Avoiding the Summer Slide: Tier One and Two Supports Targeting Early Readers

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Abstract

For more than 100 years, the "summer slide," or the learning losses by students following a long summer break, have been well documented. On average, a typical student loses a little more than one month's worth of skill across each academic area (e.g., language arts and mathematics) throughout the summer months. Research has also demonstrated that the "summer slide" has a particularly harmful impact on reading achievement of students from low-socioeconomic status (SES) backgrounds. The purpose of the present study was to investigate the effectiveness of a tiered system of support for oral reading fluency in early elementary school aged students as part of a summer day camp program, to mitigate some of the academic loss that typically occurs. All students attending the summer day camp completed a survey-level assessment (SLA) process using AIMSweb materials to determine their instructional level in reading. Following the assessment, students were placed in tiered groups where they received intervention up to three times a week for 30 minutes, and progress was monitored weekly. Results were mixed across participants; however, nine of the 11 participants made gains by the end of the summer, and four of 11 participants performed above the predicted summer slide for the grade level they had completed in the spring. Limitations and future directions for research are also discussed for furthering supports in this area.

Keywords: summer reading, summer slide, early elementary, reading intervention

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Learning to read is one of the most important skills a child acquires during early elementary school. Oral reading fluency (ORF) often sets the foundation for students' future academic success or failure. ORF is traditionally defined as a student's ability to read with "accuracy and fluency with connected text," when given a one-minute passage (University of Oregon, 2020, p.11). This skill is frequently cited as a predictive factor for a number of long-term academic outcomes (Stevens et al., 2015). Due to its critical importance, it is not surprising that ensuring a child becomes a fluent reader is on the forefront of education literature and a concern for many classroom educators (Hosp & Suchey, 2014).

Reading proficiency, defined as the ability for students to meet state reading standards through readiness, formative, and/or summative assessments, becomes a significant milestone in a student's educational trajectory as proficient reading skills are necessary for subsequent academic success (Liebfreund et al., 2022). Over the past fifteen years, educators have felt increased pressure to ensure that by the end of third grade, all students are proficiently reading as they make the transition from reading to learn instead of learning to read (Toler, 2012). These standards vary by state based upon what assessment is utilized, but reading level can be a means of promotion or retention to the next grade. While great strides have been made across the domain of evidence-based reading interventions (Hatcher et al., 2006; Jones, Conradi, & Amendum 2016; Scammacca et al., 2016), there is a lack of clear remediation strategies when students do not acquire the skills within this developmental window (i.e., first through third grades). Thus, students who are falling behind in reading abilities receive little-to-no support in bolstering reading skills outside of the academic year, especially if they are above third grade.

Reading Exposure, SES, and MTSS

One suggested strategy to mitigate reading deficits is simply to read. Even reading 15 minutes per day has been shown to have marked improvements for early readers (van Bergan et al., 2018). However, across many American households, students are not reading for even this small, suggested amount of time. A 2013 National Endowment for the ARTS (NEA) report indicated that youth are reading on average fewer than 12 minutes per day (Dillon et al., 2017). This deficit is compounded for children in economically disadvantaged areas. For example, low SES students are more likely to live in neighborhoods that are less conducive to education achievement in terms of peer support and role models (Dietrichson et al., 2017). Additionally, it has been found that by the end of second grade, oral language, which is predictive of later oral reading fluency success, differences of up to 4,000 words has been found between same-grade students (Wendling and Mather, 2008). This is largely related to differences in exposure to words during development, which is also largely attributed to SES level (Wendling and Mather, 2008).

The supports offered to students who are falling behind, compared to their same-age peers, are largely limited to within the academic year during classroom time. One problem-solving approach that schools use to support students, both academically and behaviorally, is the multi-tiered system of supports (MTSS; Fuchs & Fuchs, 2006). This provides student-specific support depending on skill level. Tier One supports are universal (i.e., across the whole school and classroom), while Tier Two supports are provided in a smaller group, and Tier Three supports are individualized (Batsche, et al., 2005). By understanding and collecting data at the Tier One level, educators and staff members are able to better understand students who may need more intervention. While MTSS is a beneficial approach during the school year, a student's SES level can still create additional setbacks as students from a lower SES

background do not have the same access to resources, support, or materials outside of school and while on breaks. However, as most teachers know, learning should not stop when the academic year is completed. The average school year is 180 days, meaning a child has 185 days during which they are not in school (National Center for Education Statistics, 2020). In addition, very few schools provide an extended school year, meaning that for most students, the days out of school are clumped into a long cluster of time (i.e., summer break). Taken together, when students leave school for extended times, it is not uncommon for them to return to school in the fall with lower academic performance scores than when they left school in the spring (Fälth et al., 2019). This is often referred to as the "summer slide."

The Summer Slide

Notably, the pattern of achievement growth for individual students reflects an upward learning trajectory during the academic year, but a slowing or loss of learning during the summer period. For more than 100 years, the "summer slide," or the learning losses by students following a long summer break, has been well documented (Borman & Dowling, 2006). Specifically, a typical student loses a little more than one month's worth of skill across each academic area (e.g., reading; Cooper et al., 1996).

Research has also demonstrated that the "summer slide" has a particularly harmful impact on reading achievement of students from low SES backgrounds. Specifically, on average, students from low-SES backgrounds fall approximately three months behind their middle-class peers over the summer (Cooper et al., 1996; Slates et al., 2012). These declines in reading are even more pronounced for students from low-SES families in large cities (McDaniel et al., 2017; Fälth et al., 2019; Schmitt et al., 2019; Beach & Philippakos, 2020) due to limited resources and opportunities to practice reading. This difference is equivalent to the amount of learning that takes place during one third of the school year. The negative impact

on low-SES students is cumulative and observed every summer following academic instruction.

Alexander and colleagues (2001) sought to explain this phenomenon with the "faucet theory," in that a faucet of resources is available during the school year, but when summer arrives, low SES students are left in a drought of resources (Allington et al., 2010). In contrast, students from high SES backgrounds have more resources year-round (Borman, Benson, & Overman, 2005) and continue to have access to these resources during the summer months. Thus, students from low SES backgrounds may be more vulnerable to the summer slide (Lenhoff et al., 2020; Alexander, Entwisle, &Kabbani, 2001; Alexander, Entwisle & Olson, 2007). This low-SES summer slide trend has been observed repeatedly in the literature (e.g., Burkam et al., 2004; Cooper et al., 1996; McCombes-Tolis & Feinn, 2008; Zvoch & Stevens, 2013). However, students who attended summer school with lengthy and inclusive literacy instruction demonstrated significantly improved oral reading fluency (ORF) rates (Zvoch & Stevens, 2015).

In addition, research has found that students learn best when instruction is continuous. A three-month summer vacation breaks the rhythm of literacy instruction, leads to forgetting of material, and requires that a significant amount of time be spent on review of old material when students return to school in the fall (Cooper et al., 1996).

Summer Slide Remediation

Given that literacy is essential for success in college and in the workplace, several programs have attempted to support students' literacy skills (Beach & Philippakos, 2020). Summer reading programs (SRPs) are one strategy that has been shown to prevent reading loss (Bowers & Schwarz, 2018) when implemented with fidelity.

Summer programs that implement literacy lessons are designed to remediate past reading weaknesses, or to prepare for skills and knowledge that students may encounter in the

upcoming year (Garst & Ozier, 2015). Research has shown that providing youth with summer reading opportunities can help them develop a range of reading skills. Most notably, meta-analyses of summer learning programs report positive effects of about .20 to .25 standard deviations when outcomes are collected using ORF measures immediately after participation and at long-term follow-up (Beach & Philippakos, 2020). These summer reading programs are beneficial for students by supplementing school-year learning, closing the achievement gap, and providing beneficial and motivating educational experiences (Schmitt et al., 2019).

The challenge for families, and their respective students, becomes engaging students in summer reading programs. A study conducted by Becnel et al. (2017) found that students who self-identified as readers were more likely to participate in SRPs than those who did not. In addition, those who participated in SRPs cited parental influence and boredom as their primary motivations. In order to engage students in the summer reading process, many community-based resources (e.g., libraries), host reading programs. Public librarians offer a variety of incentives to attract students' attention and motivate them to register for library-sponsored summer reading programs (Small et al., 2017). Summer reading programs in public libraries have been a stalwart of programming for youth for more than a century (Small et al., 2017). These programs are intended to encourage students to continue reading throughout the summer, practice communication skills, and develop a lifelong voluntary reading habit in a safe and friendly learning environment. For example, some libraries frame summer reading programs as a "challenge" in which students earn prizes based on quantitative measures such as number of pages and books read (Small et al., 2017). Students can track progress towards reading goals in order to meet pre-determined expectations, resulting in prizes. Having students work towards quantitative measures of reading increases their reading achievement outcomes (Garst & Ozier, 2015).

Methods of remediating summer reading loss include community-based programming from libraries, providing resources (e.g., instruction, books) to families, and promoting parental encouragement of reading with their children. Through these processes, the summer reading slide can be appropriately addressed so that students transition back into the academic year maintaining their previous level of reading skills. Despite several methodologies to support students' reading skills and ensure they are maintaining their reading level throughout the school year and beyond, scant literature exists on the implications of summer reading programs on ORF for low SES students that target their specific level of support.

Purpose

The purpose of the present study was to help mitigate typical summer loss in oral reading fluency for low SES early elementary aged students in the southeast part of the United States. Researchers divided students based on SLA data into three groups to support their specific ORF needs during the summer reading program. It was hypothesized that students would roughly follow the typical 80%, 15%, and 5% division of MTSS/RTI (Loftus-Rattan et al., 2021) following the SLA process. Researchers then provided tier-specific intervention to help avoid summer reading loss. The following questions were specifically analyzed during this study:

- Will there be gain, loss, or maintenance of ORF skill for students exiting kindergarten through third grade when given a tier-specific intervention?
- Will there be a difference in performance outcome based on how many intervention sessions students were able to attend?
- Will students overall find the interventions to be socially valid?

Method

Participants and Setting

The study included 41 students with written parental consent obtained prior to the start of the summer, which was over half of

the total students attending the summer day program. Parents were given the choice when completing initial paperwork for the day camp for their student to receive academic support in lieu of an open gym time. All participants attended a school within the city's public school district, which contains nine schools (i.e., six elementary, two middle, and one high school) with roughly 4,000 students. Although individual demographic data were not available for the 41 students who participated in the program, the following data are shared to provide context for the school district these students attended. The student body of the district consisted primarily of 88% Black, 6% Hispanic, and 3% White individuals. Seventy-seven percent of students were eligible for free and reduced lunch, and 4% of students were English language learners. These statistics are representative of the participant base from this study. District test scores indicated that while in elementary school 40% of students performed at or above their expected grade level for reading; however, by the time these students entered high school this dropped to 27%. The current high school graduation rate is 83%, which is slightly below the national average of 88% (NCES, 2019).

The study was completed at a local elementary school where students attended the summer day camp three times a week. Researchers were present all three days the students were at the school, and the SLA and tiered interventions occurred in individual classrooms within the building. The school building was undergoing some minor construction during the study, but the influence of any background noise or interruption appeared to cause little reactivity, if any.

Materials

Survey Level Assessment

All students were assessed using an SLA process to determine their current grade level performance on Oral Reading Fluency

(ORF) probes using AIMSweb 1.0 printed materials (Shinn & Shinn, 2002). These materials required an administrator to follow along as the student read aloud for one minute and observed for any errors. Following this process, students were divided into one of three tiers for support.

Progress Monitoring

Students' progress was monitored each week using the AIMSweb materials so that comparisons could be made between initial assessment (i.e., the SLA process) and tiered interventions that were provided.

Generalization

Students were administered weekly administered passages from the district's adopted curriculum. These data provided a measure of generalization for student ORF skills based on district curriculum in conjunction with skill development based on random probes (i.e., AIMSweb weekly progress monitoring).

Intervention

Tier One

If a student was placed in Tier One, their intervention materials included access to a wide selection of reading material from the university's library that ranged in reading difficulty. All books were labeled with their corresponding Lexile value, which was determined via the lexile.com tool (Lexile, 2022). For example, an early chapter book like the Junie B. Jones series by Barbara Park, would be a title that ranges 330L-560L depending upon which book is selected. This range of scores means that these books are between an upper kindergarten to early third grade reading level. Kindergarten Lexile ranges are 110L-430L, first grade ranges are 190L-460L, second grade ranges are 380L-580L, and third grade ranges are 510L-700L (MAP, 2021). Lexile takes into consideration

the rate, accuracy, readability, and difficulty of a passage when it is calculated (Ardoin et al., 2010). This "mini library" included everything from picture books to chapter books so that students of all reading levels could find appropriate reading material.

Tier Two

If a student was placed in Tier Two, intervention passages from Dynamic Indicators of Basic Early Literacy Skills (DIBELS; University of Oregon, 2018) Eighth Edition were used. Students were also given a timer to implement the intervention and a checklist to ensure that the intervention was being implemented accurately.

Social Validity

The Child Usage Rating Profile (CURP) was used as a measure of social validity for the study (Briesch & Chafouleas 2009). The CURP is a student self-report measure with 21 questions using a four-point Likert scale with a 1 indicating "I totally disagree" and 4 indicating "I totally agree." The scale assesses students' perception across three domains: personal desirability, feasibility and understanding of an intervention with scores closest to 4.0 indicating the highest social acceptability.

Dependent Measures

The primary dependent variable was words read correct per minute (WRCPM) on ORF passages. WRCPM was operationally defined as any word that a student read correctly within 3 seconds during a one-minute read. This was compared against a calculated summer slide value which was dependent upon the grade level at which the student was instructionally performing.

Procedures

The participants in this study were enrolled in a community-based summer day camp that met five days a week. Through a partnership with a local university, and approval through the

university's institutional review board, trained undergraduate and graduate students conducted assessment and intervention three times a week (i.e., Monday, Wednesday, and Friday) for a total of 20 days (i.e., three SLA days and 17 intervention sessions). Following the SLA process, students were divided into a tiered group where they received at least 30 minutes of reading intervention each day.

Training

Seven doctoral-level graduate students and six undergraduate psychology and education majors were supervised by one faculty member on the implementation of this project. The doctoral-level graduate students all had prior training with curriculum-based measurement (CBM) administration through didactic course work. Two fourth year students facilitated the day-to-day of the programming and led an initial training for the graduate and undergraduate student volunteers. This was a required one-hour training which briefed everyone on the premise of the study, familiarized them with intervention protocols, and discussed treatment integrity and interobserver agreement forms, which was the primary task of the student volunteers.

Survey-Level Assessment (SLA)

All students with parental consent, either at the beginning of the summer, or when they began attending the camp, were administered AIMSweb probes at the grade level they had just completed the previous spring. Students were typically given three probes to obtain a median score, but some students were only given two if performance was equivalent during both probes. These data were then used as the students' baseline level of ORF performance.

The SLA data also informed the researchers as to which level of support (i.e., tier) each individual student qualified for during the study. Students who were placed in Tier One ($n = 24$; 58.5%) were performing at the instructional or mastery level for the grade

level they had just exited that spring. Students who were placed in Tier Two ($n = 11$; 26.8%) performed at the frustrational level for the grade level they had just exited that spring, and were found at an instructional level one grade below their actual grade. Finally, students who were placed in Tier Three ($n = 6$; 14.6%) during the summer reading program were performing at two or more grade levels below their actual grade level.

To draw more fair and accurate conclusions from the data, an inclusionary criterion of student attendance of at least seven intervention sessions was required in order to be evaluated at the end of the summer program. This criterion was set by the primary researchers, as it suggested that students experienced an intervention dose roughly once a week or at least 30% of the time. Additionally, due to the scope of this journal, only students that had just completed grades kindergarten through third grade will be discussed in this article. It is important to note, as seen in Figure 1 that students in upper-grade levels (i.e., fourth through ninth grades), were at least two or more grade levels below their actual level, and for some students, even five grade levels below expected. This further indicates the substantial need for early intervention and support for students with regards to reading, and provides clear data that students, following third grade, fall further behind in their reading abilities if they are not proficient by that point. Therefore, this article will evaluate the outcomes for 11 students, who met the two criteria above. Seven students met criteria for Tier One and four students for Tier Two. The Tier One group consisted of four males (57%) and three females (43%) who averaged 7.6 years of age, and had just exited kindergarten (2 students), first (1 student), second (1 student), or third grades (3 students). The Tier Two group consisted of four females (100%) with an average age of 7.5 years, and had just exited first (2 students), second (1 student), or third grades (1 student).

Tier One

Students in Tier One were identified to be at the instructional level, or performing between the 25th and 75th percentiles for the grade they had just completed using grade level AIMSweb norms via average or median scores. An exception to this was for students (i.e., Henry and Haley) who had just completed kindergarten, since AIMSweb does not target ORF at a kindergarten level. Thus, these students were given first grade level probes against fall norms throughout the study. Tier One students were then administered probes, one grade level at a time, above their most recent grade level to determine where they were instructional and frustrational (i.e., 24th percentile or below). Thus, all students in Tier One were evaluated to determine their performance at their grade, instructional, and frustrational levels.

During the Tier One students' reading session, students read from a book of their choice, from the mini library of books at the camp that were organized by Lexile value. This "classwide" intervention was selected for its similarity to typical local library reading programs that occur in the summer and offer a designated time to expose the student to reading.

Tier Two

Students in Tier Two were identified to be at the instructional level for reading material one grade level below the grade they had just completed. The intervention utilized with the Tier Two group was a 30-minute peer tutoring session, using either repeated reading or continuous reading of passages at students' instructional level. All Tier Two students served as peer tutors and tutees during intervention sessions. Each student received a brief group training on how to provide error correction prior to implementing the intervention.

Figure 1
Summary Benchmark Outcomes by Completed Grade in Spring.

Summer Benchmark
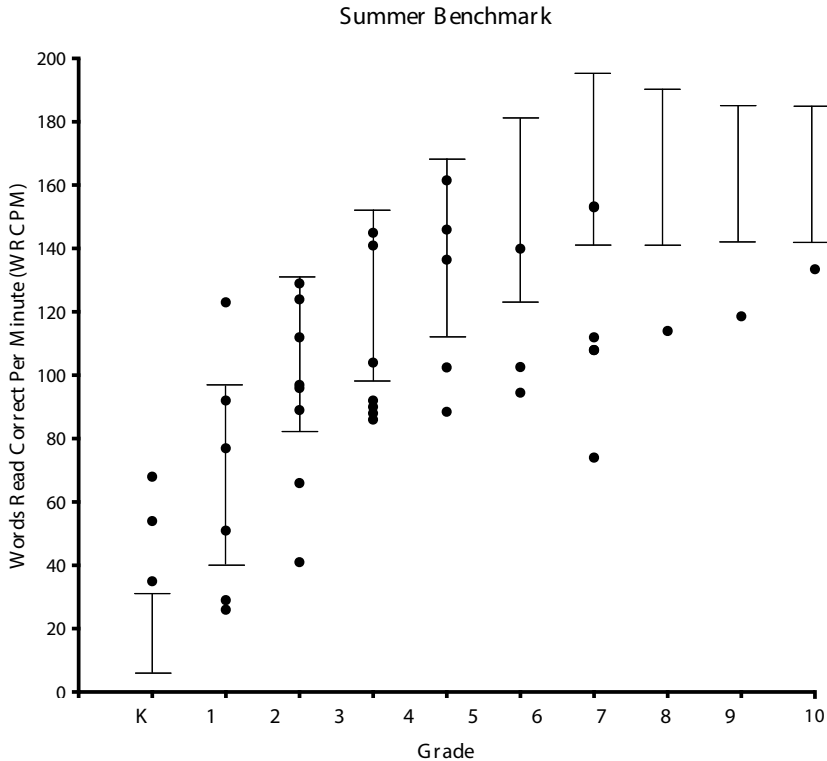
 Students in this tier were assigned a partner to form a dyad, and each dyad was randomly placed in one of two conditions (i.e., repeated reading or continuous reading). All students used DIBELS ORF passages during their intervention sessions. For students in the continuous reading condition, they would continue reading where they left off after the one-minute timer elapsed vs. students in the repeated reading condition, in which they read the same passage four times. One student in the dyad functioned as the tutor for 15 minutes and provided error correction as the other student or tutee read aloud the passage. Following 15 minutes, students would switch roles. Trained graduate and undergraduate

students monitored the dyads during the intervention to provide praise or feedback to the tutor.

Progress Monitoring

All students, regardless of tier, were progress monitored once a week. Progress monitoring mimicked the procedures of the SLA process, which included a one-minute ORF reading probe at the student's instructional level. Students' data (i.e., WRCPM) were then graphed, comparing their initial grade-level performance with their weekly progress monitoring data.

Generalization

All students were also probed for generalization once a week.

Treatment Integrity

Graduate and undergraduate students completed tier-specific treatment integrity forms during the intervention sessions for each student. Integrity was calculated by dividing the number of completed steps by the total number of steps and multiplying by 100.

Results

Data were analyzed using regression equations to demonstrate a cumulative rate of improvement (ROI) value, a comparison of pre- and post-intervention differences, and visual analysis of the trendlines compared with the summer slide slope. Regression equations were calculated through Microsoft Excel comparing baseline performance to intervention outcomes to determine a ROI for each student (Flinn and McCrea, 2010). For comparison to the typical level of summer reading loss in students at each grade level, a reverse ROI was determined from the AIMSweb norms and multiplied by seven to determine a specific summer loss per grade level. This was based on the number of weeks of progress

monitoring following the study intervention, and resulted in 1.5 words/week lost for kindergarten and first grade students, 1.2 words/week lost for second grade students, and 1.1 words/week lost for third grade students.

Pre- and post-intervention data points were calculated by taking the students' final progress monitoring score and subtracting it by the average from their baseline. Visual analysis evaluated whether the slope of the WRCPM was increasing, decreasing, or stable over the intervention period. Overall, the results were mixed across participants and tiers. An individual discussion of each student's performance is discussed below per tier placement.

Tier One Participants
Henry

Henry (Figure 2) was found to be instructional at the second-grade level for reading during the SLA process. Due to his recent completion of kindergarten, and lack of materials at that level, he was assessed and progress monitored at the first-grade level. During the SLA process, Henry averaged 47 WRCPM across three baseline data points.

Henry completed 12 intervention sessions and was administered seven progress monitoring probes during the summer reading program. Using fall norms for first grade, Henry consistently performed in the 80th percentile range (80th-89th), which would be considered mastery during progress monitoring. Treatment integrity was conducted for 11 of the 12 sessions, and was measured at 100%. Henry also completed six generalization probes, and he ranged between 22-38 WRCPM at the kindergarten level. This suggested a lower level of performance with the actual school-based curriculum.

His regression equation indicated a loss of roughly 1.1 words per week, but no overall loss of WRCPM at the end of the program

based on a pre- and post-intervention calculation. It is important to note that Henry had an exceptionally high final progress monitoring data point, which is why the pre- and post-intervention calculated resulted in no overall loss. Henry's data indicated a downward slope; however, his performance was still above the predicted summer slide slope for a kindergarten student, which was an expected loss of 1.5 words per week. Thus, because Henry was outperforming (i.e., reading roughly 45 WRCPM) a typical first grade level student (i.e., reading 13 WRCPM), his rate of loss was still above the summer slide slope due to his higher level of performance from the beginning.

Haley

Haley (Figure 2) was also found to be instructional at the second-grade level for reading during the SLA process. Haley began attending the day camp two weeks after it had started and was assessed to average 68 WRCPM across three baseline data points.

She completed 13 intervention sessions and was administered six progress monitoring probes during the summer reading program. Using fall norms for first grade, Haley consistently performed in the 90th percentile range (90th-96th), which would be considered mastery during progress monitoring. Treatment integrity was conducted for 9 of the 13 sessions and was measured at 100% overall. Haley also completed five generalization probes, and she ranged between 47-63 WRCPM at the kindergarten level. This suggested a substantially lower level of performance with the actual school-based curriculum.

Haley's regression equation indicated a gain of roughly 1.7 words per week, and she improved 17 WRCPM at the end of the program based on a pre- and post-intervention calculation. Overall, Haley's data indicated an increasing trendline with visibly steady gains in WRCPM and performance well above the predicted summer slide for a kindergartener.

Figure 2
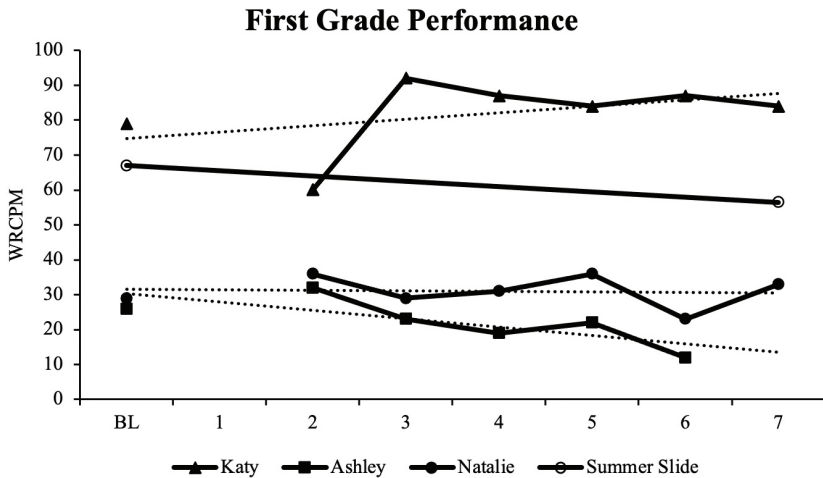*Kindergarten Participants' Outcome Data*
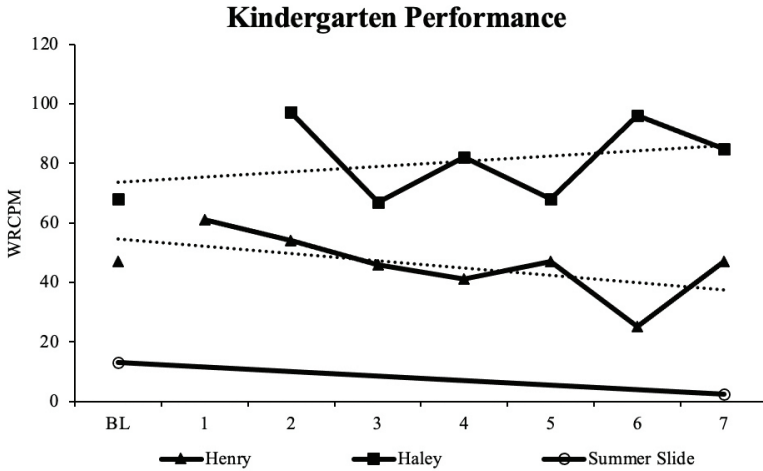
Katy

Katy (Figure 3) was found to be instructional at the first-grade level for reading during the SLA process, which is also the grade level she had just completed in the spring. Katy was assessed to average 79 WRCPM across three baseline data points. She attended 15 intervention sessions and was administered six progress monitoring probes during the summer reading program. Using spring norms for first grade, Katy consistently performed in the instructional range (43rd – 66th). Treatment integrity was conducted for 13 of the 15 sessions at 99% (range = 89-100%). Katy also completed six generalization probes, and she ranged between 48-80 WRCPM at the first- grade level. This suggested variable performance, and continued evidence of lower scores when compared with the progress monitoring data.

Katy's regression equation indicated a gain of roughly 1.3 words per week, and she improved 5 WRCPM at the end of the program based on a pre- and post-intervention calculation. Overall, these data indicated an increasing trendline and performance well

above the predicted summer slide, aside from her initial progress monitoring probe that fell shortly below the summer slide line.

Figure 3
First Grade Participants' Outcome Data

Figure shows a line graph titled "First Grade Performance" with WRCPM on the y-axis (0 to 100) and the x-axis labeled BL, 1, 2, 3, 4, 5, 6, 7. Legend: Katy, Ashley, Natalie, Summer Slide.

Tyler

Tyler (Figure 3) was found to be instructional at the second-grade level for reading during the SLA process, which was also the grade he had just completed in the spring. Tyler was assessed to average 88 WRCPM across two baseline data points. He attended 15 intervention sessions and was administered six progress monitoring probes during the summer reading program. Using spring norms for second grade, Tyler consistently performed in the instructional range (30th-54th). Treatment integrity was conducted for all 15 sessions at 99% (range = 89 -100%). Tyler also completed six generalization probes, and he ranged between 59-85 WRCPM. This suggested lower scores when compared with the progress monitoring probes.

Tyler's regression equation indicated a gain of roughly .5 words per week, and he improved 15 WRCPM at the end of the program based on a pre- and post-intervention calculation. Overall, these

data indicated a stable trendline across the summer with data that were moderately variable. Tyler's final progress monitoring data point indicated a slight increase of performance relative to the summer slide slope.

Figure 4
Second Grade Participants' Outcome Data
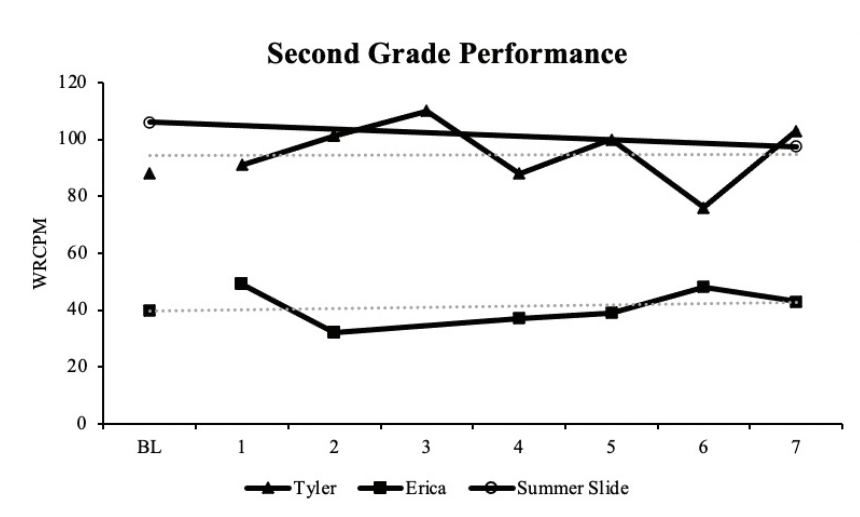
Austin

  Austin (Figure 4) had just completed third grade in the spring and was found to be instructional at the fourth-grade level for reading during the SLA process. Austin was assessed to average 140 WRCPM across two baseline data points. He attended 7 intervention sessions and was administered four progress monitoring probes during the summer reading program, and he had one of the highest number of absences for a student who was still included in the study. Using spring norms for third grade, Austin consistently performed in the instructional range (53rd-67th). Treatment integrity was conducted for all 7 sessions he attended at 100%. Austin also completed four generalization probes, and he ranged between 94-127 WRCPM at the third-grade level. This, again, suggested lower scores when compared with the progress monitoring probes.

Austin's regression equation calculated a gain of .25 words per week, and he improved three WRCPM at the end of the program. Austin's trendline was stable, and he was the only third grade student to consistently perform above the summer slide slope throughout intervention, despite his frequent absences.

Chelsea

Chelsea (Figure 4) had just completed third grade in the spring and was found to be instructional at the third-grade level for reading during the SLA process. Chelsea was assessed to average 104 WRCPM across two baseline data points. She attended 10 intervention sessions and was administered seven progress monitoring probes during the summer reading program. Using spring norms for third grade, Chelsea performed variably between the frustrational and instructional ranges (11th-41st). Treatment integrity was conducted for all 9 sessions she attended, and was measured at 100%. Chelsea also completed six generalization probes, and she ranged between 74-106 WRCPM at the third-grade level. This, again, suggested lower scores when compared with the progress monitoring probes. Chelsea's regression equation calculated a gain of 1.6 words of improvement per week with an increasing trendline to match. She showed an overall gain of 13 words at the end of the summer, but was still performing below the predicted summer slide slope. Her last data point was two words away from being consistent with the summer slide slope at week seven.

Robert

Robert (Figure 4) had just completed third grade in the spring and was found to be instructional at the fifth-grade level during the SLA process. Robert was assessed to average 145 WRCPM across three baseline data points. He attended 14 intervention sessions

and was administered six progress monitoring probes during the summer reading program. Using spring norms for third grade, Robert performed variably in the frustrational-instructional ranges (11th-87th.). Treatment integrity was conducted for 12 of the 14 sessions at and measured 93.5% (range = 78-100%). Robert also completed seven generalization probes, and he ranged between 53-125 WRCPM at the third-grade level. This, again, suggested lower scores when compared with the progress monitoring probes.

Robert's data were highly variable, with a slight increasing trendline and an overall difference by the end of the summer of 27 improved words. Robert performed below the summer slide slope for a majority of his progress monitoring sessions, but he did outperform the slope during the final two sessions of the summer. Additionally, it is important to note that Robert had a behavior plan implemented part way through the summer, after repeated demonstration of need for more behavioral support to stay on task during the intervention sessions.

Figure 5
Third Grade Participants' Outcome Data

Tier Two Participants

Ashley

Ashley (Figure 2) had just completed first grade in the spring and was found to be instructional at the first-grade level, using fall norms, during the SLA process. Ashley read 26 WRCPM during baseline. She attended 14 intervention sessions and was administered five progress monitoring probes during the summer reading program. Using fall norms for first grade, Ashley consistently performed in the instructional range (46th- 75th) during progress monitoring. This demonstrated she was one grade level behind same-grade peers. Treatment integrity was conducted for 8 of the 14 sessions and measured 100%. Ashley also completed six generalization probes, and she ranged between 9-29 WRCPM at the first-grade level. Her regression equation indicated a loss of 2.9 words per week, and her overall pre- and post-intervention difference indicted a loss of 14 words following the reading program. Ashley's trendline was also visibly decreasing, and she had a particularly low final progress monitoring data point to end the summer.

Natalie

Natalie (Figure 2) had also just completed the first grade in the spring and was found to be instructional at the first-grade level for reading, using fall norms, during the SLA process. Natalie was assessed to average 27 WRCPM across three baseline data points. She attended 11 intervention sessions and was administered six progress monitoring probes during the summer reading program. Using fall norms for first grade, Natalie consistently performed in the mastery range (73rd-78th) during progress monitoring. Treatment integrity was conducted for 9 of the 11 sessions and measured 97% (range = 78-100%). Natalie also completed five generalization probes, and she ranged between 23-30 WRCPM at the first-grade level. Natalie had a loss of .2 words per week as calculated by her regression line and demonstrated a stable trendline during the

summer. Her overall difference at the end of the summer was an improvement of four words, compared to the expected loss of 10.5 words as calculated by the reverse ROI of an average first grade student.

Erica

Erica (Figure 3) had just completed second grade in the spring and was found to be instructional for reading at the first-grade level during the SLA process. Erica was assessed to average 50 WRCPM across two baseline data points. She attended 13 intervention sessions and was administered six progress monitoring probes during the summer reading program. Using spring norms for first grade, Erica performed between the frustrational and instructional ranges (13th – 33rd) during progress monitoring. Treatment integrity was conducted for 10 of the 13 sessions and was measured to be 100%. Erica also completed five generalization probes, and she ranged between 23-46 WRCPM at the second-grade level. This, again, suggested lower scores when compared with the progress monitoring probes.

Erica's regression equation suggested a gain of .7 words per week. Her overall difference from baseline was a gain of three words, which was an improvement from the anticipated loss over the seven weeks for second grade at 8.5 words. Erica still performed well below the predicted summer slide as evidenced by Figure 3 with a stable trendline overall.

Rachel

Rachel (Figure 4) had just completed third grade in the spring and was found to be instructional at the second-grade level for reading during the SLA process. Rachel was assessed to average 104 WRCPM across two baseline data points. She attended 16 intervention sessions and was administered six progress monitoring probes during the summer reading program. Using spring norms

for second grade, Rachel performed consistently at the instructional range (34th – 50th). Treatment integrity was conducted for 12 of the 16 sessions and measured at 100%. Rachel also completed generalization probes, and she ranged between 37-89 WRCPM at the second-grade level. Rachel's end-of-summer improvement was 8 words, and her regression equation indicated 2.8 words gained each week with a visible increasing trend. This suggests that likely a match with intervention and dosage (i.e., attendance for 16 intervention session) occurred.

Social Validity

Student perceptions of their tier-specific intervention were evaluated through the CURP rating scale, with values closer to 4.0 indicating more agreeability with each factor and the overall intervention. Ten of the eleven students who met inclusion for the study completed the rating scale. Tables 3 and 4 present individual students' social validity ratings, grouped by tier. The average, across all ten participants and also when calculated by tier, was 3.2. The Personal Desirability factor ranged from 1.8-4.0, with an overall average of 3.4, which was the highest rated factor of the three. The Feasibility factor was rated between 1.3-3.6, which suggests the students did not always enjoy the amount of work, time, or frequency required by their intervention. All participants rated the Understanding factor between 3.1-4.0. Overall, these data suggest that the intervention methods utilized in the program were rated favorably by participants.

Table 3
Tier One Participant CURP Scores

	Tyler	Henry	Haley	Chelsea	Robert	Katy
Personal Desirability	3.7	1.8	3.1	3.4	4.0	3.4
Feasibility	3.3	2.3	2.6	1.7	3.7	3.6
Understanding	4.0	3.5	3.8	3.5	4.0	3.0
Overall Average	**3.6**	**2.5**	**3.1**	**2.8**	**3.9**	**3.3**

Table 4
Tier Two Participant CURP Scores

	Ashley	Natalie	Erica	Rachel
Personal Desirability	3.7	3.2	4.0	4.0
Feasibility	3.1	3.2	2.0	1.3
Understanding	3.5	3.1	4.0	4.0
Overall Average	**3.4**	**3.2**	**3.2**	**3.0**

Discussion

The primary goal of the current study was to help reduce typical summer loss, known as the summer slide, in ORF for low-SES elementary aged students with a targeted level of support. When evaluating the first research question, which determined if gains, losses, or maintenance of reading skills would be present, overall mixed results were found across participants. First, when evaluating the students based on performance against the summer slide slope, six of the 11 participants were at or above the expected reading loss for their grade level by the end of the summer program. It is important to note that five of these students were placed in the Tier One group, indicating appropriate grade-level reading abilities from the beginning of the study. Two students from Tier One (i.e., Chelsea and Robert) were slightly below the summer slide slope, and three students from Tier Two (i.e., Ashley, Natalie, and Erica) were visibly below it. Second, when evaluating the students based on pre- and post-intervention values, all students either maintained or improved their reading by the end of summer when compared with the beginning of the summer, except for one student (i.e., Ashley). Henry maintained his baseline level with end-of-summer performance at 47 WRCPM, while the other students ranged from 3-27 WRCPM of improvement across both tiers. Finally, when using visual analysis to determine the trend of each student's growth, eight students had either a stable or increasing trendline, while two students (i.e., Henry and Ashley), had a decreasing trendline. Although it is ultimately unknown without follow up data from

the fall, it is likely that reading skills were either maintained or improved through the present study for a majority of the students during the summer break.

The second research question investigated the dosage of intervention based on attendance of each student. This proved to be one of the more challenging aspects of the summer program, as students were inconsistently present throughout intervention. It also required the researchers to sacrifice some progress monitoring to ensure intervention was occurring when the students were present, rather than more assessment. The one student (i.e., Rachel) who attended 16 of 17 sessions did yield some of the strongest outcome data as a Tier Two participant. Rachel improved by 8 WRCPM at the end of the summer, had an increasing trendline, and was the only Tier Two student to be near the predicted summer slide slope. On the reverse end, Austin attended 7 sessions, which was the minimum value to meet the inclusionary criteria for the study, and had only a 3 word improvement at the end of the summer, which was the second lowest for Tier One students. Henry made no improvements, and he attended 12 sessions. Two Tier One students attended 15 interventions and saw improvements of 5 WRCPM (i.e., Katy) and 15 WRCPM (i.e., Tyler); however, Ashley, a Tier Two student attended 14 sessions, and had the only loss of words from the study at 14. Overall, intervention dosage still seems to have some impact on the outcome data, but it was not true for all participants. Certainly, more research and attention are needed to target dosage for the remediation of skill deficits and maintenance of academic skills over the summer to make more definitive conclusions.

Finally, the researchers sought to determine student perceptions of the intervention using the CURP, a social validity rating scale, at the end of the study. Overall, eight of the ten students who completed the CURP indicated scores that suggested favorable acceptability with the intervention they encountered. These scores were all in the 3.0-3.9 range, which included students from both

tiers. Unfortunately, the one student who had the least amount of intervention sessions (i.e., Tyler) was not present on the final day, so the extent of acceptability across participants who had a low (40%), moderate (45-79%), and high (80% and above) level of intervention dosage could not be determined. The Personal Desirability factor yielded one low-end score from Henry at 1.8, while the Feasibility factor yielded two low-end scores from Chelsea (1.7) and Rachel (1.3). The Understanding factor suggested high levels of acceptability across all students.

Limitation and Future Research

The present study, while demonstrating stability and growth in WRCPM for most participants, had some limitations that should be considered. One limitation is the small sample size of students that participated in the study. Even though there were 41 students involved with the project, only 11 met the inclusionary criteria. This inevitably makes definitive conclusions difficult. Additionally, attendance was difficult to navigate since this was an elective summer day camp. Many of the students were gone for several weeks on vacation or at other camps, which created large gaps in the data, and this made it more challenging to draw specific conclusions about reading growth without the consistent implementation of the intervention. It also affected intervention dosage and how students were compared. It meant that a student who received approximately 40% of the intervention was compared with a student who received over 80% of the intervention. Warren and colleagues (2007) introduced the idea of different aspects of dosage (e.g., form, frequency, duration, etc.). It would be a valuable contribution to the literature in the future to focus on these different dosage aspects when supporting summer skill loss or remediation. The current study sought to provide a certain dosage to supplement the summer break, but it did not explicitly investigate all the areas of how dosage could be impacting different outcomes at the end of the summer program. As the inclusion criterion of the study was

attendance for at least seven intervention sessions (~40% of total opportunity of intervention), it is not ideal to compare students who had differing levels of intervention exposure.

Additionally, the researchers did not compare the efficacy of the differing interventions that students encountered between and across tiers. Without explicit measures taken, such as a brief experimental analysis (BEA) of intervention match with student need, the full effect of these interventions or other potential interventions is unclear. More research is needed to assess these elements of academic interventions as well.

Another limitation is the subjectivity in evaluating the summer slide. Some sources suggest that two to three months of learning occurs during summer, while the researchers for this study utilized AIMSweb norms, which provide explicit guidance on how much is lost from the end of one grade level to the beginning of another. In this study, a reverse ROI was calculated from AIMSweb values, along with a pre- and post-intervention difference; however, there are other alternatives to this method, which might result in a different operational definition of the summer slide.

It also would be beneficial to discriminate, in future studies on the summer slide, between remediating skills and preventing skill regression more specifically. The present study did not discretely analyze the data in that capacity, but it would be a beneficial focus in future studies. More research, especially in post-COVID educational settings, would be helpful.

Additionally, based on the way paperwork was processed for the summer day camp, the specific demographic data were not accessible to the authors. Even though the authors feel confident in sharing the district statistics that mirrored the population in the study, it is still a limiting factor to definitively state findings for low SES and minority individuals who may benefit from such supports, without the availability of explicit data for participants.

Finally, a limiting factor to the study was that the interobserver agreement data were not able to be reported. Although these data

were collected, they were not consistently recorded. This limited interpretation of internal validity and reliability.

Conclusions

Overall, the results of this study suggest that even implementing an intervention for 30 minutes, three times a week can help combat against the summer slide. These results are similar to a larger-scale study recently implemented (Lenhoff et al., 2020), and further expand the literature on supporting early elementary aged students with access to academic supports in the summer through targeted measures. This has implications for the field in terms of what types of supports are available to students over the summer, especially with students from low SES backgrounds. It additionally provides data to suggest that skill remediation can occur over the summer months so that early readers do not fall further behind. Despite limitations, such as attendance, intervention dosage, and subjectivity in assessing the summer slide, the results indicate that stability and growth in reading can occur with minimal intervention, and that early elementary aged students overall enjoy a reading structure as described above. Even though summer can be a challenging time to coordinate consistent intervention, it is evident that even some support can help mitigate loss during students' time away from school.

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