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Examining The Efficacy Of Providing Writing Prompt Choices And Performance Feedback: A Randomized Controlled Trial

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Abstract

Research has indicated that the majority of students in the United States are not able to write at the proficient level (Persky et al., 2003). Prior research has demonstrated that performance feedback interventions successfully lead to students' gains in writing fluency (Hier & Eckert, 2014; Hier & Eckert, 2016; Truckenmiller et al., 2014), and that providing students with academic choices benefits their academic performance (Dickerson & Creedon, 1981; Steinman 2017). The goal of this study was to examine the combined and isolated effects of two academic interventions (i.e., providing writing prompt choices and performance feedback) on third-grade students' writing performance. A total of 70 third-grade students were randomly assigned to either the (a) performance feedback condition ($n = 24$); (b) choice condition ($n = 23$); and (c) performance feedback and choice condition ($n = 23$). Results of this study indicated that there were no statistically significant differences in students' writing performance between the three conditions. Implications for developing effective writing interventions that target student motivation and writing are discussed.

Keywords: writing performance, choice, performance feedback

EXAMINING THE EFFICACY OF PROVIDING WRITING PROMPT CHOICES AND

PERFORMANCE FEEDBACK: A RANDOMIZED CONTROLLED TRIAL

By

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Attaining strong writing skills is necessary for functioning in modern society, predominately within occupational and academic settings. For example, individuals will typically need to provide writing samples during the job hiring process and one report indicated that companies are less likely to consider an applicant with a poorly written cover letter (National Commission on Writing, 2004). Another report demonstrated that 82% of employers examine written communication skills on applicants' resumes, making it the most highly valued attribute considered (National Association of Colleges and Employers, 2019). Employees also understand the importance of being proficient writers with 80% to 90% of them reporting that writing is necessary for success (National Commission on Writing, 2004). Today, written communication skills are no longer a supplemental attribute on a resume, but a requirement for employment.

Elementary students are taught foundational writing skills that they must utilize daily in the classroom. Elementary students may spend an average of 21 minutes writing every day (Cutler & Graham, 2008) and if they lack basic writing skills, academic success in advanced grades will become difficult because students no longer receive direct writing instruction (Graham & Perin, 2007). Middle and high school students are expected to have mastered foundational writing skills and use them to acquire knowledge and express ideas in various content areas. That is, middle and high school students use *writing to learn* as opposed to *learning to write*.

If middle and high school students are not proficient with basic writing skills, they will fail to efficiently express their ideas in writing and struggle to perform to acceptable academic standards. For example, research has demonstrated that students who fail to properly use writing

skills to communicate knowledge are more likely to receive lower grades (Graham, 2006) and perform worse across subjects such as, math, science and social studies (Graham et al., 2005). Beyond classroom performance, measures of written expression are correlated with student performance on standardized tests (Abbot et al., 2010). Additionally, multiple states require students successfully pass a state test to graduate (Gewertz, 2019), meaning, a lack of writing skills can be detrimental. The influence that poor writing skills has on both occupational and academic success has led to writing becoming an integral part of the K-12 curriculum.

As a result of the importance of writing, in 2010 state leaders developed and finalized the Common Core State Standards in Literacy (CCSS; National Governor's Association Center for Best Practices, 2010). The CCSS emphasize student mastery of varied writing skills by the end of high school in order for students to become college- and career-ready. Some of the skills include an ability to produce clear and coherent text, use technology in writing, and write across an array of genres (e.g., opinion pieces, informational texts, narrative texts). Today, 41 states and the District of Columbia have adopted these standards which requires annual student assessments in reading, mathematics, and science, all of which contain writing components (Troia & Olinghouse, 2013). Despite these effortful attempts to develop common writing expectations so that students can be prepared, national assessments of fourth-grade students' academic achievement indicated that 72% of fourth-grade students were not able to write at the proficient level (Persky et al., 2003). This trend is maintained across time with 74% of eighth- and 73% of twelfth-grade students failing to write at the proficient level (National Center for Education Statistics, 2012). Additionally, corporations report dissatisfaction with the writing abilities of their employees (National Commission on Writing, 2004) and only 13% of college professors report that all their students were adequately prepared for college writing (Achieve, Inc., 2015).

In order to better understand how to improve students' writing performance, it is important to understand how writing is conceptualized.

Conceptualization of Writing

Writing has been conceptualized in numerous ways and through several different lenses (Graham, 2018). One of the earliest cognitive conceptualizations, developed by Hayes and Flowers (1980), described writing as a recursive process including three components: planning (i.e., generating ideas, organizing, setting goals), translating (i.e., produce written work), and reviewing (i.e., evaluating and revising). However, this model was designed for adult writers and omitted several lower-level processes (i.e., spelling, orthography) that are now considered necessary for developing writers (Hayes, 2012). In response to this limitation, several developmental models of writing (Berninger & Swanson, 1994; Berninger et al., 2002; Berninger & Amtmann, 2003; Berninger & Winn, 2006; Hayes, 2012; Juel et al., 1986; Kim et al., 2018) were proposed that focus on lower-level processes associated with emergent writers.

Among these developmental models, there are two with empirical support: (a) the Simple View of Writing (Juel et al., 1986; Berninger et al., 2002) and (b) the not-so-simple view of writing (Berninger & Winn, 2006). In the Simple View of Writing (Juel et al., 1986), producing written words (i.e., spelling) and generating and organizing ideas (i.e., ideation) are two critical components identified. Although Juel and colleagues empirically demonstrated that both spelling and ideation are foundational writing skills that vary over a child's development, the model did not consider other important cognitive skills (i.e., working memory, orthographic knowledge, morphological skill; Kim, & Schatschneider, 2017) associated with writing.

To address these concerns and expand on the work of Juel and colleagues (1986), Berninger and colleagues (1994; 2002) designed their own simple view of writing, which

included two components: (a) text generation and (b) transcription. Text generation was defined as converting ideas into linguistic representations in one's working memory. Transcription was defined as translating linguistic representations into written word (Berninger & Swanson, 1994; Berninger et al., 1996). However, approximately 10 years later, Berninger and Winn (2006) expanded the conceptual model by adding executive functions (i.e., self-regulatory processing, planning, monitoring) and working memory, and rebranded the model as the not-so-simple view of writing. Given that multiple models of writing have been proposed that address the needs of emerging writers, developmental considerations play an important role.

Developmental Considerations in Writing

Developmental models of writing take into consideration the the needs of emerging writers, which change as a function of the writers' age. Berninger and Winn (2006) propose that kindergarten and first-grade students focus primarily on developing transcription skills (e.g., letter generation, handwriting) whereas second- and third-grade students progress past learning transcription skills and focus on text generation. In reviewing the existing development models of writing (Berninger & Swanson, 1994; Berninger et al., 2002; Berninger & Amtmann, 2003; Berninger & Winn, 2006; Hayes, 2012; Juel et al., 1986; Kim et al., 2018), the majority emphasize the importance of addressing text generation when considering third-grade students. This theoretical support for text generation among third-grade students is evident in recent educational policy changes. For example, an examination of the Common Core indicates current instructional expectations for third-grade students' writing includes having dedicating extended periods of times for writing on various topics, purposes and audiences ((National Governor's Association Center for Best Practices, 2010).

Although the not-so-simple view of writing (Berninger & Winn, 2006) and other developmental models remain highly influential, these models do not incorporate students' motivation, even though empirical evidence demonstrates that students' motivation impacts their writing quality (Graham, 2006; Wijekumar et al., 2019). Given that motivation has been shown to impact writing quality, it is important to identify effective strategies that motivate young writers to engage in writing, particularly for those students who experience difficulties with writing.

Choice

One instructional approach that has been employed within classrooms to enhance student motivation is choice (Patall et al., 2008). Offering choices is a strategy that can be easily adapted to most instructional formats. Choice has been defined as when students are presented with at least two options and independently select one of the two options (Jolivette et al., 2002). Others have divided choice into separate categories and include between-task and within-task choices (Dibley & Lim, 1999). Between-task choices allows students to choose which task to complete (i.e., do you want to write a paper or complete a presentation?) whereas within-task choices provide students with multiple methods to complete a single task (i.e., with whom to work with, where to work).

One theoretical conceptualization that has direct relevance to choice and its relationship to motivation is Self-Determination Theory (Ryan & Deci, 2000). This theory posits that there are three psychological needs that must be met to enhance an individual's motivation: (a) autonomy (i.e., perception of freedom, able to independently make decisions), (b) competence (i.e., belief that one has the abilities and skills to complete a task), and (c) relatedness (i.e., sense of belonging to others in a social environment; Ryan & Deci, 2000). Among these three

psychological needs, Ryan and Deci (2006) argue that autonomy is most related to the effects of choice because when students are provided with choices of educational assignments, their autonomy is enhanced, leading to both improvements in motivation and task performance.

Effectiveness of Choice

Given the educational applications of choice and associated theoretical models such as Self-Determination Theory, there has been sustained interest in examining the effectiveness of choice in a number of settings. A meta-analysis examined the effectiveness of choice on motivation, and related outcomes, among children and adults (Patall et al., 2008). Motivation was assessed with behavioral measures, self-reports, or a combination of both. Specifically, behavioral measures of motivation consisted of (a) a free-choice persistence measure, which assessed the amount of time participants spent engaged with the target-activity during a free-choice period, or (b) by the proportion of participants who engaged with the target activity for any amount of time. Self-reports of motivation were assessed by administering Likert-type questions related to interest, enjoyment, liking, and willingness to engage in the activity again.

Of the 41 studies included in this meta-analysis, 13 examined the impact of choice on motivation among children and youth (i.e., K-12 students). Among those 13 studies, most of the studies used behavioral measures to assess motivation, although additional outcome measures of effort and task performance were used. Results of the meta-analysis indicated that the majority of studies examining the impact of choice resulted in positive effects on behavioral measures of students' motivation (range, *M* ES = -1.72 to 3.97), as well as positive effects on student effort (range, *M* ES = -0.07 to 3.85) and task performance (range, *M* ES = -1.15 to 2.39). Due to the relatively strong and positive effects of choice reported in this meta-analysis, as well as its adaptability to a variety of classroom instructional strategies, choice is frequently incorporated

into classroom interventions to improve students' behavioral (Shogren et al., 2004) and academic performance (Royer et al., 2017).

Choice and Academics

The research analyzing the impact of choice on the academic performance of students has been studied for the last several decades (Royer et al., 2017; von Mizener & Williams, 2009). Royer and colleagues (2017) conducted a systematic review examining the results of 26 studies that implemented choice in classroom settings for students in grades K to 12. They analyzed these studies using the quality indicators and evidenced-based standards of the Council of Exceptional Children (CEC, 2014). The quality indicators were related to context and setting, participants, intervention agent, description of practice, implementation fidelity, internal validity, outcome measures, and data analysis. Of the 26 studies, only three met all the quality indicators. Due to serious methodological concerns and a lack of strong positive effect sizes across studies reviewed, it was concluded that choice did not meet the standards as an evidenced-based intervention.

Although study design was not a specific quality indicator examined in Royer and colleagues' (2017) systematic review, it is important to note that of 26 studies identified, 23 (88%) used single-case designs. There were only three (12%) studies that used group experimental designs, and only one of the group experimental designs used random assignment. Of those studies that utilized group design, two observed positive effects of choice on various outcome measures. Further, the group experimental design study (Patall et al., 2010) that randomly assigned participants to a choice or no-choice group found choice to be a statistically significant predictor of students' interest, enjoyment, perceived confidence, test scores, and homework completion.

Prior to Royer and colleagues' systematic review, another systematic review was conducted examining the effects of students' academic choices on their academic performance (von Mizener & Williams, 2009). The findings of von Mizener and Williams were explored in the current document because the majority of studies included in their review were not included in the work done by Royer and colleagues (2017). In their review, von Mizener and Williams identified 29 studies examining the effectiveness of choice interventions among students in Kindergarten through college. Overall, only 31% ($n = 9$) found choice to be superior to no choice conditions when measuring students' academic performance (e.g., test scores, assignment completion, rate of performance, quality of performance). However, the percentage of studies demonstrating positive effects was markedly greater (43%) among K-12 aged students. These findings suggest potential developmental differences in the efficacy of choice interventions. However, the study designs used with the school-aged students varied considerably with five studies using between group experimental designs, and two studies using single-case designs. The systematic review did not fully evaluate how the experimental designs controlled for threats to internal validity or met conventional design standards (Schulz et al., 2010; Tate et al., 2016). As a result, it is difficult to fully evaluate the quality of the reviewed studies.

In summary, these two systematic reviews suggested equivocal findings for choice as a class-wide academic intervention. However, methodological limitations associated with the systematic reviews, including synthesizing results across developmental periods, experimental design types, and academic content areas, as well as methodological limitations associated the studies reviewed limits the conclusions that can be drawn. Clearly, there is a need for additional research that rigorously evaluates the efficacy of choice interventions on students' academic performance.

Choice Interventions and Written Expression

In the content area of written expression, there has been limited empirical studies evaluating the effectiveness of choice interventions on students' written expression performance. Of the two studies that focused on writing included in Royer et al.'s systematic review, one study (Lane et al., 2015) reported that choice interventions led to increased academic engaged time, and the second study (Dunlap et al., 1994) reported that choice interventions led to higher student task completion rates and academic engaged time. Among the four studies that examined writing performance that were included in von Mizener and Williams' (2009) review, only one measured performance among elementary-aged students. This study (Dickerson & Creedon, 1981) examined writing performance with second- and third-grade students and found significantly greater gains in writing among students assigned to the choice condition compared to those students assigned to the no-choice group. In addition, across both reviews, although three studies (Dickerson & Creedon 1981; Dunlap et al., 1994; Lane et al., 2015) found positive effects when examining students' writing performance, none directly examined students' writing fluency. Only one study (Dickerson & Creedon, 1981) directly examined writing performance by calculating the number of correct words written, whereas the other two studies (Dunlap et al., 1994; Lane et al., 2015) analyzed academic engaged time during a writing task.

Four additional studies (Bleck, 2014; McCurdy et al., 2008; Steinman, 2017; Sullivan, 2008) have been conducted that examined the impact of choice interventions on students' written expression skills and were not included in the aforementioned systematic reviews because they did not meet the inclusion criteria (i.e., dissertation, not examining choice in isolation) or were published following the publication of the systematic reviews. In the first study, Sullivan (2008) examined the impact of topic choice on students' writing performance and writing attitudes.

Using a within-subject group design, a total of 46 third-grade students were instructed to write about a topic of their choosing (i.e., choice essay condition) and to write in response to a prompt chosen by the researcher (i.e., non-choice essay condition). Students' writing performance was assessed by measuring topic development and standard English conventions using the Massachusetts Comprehensive Assessment System (MCAS) written composition scoring guide. Writing attitudes were assessed qualitatively using a semi-structured teacher interview and a student interview (i.e., *Student Interview Protocol*). Results indicated no statistically significant differences in students' writing performance between the topic choice essay and the non-choice essay. Regarding writing attitudes, 45% of the students stated they preferred to write about a topic of their choice with 7% saying they preferred the prompt, and the remaining 48% reporting to not have a preference or that they did not like writing. However, the order of conditions was not counterbalanced. All students received the choice condition first, followed by the non-choice condition. Given that the conditions were not counterbalanced, order effects were not controlled for, therefore limiting the internal validity of these findings.

In the second study, McCurdy and colleagues (2008) examined the effect of the Comprehensive Writing Program (CWP) on the writing performance of 17 ninth-grade students with disabilities across three classrooms. The CWP is a multicomponent program including: (a) targeted writing instruction, (b) choice of story starter, (c) writing practice, (d), public posting of class performance, and (e) feedback on performance. A multiple-baseline across-tasks design was used. Tasks were the specific writing skills targeted for improvement (i.e., percentage of complete sentences, percentage of compound sentences, percentage of sentence with adjectives). Specifically, students first responded to a writing probe (e.g., "the best thing about Saturday is…"), then implemented the CWP targeting each specific writing skill. The results indicated

writing performance improved for each writing skill that was assessed across all three classrooms. However, given that the CWP was a multicomponent intervention, conclusions cannot be drawn regarding the isolated effects of choice. Additionally, these findings cannot be generalized to typically developing, elementary-aged students.

In the third study, Bleck (2014) examined whether choice of story topic would have an impact on students' writing production (i.e., Total Words Written) and accuracy (i.e., Correct Writing Sequences). Data were collected across four sessions. Using a within subjects design, 83 ninth-grade students were randomly placed into a choice or a no-choice condition for sessions 1 and 3. For sessions 2 and 4, the groups were counterbalanced to ensure that individuals in the choice condition were placed in the no-choice condition, and vice versa. Those in the choice intervention had an option of 8 story starters to choose from; whereas those in the no-choice condition were given a prompt to respond to. Each participant was given 3 minutes to respond to a writing curriculum-based measure (CBM) probe, which was scored for writing production and accuracy. Results indicated no statistically significant differences between the conditions on writing production or accuracy. One possible explanation for this finding is that the choice condition may have been given too many writing options, which could have made it difficult to choose the truly preferred option. For example, providing many choices (i.e., 8-10) has been shown to increase students' frustration and increased perceptions of task difficulty (Haynes, 2009) which may lead to poor performance. Additionally, it is important to note that although conditions were counterbalanced, no analysis was conducted to determine whether there was a counterbalancing effect. As a result, it is unclear if order effects impacted students' writing production and accuracy.

The most recent work examining choice and writing was conducted by Steinman (2017). In this study, a multiple-baseline design across subjects was utilized to determine the effects of choice and performance feedback on students' writing fluency. Six third-grade general education students participated in the study. The phases of the study were divided into (a) baseline (i.e., students completed a story based on an experimenter-selected story starter), (b) choice (i.e., students selected story starter to complete writing assignment), (c) performance feedback (i.e., students were provided with feedback on writing performance and completed a story based on an experimenter-selected story starter), and (d) performance feedback combined with choice (i.e., students were provided with feedback on writing performance and selected a story starter to complete writing assignment).

Results indicated that all students exposed to the choice condition increased the total number of words written compared to when no-choice was given. Additionally, in comparison to the other conditions, four of the six students, the greatest number of total words written occurred when choice was combined with performance feedback. Despite these positive findings, a multiple baseline design is not the conventional design to compare treatment effects because student responding may be influenced by exposure to prior treatment conditions. Although treatment conditions were counterbalanced, unlike group experimental designs, there is no specific analysis that can be conducted to determine whether there was a counterbalancing effect. Therefore, it is impossible to rule out the impact of carryover effects on students' performance. As a result, additional treatment comparison research needs to be conducted to examine the efficacy of choice interventions on students' writing fluency.

Summary

The not-so-simple view of writing (Berninger & Winn, 2006) posits that text generation is a key writing component for developing writers. Prior research (Steinman, 2017) examined the effectiveness of choice on elementary students' text generation (i.e., number of words written) and reported improvements within the context of a single case experimental design. If providing students with choices can increase the amount of text that students generate, then it may be a viable class-wide intervention for emerging writers. Although there is preliminary evidence to demonstrate that incorporating choice into writing interventions may be beneficial and can be implemented class-wide for typically developing students, no class-wide efficacy studies have been conducted. In addition, given the mixed outcomes observed when choice interventions are implemented in isolation, it has been recommended that choice interventions be combined with other intervention components, such as those involving some feedback element (Ennis et al., 2017). Currently, there is an existing line of research that uses performance feedback as a class-wide intervention (Hier & Eckert, 2014; Hier & Eckert, 2016) to improve students' writing performance that could easily incorporate a choice intervention. For example, students could be provided with two writing prompts and students could select the prompt they want to respond to. By combining choice with performance feedback, it is possible that improvements in motivation would occur, which would further facilitate their growth in writing. Providing consistent feedback, while also offering students choice of writing prompts, may facilitate students' growth in writing by enhancing their competence and motivation to generate text.

Performance Feedback Interventions

Performance feedback is among the most widely studied processes in psychology and several relevant models (Kluger & DeNisi, 1996; Hattie & Timperley, 2007) have emerged. It is

described as "information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding" (Hattie & Timperley, 2007, p. 81). Prior to theoretical models of performance feedback emerging (e.g., Kluger & DeNisi, 1996; Hattie & Timperley, 2007), much of the research on feedback was based on Thorndike's Law of Effect (Thorndike, 1931) which, when applied to learning, proposed that the process of learning is positively influenced when an individual is provided with feedback that includes the correct response (Thorndike, 1931).

As a result of limited theoretical models addressing performance feedback interventions, Kluger and DeNisi (1996) proposed the Feedback Intervention Theory (FIT). This theory suggests that feedback interventions have different effects at three hierarchical levels: (1) meta-task processes (i.e., involving the self); (2) task-motivation processes (i.e., involving the task itself); and (3) learning processes (i.e., processes requiring allocation of very little additional cognitive resources). Although task-motivation processes are ordered at the middle level, Kluger and DeNisi argue that feedback interventions are most effective when aimed at task-motivation.

A second conceptualization of feedback interventions was proposed by Hattie and Timperley (2007). They argued that the main purpose of feedback is to reduce discrepancies between the individual's current performance and the future goal. In order to achieve this, three questions need to be answered: (1) What are the goals?; (2) What progress is being made towards those goals?; and (3) What activities need to be undertaken to achieve those goals? In addition to these questions, Hattie and Timperley suggested that feedback can be targeted at four different levels: (1) Task level (e.g., corrective feedback); (2) Process level (e.g., "You need to edit this piece by attending to descriptors"); (3) Self-regulation level (e.g., "Check to see if you have included topic sentences"); and (4) Self level (e.g., "You are a great student"). These levels are

ordered hierarchically, with task level feedback as most effective and with self-level feedback (e.g., praise) as least effective.

Informed by these conceptual models, a number of research studies have incorporated task level feedback in the content area of writing. Initially, several studies examined whether performance feedback was effective in improving students' writing performance using either single case designs (Van Houten et al., 1975), or clustered, randomized controlled trials (RCT) with students with learning disabilities (Harris et al., 1994) and clustered, randomized controlled trials with general education students (Eckert et al., 2006). To date, three randomized controlled trials were conducted examining the efficacy of performance feedback in improving writing performance (Hier & Eckert, 2014; Hier & Eckert, 2016; Truckenmiller et al., 2014). In these studies, students were provided with feedback regarding (1) the number of words the student wrote in response to a prompt and (2) an arrow indicating if that number was higher or lower than the previous time the student wrote. Specifically, this method of feedback is designed to increase the amount of text each student generates in relation to the assigned writing task. As a result, this type of feedback is provided at the task level and specifically targets students' text generation, a key component for developing writers (Berninger & Winn, 2006). The results of these studies demonstrated strong empirical support for the performance feedback intervention (Hier & Eckert, 2014, 2016; Truckenmiller et al., 2014) among ethnically diverse and economically disadvantaged third-grade students. The intervention is simple to implement in a class-wide context, more cost-effective (Barrett et al., 2020) than other class-wide interventions implemented in classrooms and is designed to target an essential component of identified in current theoretical models of writing (i.e., text generation; Berninger & Winn, 2006).

Recently, Eckert and colleagues (in press) conducted the first replicability study analyzing the impact of performance feedback on students' writing performance. The researchers used data from seven randomized controlled trials or clustered, randomized controlled trials to assess the replicability of the intervention. Participants included 536 third-grade students that were enrolled in 44 classrooms across eight schools. The participants identified as African American or black (46.6%) or white (41%) with most students in the urban school districts qualifying for free/reduced-priced lunch (range, 65% - 96%). Using an integrative data analysis, the results demonstrated moderate to large effect sizes of performance feedback (Hedges' g range, 0.41 to 1.11) that was replicable, across diverse groups of students.

Despite the moderate to large and replicable effects associated with the performance feedback intervention, not all students receiving the intervention demonstrated improvements. For example, in a randomized controlled trial conducted by Hier and Eckert (2014), 34% of the students assigned to the performance feedback intervention did not evidence writing improvements that met grade-level expectations (i.e., performing at the *fluctuational level*; writing below 37 words on a Curriculum-Based Writing measure), based on criteria established by Shapiro (2004). Because almost one-third of students participating in the study did not meet the expected grade-level criterion, there remains a significant need to explore alternatives to enhance the effectiveness of the intervention in order to more fully meet the needs of students. In addition, Truckenmiller et al. (2014) noted variability in the reported results associated with their randomized controlled trial and highlighted that variability associated with the writing probes (i.e., story starters) could be associated with these findings. Specifically, these authors highlighted that student background knowledge associated with the writing probes, difficulty level of the writing probes, and students' motivation were potential uncontrolled sources of

variability. Providing students with an opportunity to select the writing probe (i.e., choice intervention), within the context of the performance feedback intervention, is one way to address the uncontrolled sources of variability identified by Truckenmiller and colleagues (2014) and potentially expand the impact of the performance feedback intervention to a wider range of students as recommended by Hier and Eckert (2016).

Purpose of the Present Study

Providing consistent feedback, as well as offering students choices, may facilitate students' growth in writing by enhancing both their competence and motivation. As previously discussed, choice has been used to enhance students' writing performance (Bleck, 2014; McCurdy et al., 2008; Steinman, 2017; Sullivan, 2008). Similarly, performance feedback has been utilized to enhance student performance in writing (Eckert et al., 2006; Hier & Eckert, 2014; Hier & Eckert, 2016; Truckenmiller et al., 2014). However, there has only been one study conducted (Steinman, 2017) that examined the combined effects of performance feedback and choice on students' writing fluency, and a number of methodological limitations limited the conclusions that can be drawn. To date, there are no randomized controlled trials that have been conducted examining the efficacy of combining these two class-wide interventions among general education students.

The primary aim of the present study was to examine the combined effects of performance feedback and choice on students' writing fluency among third-grade students enrolled in general education classrooms. To address this aim, the following hypotheses were posed:

(1) Due to the replicable effects of providing students with performance feedback (Eckert et al., 2006; Hier & Eckert, 2014; Hier & Eckert, 2016; Truckenmiller et al., 2014), it is

hypothesized that at the conclusion of the study, students receiving performance feedback (i.e., students assigned to the performance feedback intervention and students assigned to the performance feedback and choice intervention) will demonstrate greater writing performance (i.e., Correct Writing Sequences, Correct Minus Incorrect Writing Sequences) than students receiving only the choice condition.

(2) Due to preliminary research (Steinman, 2017) suggesting that combining choice and performance feedback interventions produces greater improvements in writing fluency than providing performance feedback or choice in isolation, it is hypothesized that at the conclusion of the study, students receiving the performance feedback and choice intervention will demonstrate greater writing performance (i.e., Correct Writing Sequences, Correct Minus Incorrect Writing Sequences) than students receiving performance feedback or choice in isolation.

(3) Given that students' attitudes toward specific subjects (e.g., writing) may influence students' performance (Graham et al., 2018) I examined whether student's academic preference for mathematics, spelling, reading, or writing influenced their post-intervention writing outcomes. Given the exploratory nature of this study aim, no a priori research hypotheses were created.

Method

Participants and Setting

The participants consisted of third-grade general education students within an inner-city school in upstate New York. This school was selected based on its proximity to the university. Approval for the present study was obtained from the Institutional Review Board of Syracuse University and the participating school district. Prior to data collection, parent consent and child assent were obtained. Students were deemed ineligible to participate in the study if they are

identified as (a) Limited English Proficiency or English Language Learner status, (b) eligible for special education due to intellectual disability or a specific learning disability in reading or writing, (c) achieve a standard score below 40 on the WIAT Essay Composition subtest; or (d) achieve a standard score below 50 on the WIAT Alphabet Writing Fluency subtest.

Third-grade students were targeted because this grade level is considered a critical period in students' writing development due to increased curricular demands on text generation in association with high stakes assessment requirements (Berninger et al., 2002). A total of 92 students enrolled in four general education classrooms were screened for eligibility and invited to participate in the study. Of these students, six students' parents declined to give consent for participation, five students did not provide assent for participation, and one student moved to another school district during the eligibility assessment. In addition, students were excluded ($n =$ 10) because they were either (a) identified with Limited English Proficiency or English Language Learner status ($n = 9$), or (b) did not achieve a standard score of 40 or above on the WIAT Essay Composition subtest ($n = 1$). As a result, the final sample consisted of 70 students (see Figure 1).

For this sample of participants, there was a relatively equal distribution of male (54%) and female (46%) students. The students predominately identified as Caucasian (37%) or Black or African American (35%), with the remaining students identifying as Hispanic of Latino (8%), Asian (6%), Multiracial (10%), or American Indian or Alaskan Native (2%). The students' average age was 8 years, 3 months (range, 7.11 to 9.10). The complete demographic information for the sample is reported in Table 1.

The sessions were conducted within students' general education classrooms, each consisting of approximately 20 students, two research assistants, and the respective teacher.

Given that most students within this school are Economically Disadvantaged (83%; New York State Education Department, 2017) all students within the school received free lunch.

Research Assistants

School psychology graduate students served as the primary researchers and undergraduate students majoring in psychology served as the research assistants. All research assistants were required to complete a formal training in ethics. The training consisted of completing the Social and Behavioral Focus and Responsible Conduct of Research courses through the Collaborative Institute Training Initiative designed to ensure the protection of human research subjects. Research assistants were further trained on all procedures related to treatment implementation (i.e. using procedural scripts, scoring procedures), and were given opportunities to rehearse these procedures until proficient. All research assistants were required to be 100% proficient in scoring the dependent measures.

Materials

Wechsler Individual Achievement Test- Third Edition

The Wechsler Individual Achievement Test-Third Edition (WIAT-III; Pearson, 2009) is a standardized, norm-referenced measure designed to assess students' academic achievement in grades pre-kindergarten through twelfth. For the purposes of this study, two subtests will used: a) Alphabet Writing Fluency (i.e., student has 30 seconds to write as many letters as possible), and b) Essay Composition (i.e., student has 10 minutes to write an essay in response to a prompt). Students' Alphabet Writing Fluency scores and Essay Composition scores will be used for eligibility determination.

The Alphabet Writing Fluency subtest demonstrates moderate test-retest reliability among third-grade students ($r = .69$) and moderately low criterion-related validity when

compared to the Wechsler Nonverbal Scale of Ability (r =.36; Pearson, 2009). The Essay Composition subtest has high test-retest reliability among third-grade students (r = .86, range 2 to 32 days) and has been shown to be moderately correlated (r = .43) with the Wechsler Intelligence Scale for Children (Pearson, 2009).

Narrative Curriculum-Based Measurement in Written Expression

Narrative Curriculum-Based Measurement in Written Expression (CBM-WE) probes were administered during each intervention session (see Table 7). Each CBM-WE probe contains a narrative prompt that was previously evaluated among elementary-aged students of varied backgrounds (i.e., different ethnicities, English language learner status, and special education recipients; McMaster & Campbell, 2008; McMaster et al., 2010). The narrative prompts contained fragmented sentences intended to provide students with an idea for their story (i.e., "I was on my way home from school and…") (see Appendix E and Appendix F). Narrative prompts were provided to remain consistent with Common Core State Standards, which suggests, at third grade, a topic should be introduced to students before they begin writing. Alternate-form reliability estimates for the CBM-WE probes were moderately high (r=.73 to .90) and the criterion-related validity estimates were low to moderate (r=.29 to .63; McMaster et al., 2010)

Academic Preference Assessment

The academic preference assessment (see Appendix D) is a student-completed measure that asks the student to rate the likelihood that they would participate in a specific academic task if they were given free-choice time in class. The measure requires students to rate the likelihood they would engage in each academic task (e.g., writing, math, reading, and spelling) on a scale from "Not at all" to "Very, very much" (see Appendix D). There were five response options,

which were scored on a 5-point scale ranging from *Not at all* (1) to *Very, very much* (5). This measure was developed by the author and to date, no psychometric information is available.

Performance Feedback Weekly Writing Packet

Each student received an individualized writing packet that consisted of: (a) a cover page depicting participant information, (b) individualized performance feedback, and (c) a CBM-WE probe. The performance feedback sheet indicated the total words written by the participant from the previous session paired with an arrow pointing up or down indicating an increase or decrease in writing productivity. The third page in the packet displayed the CBM-WE story stem and an image of a stop sign to prevent students from moving ahead in the packet. The last two pages in the packet contained the same CBM-WE story stem at the top of the page followed by horizontal lines for the student to write their story (see Appendix E).

Choice Weekly Writing Packet

Each student in either choice condition received a writing packet that contained two different CBM-WE probes. The packet consisted of (a) a cover page and (b) two CBM-WE probes. The first page of the packet served as a cover page. The second page displayed the CBW-WE probes and an image of a stop sign. The last two pages of the packet presented both CBM-WE probes at the top of the page followed by horizontal lines (see Appendix F).

Choice + Performance Feedback Weekly Writing Materials

Each student received an individualized writing packet that consisted of (a) a cover page, (b) individualized performance feedback, and (c) two CBM-WE probes. The performance feedback page was identical to the sheet used for the performance feedback weekly writing packet. The writing packet was identical to those used for the choice weekly writing packets.

Procedures

The present study occurred across 5 weeks with one session occurring per week. Each session lasted approximately 20 minutes and was conducted within the students' general education classrooms. Following pre-assessment, the students were randomly assigned to one of three conditions: (a) performance feedback; (b) choice; (c) performance feedback and choice.

Eligibility

The first two sessions were devoted to gathering eligibility data. At the beginning of the first session, the Alphabet Writing Fluency subtest was administered. Consistent with standard WIAT administration procedures, students were given a lined sheet of paper that contains the letter "a" printed on the first line. They were instructed to write as many letters of the alphabet as possible, to only write each letter once, and that it does not matter if the letters are uppercase or lower case. The students had 30 seconds to complete this task. Additionally, the WIAT Essay Composition subtest was administered. Students were given 10 minutes to write an essay responding to a prompt.

Pre-intervention Assessment

Prior to commencing the study, students were administered one CBM-WE. Lined paper with a story starter (i.e., "I was on my way home from school and…") printed at the top was distributed to each student. Students were told "Today I want you to write a short story. You will have some time to think about the story you will write, and then you will have time to write it." Following this, the students were instructed, "I am going to read a sentence to you first, and then I want you to write a story about what happens next. You will have one minute to think about the story you will write and then you will have three minutes to write it.". The students were then instructed, "For the next minute think about writing a story that begins with this sentence: 'I was

on my way home from school and ...'". After 1 minute the students were instructed to hold their

pencils up in the air and to listen; "When I tell you to start, please begin writing your story.

Remember, if you don't know how to spell a word, you should try your best and sound it out. It

is important that you do your best work. If you fill up the first page, please turn to the next page

and keep writing. Do not stop writing until I tell you to. Do your best work. Okay, you can start

writing". Students had 3 minutes to write their story (see Table 2).

Performance Feedback Only Condition

At the beginning of each session, research assistants distributed an individualized

performance feedback weekly writing packet to each participant. Performance feedback was

explained to the students and any questions were answered (see Appendix A). Students were

then instructed to turn to the second page where the CBM-WE probe and stop sign appeared. The

research assistants monitored the students to ensure they were all on the correct page before

presenting the next set of instructions. Next, the writing probe was read a loud and the students

were instructed to think about their story for one minute. Following this, the students were

instructed to turn the page and had three minutes to write their story. At the end of the three

minutes the researchers collected the students' packets and thanked them for their cooperation.

In order to provide students with feedback, the total words written on each CBM-WE

probe was assessed and included on the individualized performance feedback sheet. Total words

written was the number of words written in a passage with each word defined as two letters

written in sequence, except for the single letter words "a" and "I" (Deno et al., 1980). This

metric was solely used as feedback for students and will not be included in the statistical

analyses.

Choice Only Condition

At the beginning of each session, research assistants distributed to each participant a choice weekly writing packet. The students were told that they are writing a story, and that they have a choice of which story they want to write about (see Appendix B). Following this, the students were instructed to go the next page in their packet, which contained the CBM-WE probes. The research assistant read each CBM-WE probe, and students were instructed to circle which CBM-WE probe they wanted to respond to. The remaining procedures were identical to those described in the performance feedback condition.

Choice and Performance Feedback Condition

At the beginning of each session, research assistants distributed to each participant an individualized weekly writing packet and provided an explanation of the performance feedback identical to that described in the performance feedback condition. Then, the research assistants followed procedures identical to those described in the choice only condition. The procedural script for this condition appears in Appendix C.

Post-Intervention Assessment

Given that the school district closed unexpectedly due to a national pandemic, post-intervention data collection was modified. Students were only administered the CBM-WE probes that contained the story starter "I was talking to my friends, when all of a sudden…" or "One night I had a strange dream about…". Standard administration procedures were followed.

Dependent Measures

Students' writing performance on the pre- and post-assessment CBM-WE probes was assessed by the number of Correct Writing Sequences, and Correct Minus Incorrect Writing Sequences, based on procedures developed by Shapiro (2011). Correct Writing Sequences was

scored based on accuracy of spelling, capitalization, punctuation and syntax of each adjacent word written. Incorrect Writing Sequences was scored based on the inaccuracies of spelling, capitalization, punctuation and syntax of each adjacent word written.

Psychometric support for Correct Writing Sequences was evidenced by demonstrating moderate criterion validity ($r = 0.63$) when compared to the Test of Written Language- Third Edition (TOWL-3; Hammill & Larsen, 1996) and moderately high alternate-form reliability ($r = 0.76$) when scoring third-grade students' responses to a narrative prompt (McMaster & Campbell, 2008). Additionally, psychometric support for Correct Minus Incorrect Writing Sequences was evidenced by demonstrating moderate criterion validity estimates ($r = 0.60$; Romig et al., 2017).

Experimental Design

A covariate-adaptive randomization method was employed to assign eligible students to conditions based on their pre-assessment writing percentile score, which was derived from AIMSweb norms for Total Words Written. Based on this percentile score, all students were ranked and then randomly assigned in sequential order to one of the three conditions: (a) performance feedback only ($n = 24$), (b) choice only ($n = 23$), or (c) performance feedback and choice ($n = 23$). This method of randomization controlled for the students' initial writing skills while maintaining equal sample sizes across conditions. Covariate-adaptive randomization has been shown to achieve balance over many covariates when the sample size is small to medium, and when using this method, the power is higher compared to complete randomization (Hu et al., 2014). Each condition was randomly assigned to one of the three classrooms.

An a priori power analysis was conducted using GPower (Erdfelder et al., 1996) to determine an adequate sample size for testing group differences between the three

conditions. Sample size was calculated by setting a equal to 0.05, power equal to 0.80, and an effect size of 0.60. The effect size was determined based on the results of previous studies (i.e., Hier & Eckert, 2014; Hier & Eckert, 2016; Truckenmiller et al., 2014) which was conceptually and statistically similar to the present study. The results indicated that 25 third-grade students per condition would be sufficient, which results in a total sample size of 75 participants. Although the total number of students that were assessed for eligibility to participate in the study exceeded the results of the power analysis ($n = 92$), only 70 students served as participants (Figure 1). Thus, as a result, the present study did not meet the threshold established by the power analysis.

Procedural Integrity

Procedural integrity scripts were designed for each session. The primary researcher followed the procedural script and checked off steps as they were completed. A secondary researcher monitored the primary researcher and verified whether the steps were correctly implemented for 67% ($n = 4$) of the sessions. Agreement between the primary and secondary researcher were calculated by dividing the instances when the secondary researcher indicated that the primary researcher accurately followed a step by the total number of possible procedural steps, and then multiplying that number by 100. Overall, procedural integrity for each condition was high. Results indicated that 99% of the steps (range, 95% to 100%) were accurately completed by the primary research assistant for each observed session. An analysis of the procedural integrity outcomes indicated that two deviations occurred during implementation of the Performance Feedback and Choice intervention. Specifically, there were two instances where the secondary observer did not observe the primary research assistant monitoring the participants for questions (i.e., step 13) or ensuring that students raised their pencils in the air prior to writing

(i.e., step 31; see Appendix C). Table 6 illustrates the procedural integrity outcomes for each condition.

Interscorer Agreement

A total of 40% ($n = 52$) of the CBM-WE pre- and post-assessment probes were randomly selected and rescored for the primary dependent measures, which included Correct Writing Sequences and Correct Minus Incorrect Writing Sequences. Interscorer agreement was scored on a word-by-word basis and was calculated by dividing the number of agreements by the sum of agreements and disagreements. Kappa coefficients were also calculated. The mean interscorer agreement for Correct Writing Sequences was 86.7% (range, 75% - 100%) and the mean Kappa coefficient was 0.95. The mean percentage of interscorer agreement for Incorrect Writing Sequences was 96.5% (range, 67% - 100%) and the mean Kappa coefficient was 0.95. For those instances where scoring discrepancies existed, I re-evaluated the probes to determine the final score.

Design and Data Collection Alterations

Due to the closing of schools as a result of the global pandemic (i.e., COVID-19), data collection could not be conducted as originally proposed. A total of four alterations occurred due to early termination of data collection, including (a) a reduction in the number of direct intervention sessions (i.e., two instead of five) and (b) the removal of the Intervention Rating Profile 15 (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985), (c) and the removal of the Kids Intervention Profile (Eckert et al., 2017), and (d) the removal of the post-intervention academic preference assessment. Additionally, the covariate-adaptive randomization design was not able to consider race and ethnicity during randomization because the central administrative office of the school district did

not release information until after data collection ended. Table 5 provides a listing of the alterations that occurred and the impact this had on the study's methods and design.

Results

Raw data were input into Microsoft Excel by the primary researcher. The data were verified for accuracy and then transferred to SPSS 26 (IBM Corp., 2019). Prior to conducting the major analyses, data were inspected for missingness and analyzed to determine whether the missing data were missing completely at random. The aspects of the data that were examined were the pre- and post-assessment writing outcomes (i.e., Total Words Written, Correct Writing Sequences, Incorrect Writing Sequences and Correct Minus Incorrect Writing Sequences) and the demographic variables (i.e., age, gender, ethnicity and race). There were no missing student demographic data; however, the percentage of missing values for writing outcome measures was 8% ($n = 11$) due to student absenteeism. As a result, 92% of pre- and post-assessment writing samples were available for analysis, which constitutes a low attrition study. In order to determine if the data were missing completely at random (i.e., the missing values on one variable are unrelated to other variables in the dataset; Rubin, 1976) Little's Test of Missing Completely at Random (Little, 1988) was conducted, which indicated the outcome data were missing completely at random ($\chi^2 = (7, N = 60) = 6.280, p = .507$).

To improve accuracy and statistical power of my results (Baraldi & Enders, 2010; Schafer & Graham, 2002), I used the multiple imputation procedure in SPSS to obtain a complete data set, which is consistent with standards established by What Works Clearinghouse (Institute of Education, 2017) for a low attrition RCT. Multiple imputation (Rubin, 1987) is a technique in which each missing data point is filled with a set of plausible replacement scores prior to conducting analyses. Multiple imputation is the preferred method to replace missing data

over other traditional methods (i.e., listwise deletion, pairwise deletion, mean imputation and regression imputation) given that the bias with multiple imputation is less than those traditional methods, assuming the data are missing completely at random (Muthén et al., 1987). Given that recent recommendations suggest using a larger number of imputations can minimize simulation error (White et al., 2011) I generated 20 imputed data sets. Imputation occurred for the writing outcomes Correct Writing Sequences and Incorrect Writing Sequences at the item-level.

Descriptive Analyses

Demographic information of the students assigned to each condition was compared using non-parametric and parametric tests. Results indicated there were no statistically significant differences regarding student demographic characteristics between the three conditions with regard to age, F (1, 69) = .143, p = .867, race or ethnicity, χ^2 (10, N = 70) = 12.60, p = .246, or gender, χ^2 = (1, N = 70) = 4.11, p = .128. As a result, the sample was considered heterogenous with respect to age, race, ethnicity, or gender.

Descriptive statistics for the pre-intervention outcomes (i.e., Correct Writing Sequences, Incorrect Writing Sequences and Correct Minus Incorrect Writing Sequences) were computed. At pre-intervention, there were no statistically significant differences between conditions based on Correct Writing Sequences, F (2, 69) = .113, p = .893, Incorrect Writing Sequences, F (2, 69) = .068, p = .934, or Correct Minus Incorrect Writing Sequences, F (2, 69) = .082, p = .921. Students' initial writing performance (i.e., Correct Writing Sequences) was determined to be falling below the 30th percentile based on spring normative outcomes for third-grade students (AIMSweb, 2017).

Major Analyses

To examine whether the addition of providing students with writing prompts choices to a performance feedback intervention improved students' writing performance relative to students that received a performance feedback intervention in isolation or choice in isolation, two analyses of covariance (ANCOVA) were conducted. These analyses examined whether there were differences in students' post-intervention writing performance (i.e., Correct Writing Sequences, Correct Writing Sequences Minus Incorrect Writing Sequences) based on condition assignment, after accounting for pre-intervention performance. Prior to running the major analyses, the underlying statistical assumptions were examined (e.g., linearity, independence of covariate, normality of the distribution, homogeneity of regression slopes, homogeneity of variance) and it was determined that all assumptions were met.

Writing Performance

Results of the major analyses indicated no statistically significant differences between conditions for students' post-intervention Correct Writing Sequences, $F(2, 70) = .845$, $p = .434$, or Correct Minus Incorrect Writing Sequences, $F(2, 70) = .320$, $p = .727$ (see Table 3). For Correct Writing Sequences, students assigned to the Performance Feedback ($M_{adj} = 22.46$, $SD_{adj} = 14.78$), Choice ($M_{adj} = 23.26$, $SD_{adj} = 11.15$), and Performance Feedback and Choice ($M_{adj} = 25.13$, $SD_{adj} = 13.01$) conditions demonstrated similar levels of performance at post-intervention. Similarly, for Correct Minus Incorrect Writing Sequences, students assigned to the Performance Feedback ($M_{adj} = 15.50$, $SD_{adj} = 13.66$), Choice ($M_{adj} = 17.09$, $SD_{adj} = 11.13$), and Performance Feedback and Choice ($M_{adj} = 17.04$, $SD_{adj} = 12.71$) conditions also demonstrated similar levels of performance at post-intervention. These results indicate that regardless of the type of intervention received, student's post-intervention writing performance was similar (see Table 3).

Exploratory Analyses

To examine if students' academic preference for a given subject (i.e., reading, writing, math, and spelling) was associated with their post-intervention writing outcomes (i.e., Correct Writing Sequences; Correct Minus Incorrect Writing Sequences), bivariate correlations were conducted (see Table 4). Results of these analyses indicated no statistically significant correlations between any of the students' self-reported academic preferences and their post-intervention writing outcomes. Stronger, although not statistically significant, correlations were found for students' self-reported preference to write and their Correct Writing Sequences, $r = .22$, and their Correct Minus Incorrect Writing Sequences, $r = .226$ However, the associations between students' self-reported academic preferences in writing, reading, math, and spelling were significantly correlated with one another, suggesting that if students had a preference for one subject, they reported preferences for the other subjects.

Supplementary Analyses

Given that the association between students' self-reported academic preferences were significantly correlated with one another, it is possible that the unique contribution of each academic preference (i.e., math, reading, writing or spelling) towards post-intervention writing performance was not accounted. As a result, partial correlations were conducted. Prior to conducting these analyses, the underlying statistical assumptions were examined (i.e., linearity, significant outliers present, normality of the distribution, control variables present, variables measured continuously) and it was determined that all assumptions were met. Results of these analyses indicated that there was a statistically significant partial correlation between students' preference for writing and their Correct Writing Sequences (partial $r = .285$, $p = .020$) and the association was approaching significant for the partial correlation between students' preference

for writing and their Correct Minus Incorrect Writing Sequences (partial $r = .242$, $p = .051$). The associations between the students' other self-reported academic preferences for math, reading, and spelling were not correlated at the statistically significant level (see Table 8).

Discussion

Although there is evidence suggesting that providing performance feedback in isolation improves students' writing performance (Eckert et al., 2006; Hier & Eckert, 2014; Hier & Eckert, 2016; Truckenmiller et al., 2014) and evidence suggesting that providing students with choices enhances students' academic performance (Beck, 2014; McCurdy et al., 2008; Sullivan, 2008), only one study (Steinman, 2017) examined the combined effects of these two interventions on students' writing performance. However, Steinman's study used a multiple baseline design, which is not considered a conventional methodological approach to compare treatment effects. As a result, there is a need for further research to examine the efficacy of combining performance feedback and choice on students' writing performance. The present study sought to fill this gap in the literature by examining the efficacy of combining these two class-wide interventions among third-grade general education students.

Writing Performance

Contrary to my initial hypotheses, students in the Performance Feedback condition did not outperform those students in the Choice condition on any of the writing outcomes assessed (i.e., Correct Writing Sequences & Correct Minus Incorrect Writing Sequences). Similarly, students in the Performance Feedback combined with Choice condition did not outperform those students within the Performance Feedback or Choice condition on any of the writing outcomes. Following completion of the brief intervention, students assigned to all three conditions

performed similarly on the post-assessment writing outcomes (see Table 3), suggesting that there was no differential impact of interventions on students' writing performance.

Based on AIMSweb percentile scores, the majority of students in this sample were performing below the 30th percentile, on average, at pre-intervention on a measure of writing (i.e., Correct Writing Sequences). Although providing students with choices has been linked to increasing students' motivation (Patall et al., 2008) and increased academic engaged time (Dunlap 1994; Lane et al., 2015), several studies have demonstrated that providing choices within a writing intervention did not improve students' writing fluency (Sulivan 2008) or quality (Bleck 2014). In the one study that examined the effectiveness of choice within the context of a writing intervention (Steinman, 2017), although students' writing fluency (i.e., Total Words Written) increased when writing prompt choices were provided, they did not utilize a standard single-subject research design that was appropriate for comparing treatment effects (i.e., multiple baseline design with reversal components).

It is important to note that when students do not initially possess the necessary skills to write fluently, the effectiveness of choice may become limited. For instance, if students have a performance deficit (i.e., they possess the necessary skill but lack motivation to be engaged), they may be more affected by being provided with choices because they already possess skills that allow them to write with fluency, relative to students with a skill deficit (i.e., they lack the necessary skill to participate). For students with skill deficits, choice may not be effective because even though choice may increase student motivation, if they do not have the skill, they will not be able to improve their performance. Given that students within my sample originally performed below the 30th percentile, this may have influenced the relative effectiveness of

providing writing prompt choices. As a result, it may be more relevant for future research studies to examine *who* choice is effective for, rather than determine *if* choice is effective.

Contrary to prior research demonstrating that providing elementary-aged students with feedback regarding the number of words they wrote was more effective than practice-only conditions in enhancing their writing fluency (Eckert & Hier 2014; Eckert & Hier 2016), the present study found that students' assigned to the Performance Feedback condition demonstrated similar writing outcomes to students who were assigned to the Choice condition. A number of factors may explain this finding. First, it is possible that the limited dosage of performance feedback was not sufficient to impact students' writing performance. Second, students assigned to the Performance Feedback condition demonstrated improvements in writing fluency similar to students assigned to the Choice condition as evidenced by participants in both groups increasing their AIMSweb Total Words Written percentile score, on average. As a result, the Choice condition appeared to impact students' writing performance. Consistent with prior research studies examining the impact of choice on students' performance (Bleck 2014; Sullivan 2008), simply providing students with the opportunity to select their writing prompt within the context of the Choice condition may have increased their motivation and subsequently impacted their writing performance. Third, as previously noted, past studies (Hier & Eckert, 2014; Hier & Eckert, 2016) examining the efficacy of performance feedback have compared the impact of performance feedback on students' writing performance to a control condition. In the present study, I did not include a control group.

Limitations

Several limitations should be considered when interpreting the results from this study.

First, the abbreviated duration of the intervention (i.e., one intervention session) may not have been a sufficient dosage to alter students' writing performance. Second, true randomization was not achieved. Although students assigned to the three conditions performed similarly on pre-intervention writing outcomes, there were statistically significant differences between conditions in the proportion of students based on race and ethnicity. Third, the number of students that meet the inclusion criteria was less than the number specified by the a priori power analysis. As a result, the study was underpowered. Last, this study only explored third-grade students in an urban school locale, limiting the generalizability of this study to other student and school demographics.

Future Research Directions

The results of the current study indicate that the inclusion of providing writing prompt choices or the combination of choice with performance feedback did not lead to statistically significant differences in students' post-intervention writing performance between conditions. Although future research should examine whether increasing the intervention length leads to differential improvements in students writing performance, given the results observed in the present study, future research may want to consider including additional measures that examine internal student characteristics, such as writing motivation, anxiety, or apprehension. In addition, given that much of the research surrounding choice has been focused on enhancing students' motivation (Patall et al., 2008) rather than improving a specific skill, it may be relevant to consider using choice interventions among students who are experiencing a performance deficit (i.e., have the skill but lack motivation) rather than a skill deficit (i.e., cannot fluently use the skill). For students who have a performance deficit, providing choices may be more effective at enhancing their writing relative to students who have a skill deficit.

Considering that there were alterations made to the originally proposed design of the current study, I was unable to gather intervention acceptability data from the students or the teachers. Future research would benefit from gathering information regarding how teachers feel about the appropriateness and effectiveness of the interventions examined in this study, especially if the intention is to have the teachers provide these interventions in the classroom.

Conclusion

Given that the majority of elementary-aged students are performing below their expected grade-level on measures of writing ability (National Center for Education Statistics, 2012), there is a need for evidenced-based interventions to be developed. Results of the current study indicate that students who received writing prompt choices performed similarly to students who received performance feedback of a combination of the two interventions. Although the results of this study provide preliminary evidence that providing writing prompt choices may not be effective for the sample of students participating in this study, there were methodological limitations that should be considered when informing future research. Due to the closing of schools as a result of the global pandemic (i.e., COVID-19), there was a reduction in the number of direct intervention sessions, the removal of intervention acceptability measures, as well as the removal of a post-intervention academic preference assessment. Future research and school-based practitioners should consider examining whether intervention dosage results in improved student outcomes as well as considering whether providing choice differentially impacts students who have skill versus performance deficits in writing.

Table 1

Student Demographic Characteristics (N = 70)

Characteristics	Total Sample[a] %	Total Sample[a] (n)	Choice[b] %	Choice[b] (n)	Performance Feedback[c] %	Performance Feedback[c] (n)	Choice and Performance Feedback[d] %	Choice and Performance Feedback[d] (n)	χ^2	p
				Condition						
Gender									4.11	.128
Female	46%	(32)	57%	(13)	29%	(7)	52%	(12)		
Male	54%	(38)	43%	(10)	71%	(17)	48%	(11)		
Race or Ethnicity									12.60	.246
American Indian or Alaska Native	4%	(3)	4%	(1)	4%	(1)	4%	(1)		
Asian	6%	(4)	0%	(0)	4%	(1)	14%	(3)		
Black or African American	33%	(23)	26%	(6)	42%	(10)	30%	(7)		
Hispanic or Latino	7%	(5)	4%	(1)	13%	(3)	4%	(1)		
Multiracial	17%	(12)	35%	(8)	8%	(2)	9%	(2)		
White	33%	(23)	30%	(7)	29%	(7)	39%	(9)		
	M	(*SD*)	*M*	(*SD*)	*M*	(*SD*)	*M*	(*SD*)	*F*	*p*
Age	8.02	0.042	8.02	0.03	8.03	0.04	8.02	0.04	0.14	.867

[a]$n = 70$. [b]$n = 24$. [c]$n = 23$. [d]$n = 24$

Table 2

Student Pre-Intervention Writing Outcome Results on CBM-WE Probe

Writing Outcomes	Total Sample[a]		Choice Condition[b]		Performance Feedback Condition[c]		Choice and Performance Feedback Condition[d]	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Correct Writing Sequences	18.95	(11.73)	18.91	(12.02)	19.79	(11.95)	18.13	(11.12)
Incorrect Writing Sequences	7.16	(5.51)	7.43	(5.91)	7.25	(4.93)	6.78	(5.64)
Correct Minus Incorrect Writing Sequences	11.8	(11.94)	11.48	(13.38)	12.54	(9.66)	11.35	(12.51)

[a]$n = 70$. [b]$n = 24$. [c]$n = 23$. [d]$n = 24$

Table 3

Analysis of Covariance for Students' Post-Intervention Correct Writing Sequences and Correct Minus Incorrect Writing Sequences by Condition with Pre-Intervention Correct Writing Sequences and Correct Minus Incorrect Writing Sequences as Covariates

Outcomes	Choice Condition		Performance Feedback Condition		Choice and Performance Feedback Condition		ANCOVA		
	M_{adj}	(SD_{adj})	M_{adj}	(SD_{adj})	M_{adj}	(SD_{adj})	F ratio	df	η^2
Correct Writing Sequences	23.26	(10.91)	22.46	(14.47)	25.13	(12.73)	.845	2	.025
Correct Minus Incorrect Writing Sequences	17.09	(11.13)	15.50	(13.66)	17.04	(12.71)	.320	2	.010

Table 4

Bivariate Correlations between Students' Academic Subject Preferences and Post-Intervention

Writing Outcomes

Variable	*n*	*M*	*SD*	1	2	3	4	5	6
1.Writing Preference	69	3.710	1.352	-	-	-	-	-	-
2.Reading Preference	70	3.543	1.452	.273*	-	-	-	-	-
3.Spelling Preference	70	3.243	1.623	.498***	.630***	-	-	-	-
4.Math Preference	70	3.514	1.520	.421***	.482***	.482***	-	-	-
5. Correct Writing Sequence	70	23.60	12.952	.220	.109	.033	-.057	-	-
6.Correct Minus Incorrect Writing Sequences	70	16.53	12.673	.226	.148	.086	.022	.951***	-

Note. The size of *n* for Correct Writing Sequences and Correct Minus Incorrect Writing

Sequences includes the imputed data for nine missing data points.

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

Table 5

Description of Research Design Pre and Post Pandemic

Initially Proposed Project	Alterations to Proposed Project
Randomization Process • Include students' pre-intervention writing performance and student demographic characteristics during randomization process	**Randomization Process** • Include students' pre-intervention writing performance during randomization process
Measures Included • Wechsler Individual Achievement Test-Third Edition (Pre-intervention assessment) • Narrative Curriculum-Based Measurement in Written Expression (Pre-intervention assessment) • Academic Preference Assessment (Pre-intervention assessment) • Narrative Curriculum-Based Measurement in Written Expression (Post-intervention assessment) • Kids Intervention Profile (Post-intervention assessment) • Intervention Rating Profile (Post-intervention assessment) • Academic Preference Assessment (Post-intervention assessment)	**Measures Included** • Wechsler Individual Achievement Test-Third Edition (Pre-intervention assessment) • Narrative Curriculum-Based Measurement in Written Expression (Pre-intervention assessment • Academic Preference Assessment (Pre-intervention assessment) • Narrative Curriculum-Based Measurement in Written Expression (Post-intervention assessment) •
Study Length • A total of 5 intervention sessions and one 1 post-intervention session	**Study Length** • 2 intervention sessions with students' performance on the second session being used for post-intervention analyses

Table 6

Descriptive Statistics for Procedural Integrity Assessments

Phase or Condition	Sessions Assessed		Percentage of Steps Completed		
	%	(*n*)	*M*	(*SD*)	Range
Eligibility and Pre-Assessment	25%	(3)	100%	(0)	100%
Choice Condition	100%	(2)	100%	(0)	100%
Performance Feedback Condition	50%	(1)	100%	-	100%
Performance Feedback and Choice Condition	50%	(1)	95%	-	(95%)

Table 7

Condition Allocation of CBM-WE Prompts

Session	Performance Feedback Condition	Choice Condition	Performance Feedback and Choice Condition
Pre-Assessment	I was on my way home from school and…	I was on my way home from school and…	I was on my way home from school and…
Session 1	One morning I found a note under my pillow that said . . .	Option 1: One morning I found a note under my pillow that said . . . Option 2: One day, when I got home from school…	Option 1: One morning I found a note under my pillow that said . . . Option 2: One day, when I got home from school…
Post-Assessment	I was talking to my friends when, all of a sudden…	Option 1: I was talking to my friends when, all of a sudden… Option 2: One night I had a strange dream about…	Option 1: I was talking to my friends when, all of a sudden… Option 2: One night I had a strange dream about…

Table 8

Partial Correlations between Students' Academic Subject Preferences and Post-Intervention

Writing Outcomes

| Variable	*n*	*M*	*SD*	1	2	3	4	5	6
1.Writing Preference	69	3.710	1.352	-	-	-	-	-	-
2.Reading Preference	69	3.522	1.451	-.126	-	-	-	-	-
3.Spelling Preference	69	3.217	1.626	.381**	.517***	-	-	-	-
4.Math Preference	69	3.507	1.530	.263*	.287*	.135	-	-	-
5. Correct Writing Sequence	69	23.64	13.043	.285*	.184	-.123	-.196	-	-
6.Correct Minus Incorrect Writing Sequences	69	16.53	12.673	.242	.168	-.084	-.124	NA	-

Note. The size of *n* for Correct Writing Sequences and Correct Minus Incorrect Writing

Sequences includes the imputed data for nine missing data points. NA = Not available; based on

the way these measures were designed, I was unable to run a partial correlation for the specified

variables.

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

Figure 1

Participant flow chart following consolidated standards of reporting trial guidelines.
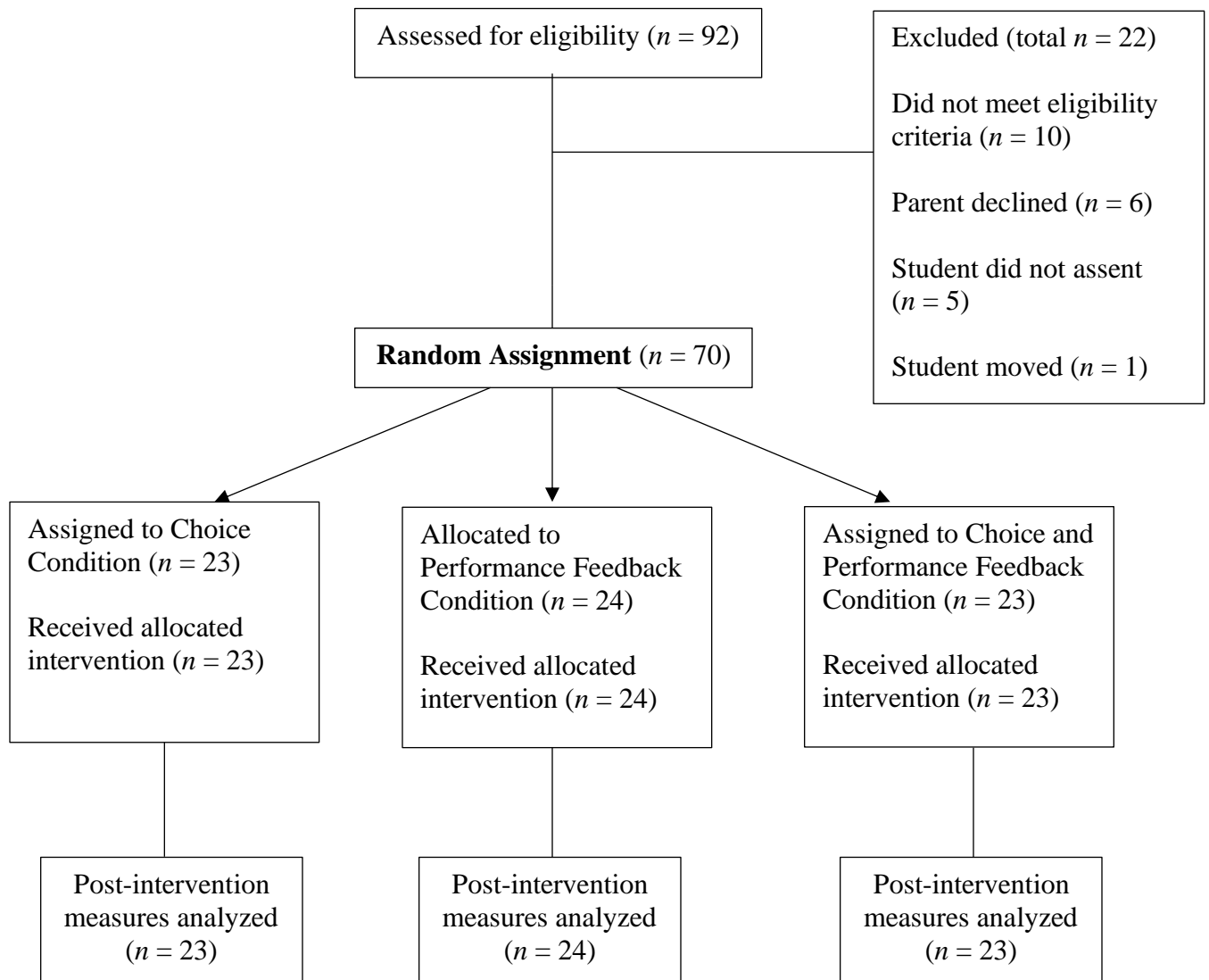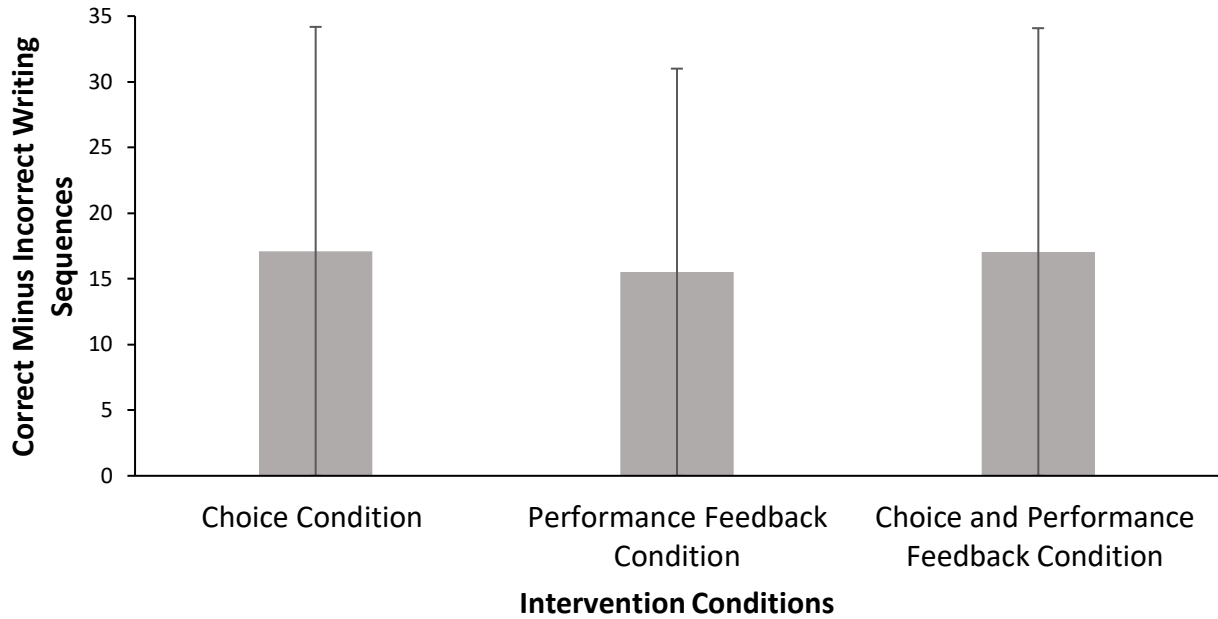
Figure 2

Post-Intervention Correct Writing Sequences Across Treatment Conditions
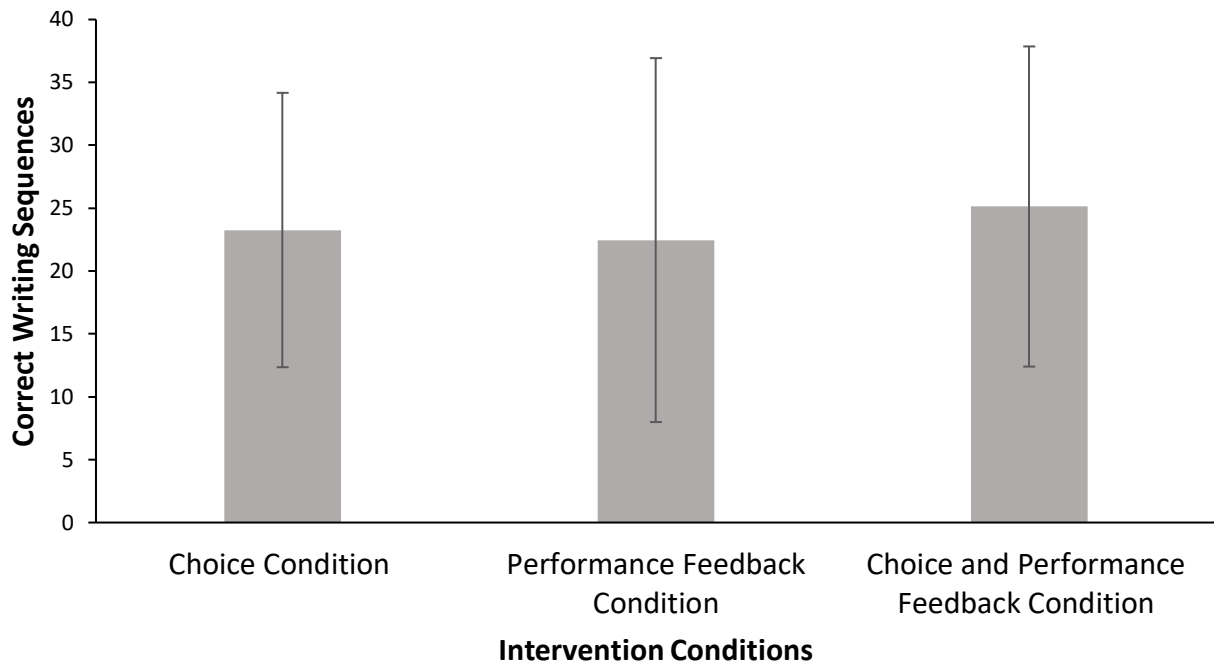
Note. The averages for each condition are the adjusted means from the ANCOVA

Figure 3

Post-Intervention Correct Minus Incorrect Writing Sequences Across Treatment Conditions

Note. The averages for each condition are the adjusted means from the ANCOVA

Appendix A

Performance Feedback Condition – Procedural Script

Step Number	Procedure	Mark "X" if completed
1	"Hello, my name is [insert name}, and I am from Syracuse University. I am going to be working with you today as part of a project your teachers are letting us do with all the third-grade students"	
2	"We are going to hand out packets to everyone. But please do not open the packets. Keep them closed"	
3	Research assistant(s) ensure that all students have a packet and are remaining on the appropriate page	
4	"Please take out a pencil. If you do not have a pencil, raise your hand"	
5	Research assistant distributes pencils as needed	
6	"Today I want you to write a short story. You will have some time to think about the story and then you will have time to write the story. Turn to the next page of your packet. It has a box in the middle of the page"	
7	Ensure that all students are on the correct page	
8	"Remember how I asked you to write a story last week? 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 up towards the sky, that means you wrote more words since the last time I worked with you. If the arrow is pointing down towards the floor, that means you wrote fewer words since the last time I worked with you. If there is an equal sign, that means you wrote the same number of words as you did the last time I worked with you."	
9	"Does anyone have any questions?"	
10	"Please turn to the next page of your packet. This page has a thought bubble at the top of the page"	
11	Check to make sure all students are on the correct page	

12	"Today I want you to write a story. First, I will read a sentence, and then you will write a story about what happens next. You will have 1 minute to think about what you will write and then you will have 3 minutes to write your story. Are there any questions?"	
13	"For the next minute, please do not write the story, just think about a story that begins with [insert story starter…]"	
14	Start stopwatch and survey to make sure students are not going forward and writing	
15	[after 30 seconds have past, remind students] "You should be thinking about [insert story starter…]"	
16	"Please turn to the next page of your packet, and raise your pencil high in the air."	
17	Ensure that all students are on the correct page	
18	"When I tell you to start, please begin writing your story. Remember, if you don't know how to spell a word, you should try your best to sound it out. It is important that you do your best work. If you fill up the first page, please turn to the next page and keep writing."	
19	"Okay, you can start writing."	
20	Monitor the students while they write but do not provide assistance if they ask for help.	
21	[after 90 seconds have past, remind students] "You should be writing about [insert story starter…]	
22	[At the end of 3 minutes say] "Please stop writing and close your packets. We will come around and collect the packets"	
23	Collect all packets	
24	"Thank you all for working so hard and following directions."	

Appendix B

Choice Condition – Procedural Script

Step Number	Procedure	Mark "X" if completed
1	"Hello, my name is [insert name}, and I am from Syracuse University. I am going to be working with you today as part of a project your teachers are letting us do with all of the third-grade students"	
2	"We are going to hand out packets to everyone. But please do not open the packets. Keep them closed"	
3	Research assistant(s) ensure that all students have a packet and are remaining on the appropriate page	
4	"Please take out a pencil. If you do not have a pencil, raise your hand"	
5	Research assistant distributes pencils as needed	
6	"Today I want you to write a story. You will have a choice of which story you want to write. I am going to read two sentences to you first, and then I want you to choose which story you want to write about. Please turn to the next page in your packet. There will be a picture of a thought bubble at the top of the page."	
7	Ensure all students are on the correct page in their packets	
8	"Please look at the left box on your page. It says… [INSERT STORY STARTER 1…]. **Give student 5 seconds to think about the story starter.**	
9	"Now look at the right box on your page. It says… [INSERT STORY STARTER 2 …] **Give students 5 seconds to think about the second story.**	
10	"Please choose which story you would like to write about today by circling that box."	
11	Give students 5 seconds to decide and have research assistants ensure that all students circle **one** of the options	

12	"I want you to write your story. I am going to read each story starter again. I want you to write a short story about what happens next for the story starter you chose. You will have 1 minute to think about the story you will write and then have 3 minutes to write it. Are there any questions?"	
13	Research assistants should answer all questions	
14	"For the next minute, please do not write the story, just think about a story that begins with [insert story starter 1…] or [insert story starter 2]"	
15	Start stopwatch and survey to make sure students are not going forward and writing	
16	[after 30 seconds have past, remind students] "You should be thinking about [insert story starter 1…] or [insert story starter 2…}"	
17	[after 1 minute has past say] "Please turn to the next page of your packet. There is a picture of a pencil at the top"	
18	Ensure that all students are on the correct page	
19	"Everyone circle the story starter you want to respond to"	
20	Ensure that each student circles one of the story starters	
21	"Everyone please raise your pencil high in the air and listen to the instructions."	
22	Ensure that all students have their pencils high in the air before starting instructions	
23	"When I tell you to start, please begin writing your story. Remember, if you don't know how to spell a word, you should try your best to sound it out. It is important that you do your best work. If you fill up the first page, please turn to the next page and keep writing."	
24	"Okay, start writing."	
25	Monitor the students while they write but do not provide assistance if they ask for help.	
26	[after 90 seconds have past, remind students] "You should be writing about [insert story starter 1…] or [insert story starter 2…]"	

27	[At the end of 3 minutes say] "Please stop writing and close your packet. We will come around and collect them"	
28	Collect all packets	
29	"Thank you all for working hard and following directions."	

Appendix C

Performance Feedback + Choice Condition – Procedural Script

Step Number	Procedure	Mark "X" if completed
1	"Hello, my name is [insert name}, and I am from Syracuse University. I am going to be working with you today as part of a project your teachers are letting us do with all the third-grade students"	
2	"We are going to hand out a sheet of paper to everyone"	
3	Hand out performance feedback sheet	
4	"Remember how I asked you to write a story last week? 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 up towards the sky, that means you wrote more words since the last time I worked with you. If the arrow is pointing down towards the floor, that means you wrote fewer words since the last time I worked with you. If there is an equal sign, that means you wrote the same number of words as you did the last time I worked with you."	
5	"Does anyone have any questions?"	
6	"We are going to hand out two packets to everyone. But please do not open either packet. Keep them closed"	
7	Ensure all students have both packets and both are closed	
8	"Please take out a pencil. If you do not have a pencil, raise your hand"	
9	Distribute pencils as needed	
10	"I want you to write a story. Today you will have a choice of which story you want to write. I am going to read two sentences to you first, and then I want you to choose which story you want to write about."	
11	"Please turn to the next page in both of your packets. There will be a picture of a pencil at the top of the packets."	

| 12	Ensure all students are on the correct page in both of their packets	
13	"Please look at the page that has a number 1 at the top of the page. The sentence on this page says… [INSERT STORY STARTER 1…]. **Give student 5 seconds to think about the story starter.**	
14	"Now look at the page that has a number 2. The sentence on this page says… [INSERT STORY STARTER 2 …] **Give students 5 seconds to think about the second story.**	
15	"Please choose which story you would like to write today."	
16	Give students 5 seconds to decide	
17	"Please place your name on the story you want to write about today. Next, place the story you didn't choose on the floor and underneath your chair."	
18	"It is time to write your story. I am going to read each again. Listen for the story you chose and then I want you to write a short story about what happens next. You will have 1 minute to think about the story you will write and then have 3 minutes to write it. Are there any questions?"	
19	"For the next minute, please do not write the story, just think about a story that begins with [insert story starter 1…] or [insert story starter 2]"	
20	Start stopwatch and survey to make sure students are not going forward and writing	
21	[after 30 seconds have past, remind students] "You should be thinking about [insert story starter…]"	
22	[after 1 minute has past say]"Please turn to the next page of your packet, and raise your pencil high in the air."	
23	Ensure that all students are on the correct page	
24	"When I tell you to start, please begin writing your story. Remember, if you don't know how to spell a word, you should try your best to sound it out. It is important that you do your best work. If you fill up the first page, please turn to the next page and keep writing."	
25	"Okay, start writing."	

| 26 | Monitor the students while they write but do not provide assistance if they ask for help. | |
27	[after 90 seconds have past, remind students] "You should be writing about [insert story starter 1…] or [insert story starter 2]"	
28	[At the end of 3 minutes say] "Please stop writing and close your packets. We will come around and collect them"	
29	Collect all packets	
30	"Thank you all for working so hard and following directions."	

Appendix D

Academic Preference Assessment

Question #1
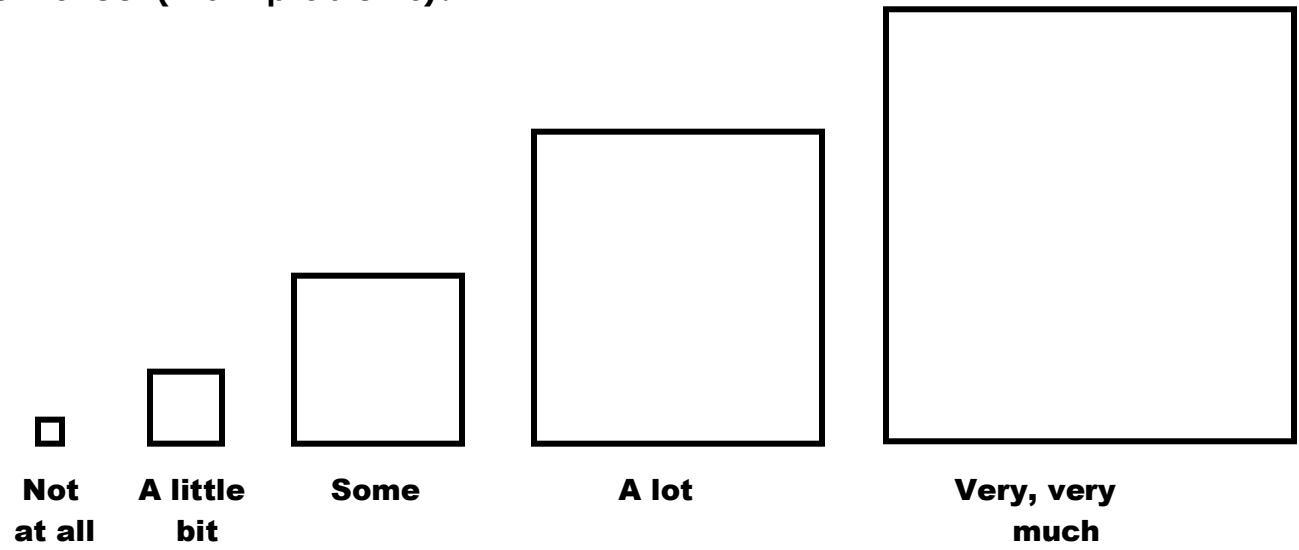**If you were given free time in class, how likely would you be to read a book of your choosing?**

Not at all	**A little bit**	**Some**	**A lot**	**Very, very much**
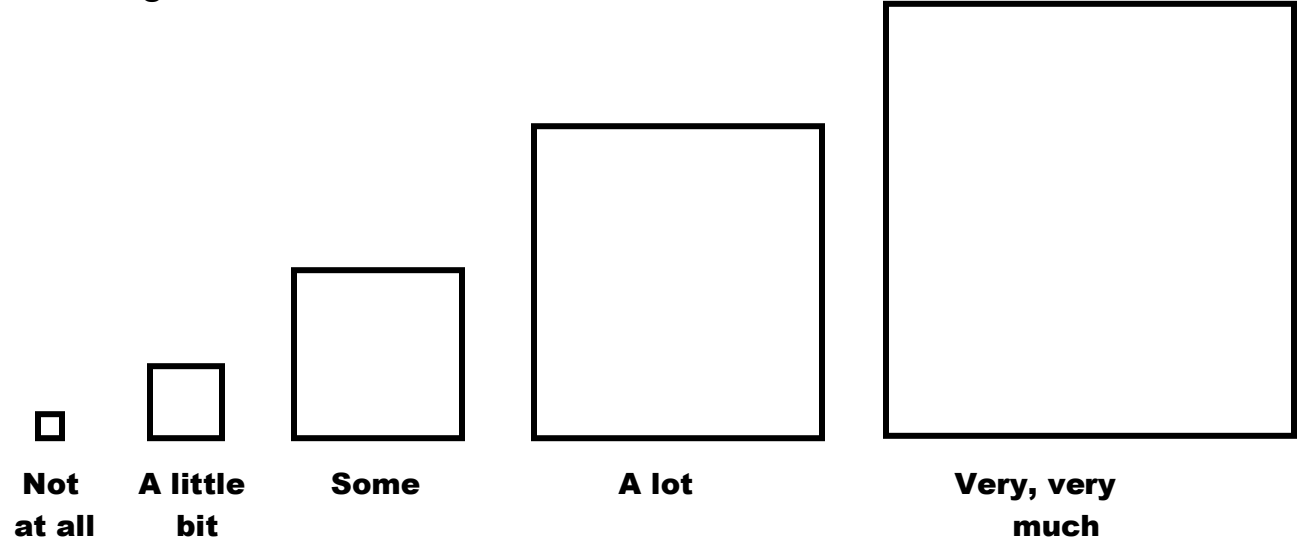
Question #2
If you were given free time in class, how likely would you be to write a story about anything you want?

|				
Not at all	**A little bit**	**Some**	**A lot**	**Very, very much**
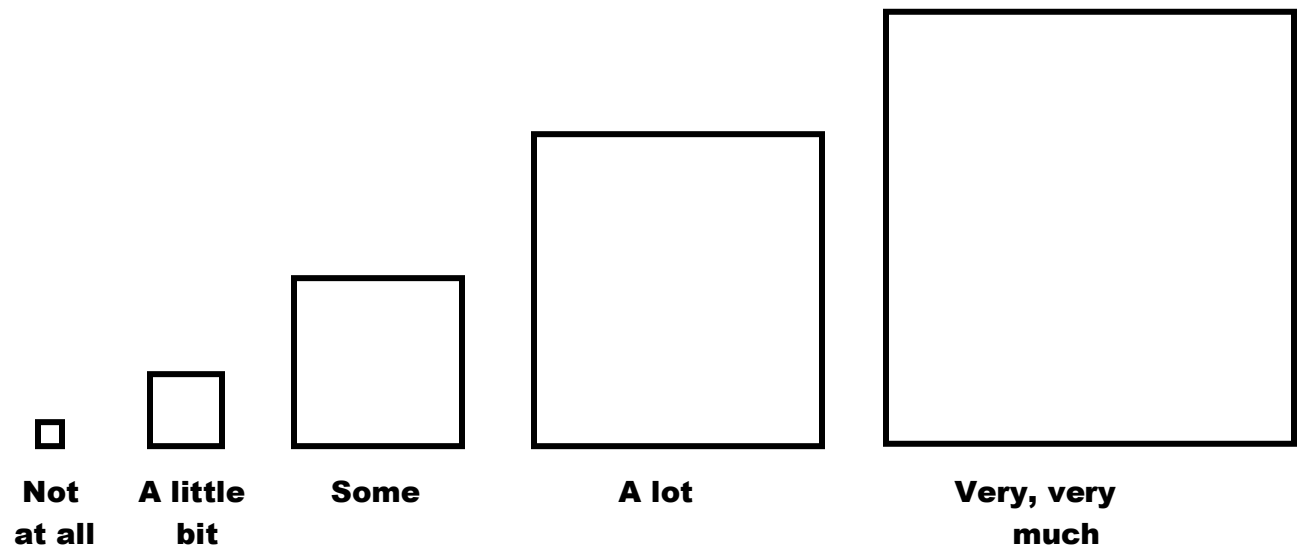
Question #3

If you were given free time in class, how likely would you be to work on a Pattern Sheet (math problems)?

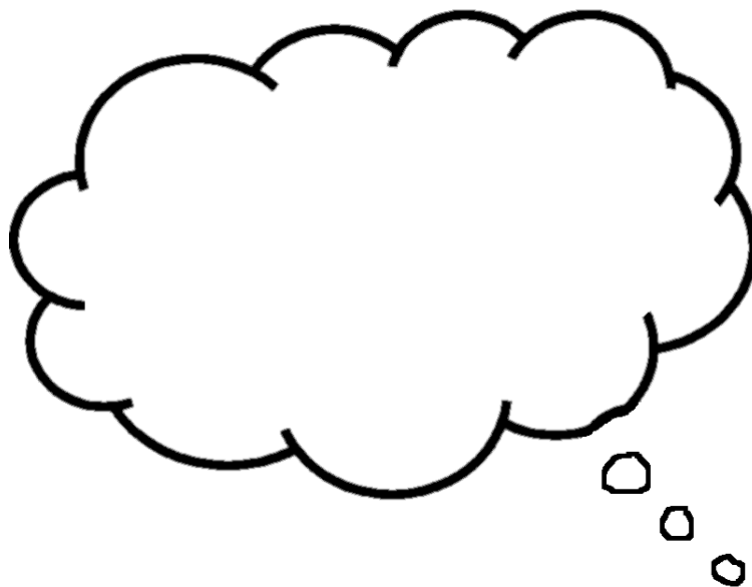|				
Not at all	A little bit	Some	A lot	Very, very much

Question #4

If you were given free time in class, how likely would you be to practice spelling on the magnetic boards with letters?

Not at all	A little bit	Some	A lot	Very, very much
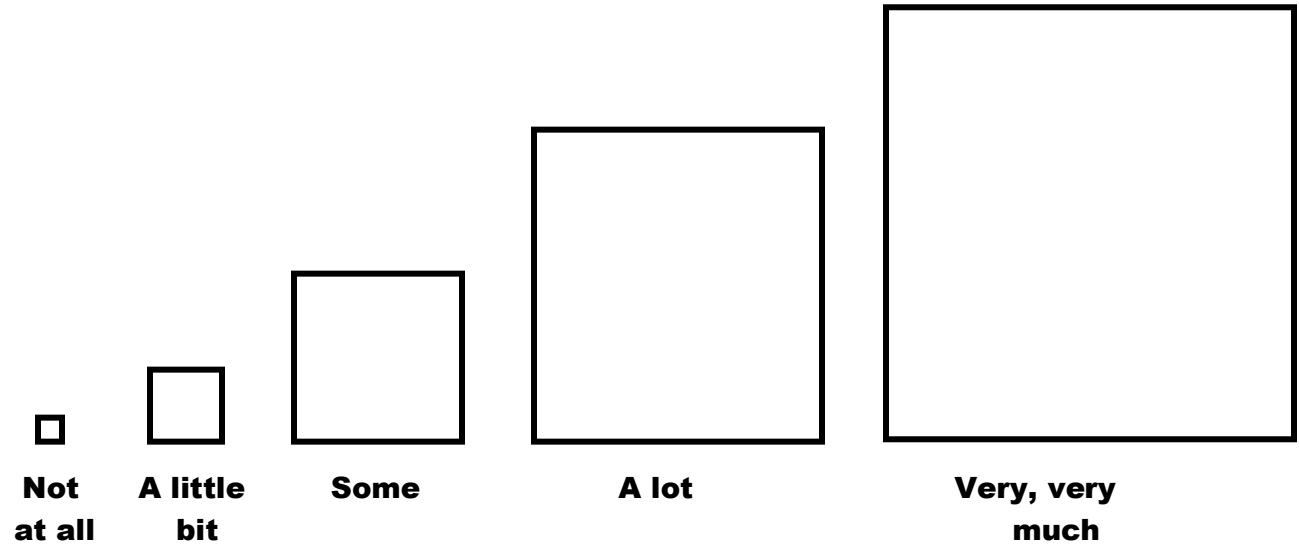
Appendix E

Performance Feedback CBM-WE Probe

I was on my way home from school and . . .

I was on my way home from school and . . .

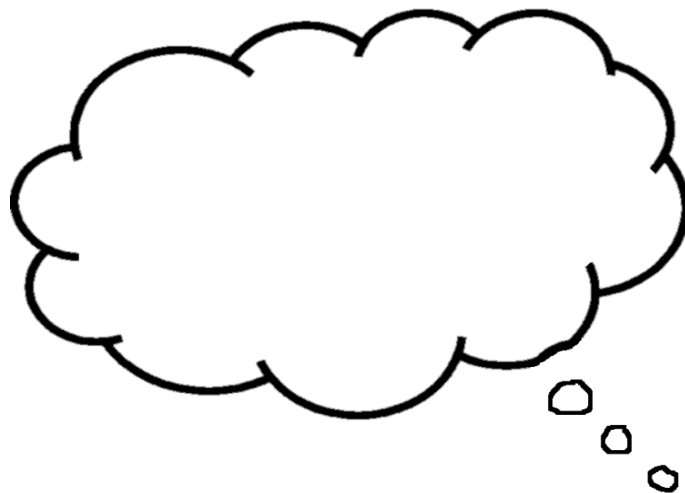_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Keep going

Appendix F

Choice CBM-WE Probe

I was on my way home from school and…

One night I had a strange dream about…

I was on my way home from school and…

One night I had a strange dream about…

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

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Curriculum Vita

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EDUCATION

Syracuse University, Syracuse NY, 2018-Present   In Progress
Graduate Student, School Psychology Program (APA accredited; NASP approved)
Advisor: Dr. Tanya Eckert, Ph.D.

University of Vermont, Burlington VT, 2014-2018   May 2018
Bachelor of Science in Psychology, Minor in Sociology, Minor in Coaching
Overall GPA 3.79;
Dean's List recognition 6/8 eligible semesters

HONORS AND AWARDS

- **Alpha Kappa Delta: International Sociology Honor Society Member.** Spring 2017-Present
- **Psi Chi: International Honor Society in Psychology Member:** Spring 2017 - Present

RESEARCH EXPERIENCE

Research Assistant, Syracuse University   March 2019 – Present
Research in Interventions Targeting Education Services, Bridget Hier, Ph.D., BCBA
- Project: Systematic Review - Writing Quality – Techniques and Interpretation in Primary and Secondary Studies (Writing Q-TIPPS)
- Code assigned articles each week related to a systematic review
- Participate in weekly meetings to address concerns related to properly coding necessary articles
- Train incoming graduate research assistants
- Supervising graduate research assistants

Research Assistant, Syracuse University   February 2020 – April 2020
Emily Baxter, M.S., BCBA
- Dissertation Project: Effects of differential reinforce magnitude of an alternative response on the resurgence of academic responding
- Assisted with collecting academic performance data on students' responses to math problems on Curriculum Based Measurement – Mathematics Probes across 10 sessions

Research Assistant, Syracuse University   August 2018 - Present
Treatment Researching Academic Competence Laboratory, Tanya Eckert, Ph.D.
- <u>Project:</u> Evaluating the efficacy of an integrated writing and spelling interventions on elementary school students' literacy outcomes
- Participate in weekly meetings to address relevant literature, guide undergraduates in discussion, and provide information about upcoming lab assignments
- Supervising undergraduate research assistants
- Developing research protocols
- Gain direct experience with developmental and educational research in applied settings
- Administered manualized intervention protocols in local elementary schools in the Syracuse City School District (Syracuse, NY)

Research Assistant, University of Vermont   August 2017 - July 2018
Vermont Child Welfare Training Partnership, Jennifer Jorgenson
- <u>Purpose:</u> To provide classes and resources designed to teach foster, adoptive, and kin caregivers strategies in regards to helping traumatized children who struggle with emotional-behavioral challenges
- Attend meetings that inform social workers how to teach parents the strategies to help their children
- Enter and update caregiver information on an online database
- Call caregivers directly to inform them of upcoming classes and or workshops
- Organize online classes (i.e. record voice for online classes, upload documents, videos, write instructions, etc)

Research Assistant, University of Vermont   August 2016 - May 2018
Children and Families Laboratory, Rex Forehand, Ph.D.
- <u>Project</u>: Methods of Delivery of Treatment for Early Conduct Problems
- Code behavioral parent-child interactions of families engaging in treatment for child externalizing problems
- Participate in weekly lab meetings to discuss relevant readings about multiple types of behavioral disorders in children (ODD, OCD, Anxiety disorders, etc)
- Conducted an in-depth literature review regarding the influences of parenting behaviors on child aggression under the supervision of Dr. Rex Forehand.

Research Assistant, University of Vermont Medical Center   May 2017 - December 2017
University of Vermont Medical Center, Robert Althoff, Ph.D., M.D.
- <u>Project:</u> Metabolic Rates and Treatment for Children with DMDD and SMD
- Clean and input survey data, questionnaires, and physiological results (heart rate, digestion, etc)
- Organize data in Excel and other database programs (i.e. redcap)
- Participate in weekly lab meetings and discuss recent and relevant research regarding children with mood dysregulation symptoms
- Present a relevant research article of my choosing at the end up the semester

TEACHING EXPERIENCE

Teaching Assistant, Syracuse University   August 2018 – May 2019
Introduction of Psychology, Instructor: Shannon Houck
- Independently teach four recitation sections
- Implementing engaging learning activities during class
- Develop and grade weekly quizzes
- Evaluate written assignments
- Attend weekly meetings to discuss challenges or problems

Teaching Assistant, University of Vermont   August 2017 – December 2017
Social Psychology, Instructor: Susan Fenstermacher, Ph.D.
- Present an article to the class about attachment styles and their influence on relationships
- Leading review sessions for undergraduates, as well creating original questions for review sessions
- Evaluate weekly essays completed by students
- Grade In-Class Activities (Short answer questions)
- Design possible questions for each exam
- Participate in meetings to discuss relevant issues and concerns

PROFESSIONAL EXPERIENCES

Psychology Intern, Syracuse, NY   August 2019 - Present
Elmcrest Children's Center, Sarah Feocco, Psy. D.
- Monitor and record implementation fidelity of Boys Town Educational Model by staff within the children's center
- Behavioral consultant for children who have experienced emotional, developmental and/or behavioral challenges.
- Work with individuals age 3 to 17
- Conduct diagnostic assessments
- Write diagnostic and clinical reports
- Develop Behavior Intervention Plans
- Conduct Functional Behavior Assessments and Analyses (FBA)
- Participate in biweekly supervision meetings to address problems and present concerns

PRESENTATIONS AND PUBLICATIONS

- **Poster Presentation** – Williams, N. L., Eckert, T. L., Malandrino, R. M., Eggleston, B, N., Hamsho, N., & **Circe, J. C.** (February, 2019) *Improving students' writing and spelling skills through an integrative intervention.* Poster presented at the National Association of School Psychologists annual conference. Atlanta, GA.

- **Poster Presentation** – Baxter, E.L., Martens, B.K., Cerisier, T., **Circe, J**., & Sallade, S. (2019). Effects of differential reinforce magnitude of an alternative response on the resurgence of academic responding. Presentation given in a symposium at the New York Association for Behavior Analysis Conference, Albany, NY.

RELEVANT CERTIFICATIONS

- CITI Human Subjects Training   August 2018 - Present
- Boys Town Education Model® Training   August 2020

TRAININGS CONDUCTED

- Boys Town Education Model – Led a training group describing the behavioral foundations for Boys Town for staff at a residential children's center

LEADERSHIP AND SERVICE ACTIVITIES

- **Syracuse University: Fall 2020 to Spring 2021** – Psychology Action Committee: Treasurer

- **Syracuse University: Fall 2019 to Spring 2022 –** Graduate Student Liaison: The senior liaison for the graduate students within the School Psychology Program

- **Syracuse University: Spring 2020** – Graduate Student Panel: Posed interview questions for School Psychology Program applicants

- **Syracuse University: Spring 2019** – Diversifying Psychology Weekend: Assisted the psychology department with introducing potential psychology graduate students to varying programs of study

- **Syracuse University: Spring 2019 –** Graduate Student Panel: Aided the psychology department in the search for a new faculty by posing questions to candidates

- **Syracuse University: Spring 2019** – Graduate Student Panel: Posed interview questions for School Psychology Program applicants

PROFESSIONAL AFFILIATIONS

- Student Member, National Association for School Psychologists

PROFESSIONAL REFERENCES

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