In 2004, the National Center for Education Statistics (NCES) reported that only 42% of fourth-grade students and only 13% of African American students nationwide read at the proficient level, and that more than one-third of all fourth graders could not read at even the most basic level. Despite educators’ use of evidence-based practices to improve reading performance, these figures have not improved in the past five years. The consequences of children not being successful readers are serious. Previous studies have noted that employment, postsecondary education options, attention to learning, and law-abiding citizenship are among the many outcomes adversely affected in individuals who do not learn to read proficiently.

One approach to increasing reading proficiency is to improve reading fluency. Fluent reading is characterized by both speed and accuracy and is generally measured as the number of words read correctly per minute. When students read fluently, they can quickly process text in the working memory and focus on the content of the passage rather than focusing on laboriously sounding out each segment of each word; thus, reading fluency is considered a necessary skill for reading comprehension.

Oral reading fluency is often used as an index of reading proficiency because it correlates highly with passage comprehension. In 2002, NCES compared written reading comprehension test scores to the oral reading task performances of fourth-grade students. Results indicated that students who read quickly and accurately had higher comprehension scores. These findings suggest that oral reading fluency can be used as a reliable index of reading proficiency. Therefore, reading fluency is often the target of reading intervention programs for students who are not reading proficiently.

One of CURA’s first Northside Seed Grants was awarded to Lucy Craft Laney Elementary School in North Minneapolis last summer. The project, titled “The Effects of Prescriptive Assessment on Reading Performance,” was proposed by Caron Cunningham and Dr. Joyce Bell, the then principal and assistant principal of Laney Elementary, in partnership with our team from the Department of Educational Psychology at the University of Minnesota. The main goal of the project was to improve the reading
fluency of elementary-school students in North Minneapolis, where a large proportion of these students were struggling to be successful readers.

This article describes our use of a summer reading program with elementary-school students reading below grade level in North Minneapolis, and reports on the effectiveness of interventions designed to improve reading fluency in these students. The research on which this article is based was funded by CURA’s Northside Seed Grant program.

Study Methodology

Children in grades 1–6 from Laney and Loring Elementary Schools who were enrolled in the Minneapolis Public Schools’ summer school program during June and July of 2007 due to academic difficulties were invited to participate in the reading project. Nine University of Minnesota undergraduate and graduate research assistants, most of whom were volunteers, served as instructors. Each instructor worked on a one-on-one basis with participating children for 30 minutes a day, every day of the 16-day summer school program. More than 60 children enrolled in the project and received individualized instruction from our team.

During the first week of the program, one member of our team of instructors completed a “prescriptive analysis” with each participating child. To begin, an instructor identified the appropriate reading level (“instructional reading level”) of each child by having them read leveled passages until the student read a passage with 93 to 97% accuracy. If a second-grade child read a second-grade passage with less than 93% accuracy, the instructor presented them with a first-grade passage. If the child read the first-grade passage with less than 93% accuracy, the instructor presented a kindergarten passage.

After identifying the instructional reading level for each child, instructors completed individualized analyses of teaching strategies with each reader to identify (prescribe) an effective teaching strategy for improving reading fluency for that child. During each analysis and intervention session, the instructor directed the child to read the passage aloud for one minute and measured the number of words read correctly per minute. Next, the instructor implemented the intervention, using the same passage. Finally, the instructor directed the child to read the passage a final time, post-intervention, and again measured the number of words read correctly per minute. In most cases, instructors tested four interventions with each child—two reward-based interventions and two interventions that modeled fluent reading and the prescriptive analyses were completed within two days during the first week of the summer program. One group of students, in addition to receiving the intervention identified in the prescriptive analysis, received instruction using individually designed word lists developed based on the pattern of errors a student made while he or she was reading. We selected for use in subsequent sessions the intervention that produced the best performance on the post-intervention measure.

Based on this prescriptive analysis, instructors used the identified effective teaching strategy for 30 minutes each day in a one-on-one tutoring session for the remaining 12 days of the summer school program. If a child had perfect attendance, he or she received a total of six hours of intervention. Instructors conducted the intervention using instructional-level passages. Twice per week, we monitored each child’s progress by taking a measure of the child’s reading fluency. We asked each child to read a new grade-level passage that he or she had not read before. In many cases, these progress monitoring probes were at a higher grade level than the instructional-level passages that were used during tutoring sessions. We measured the number of words read correctly per minute so that the effects of the intervention could be assessed for each child individually and continuously.

Study Findings

RayShawn, a child entering second grade, provides an example of how the readers participated in the program. At the beginning of the reading program, he was reading approximately 24 words correctly per minute. The average student entering second grade reads approximately 51 words correctly per minute. Because RayShawn was reading far below the average for a student entering second grade, members of our team conducted an analysis to identify an individualized intervention to improve his reading fluency. First, we tested rewards. For example, we compared the effect of rewarding RayShawn for using his finger to point to the words while reading (“tracking”) with the effect of rewarding him for improving his number of words read correctly per minute by 300% (“fluency”). For RayShawn, rewards for tracking produced better effects than rewards for fluency. Next, we retained tracking as a strategy and compared the effects of two methods of modeling fluent reading. Listen Passage Preview involves the instructor reading the entire passage to the child prior to the child practicing reading the passage. Listen Sentence Preview involves the instructor reading a sentence to the child, followed by
the child reading that same sentence back to the instructor. This process is repeated, sentence by sentence, for the entirety of the passage. Both interventions also included the child practicing reading the passage three times, with the instructor providing error correction after each reading. For RayShawn, Listen Sentence Preview plus tracking produced the highest number of words read correctly per minute.

The intervention effects for RayShawn during the course of the summer reading program are shown in Figure 1. RayShawn read 24 words correctly per minute on the first progress monitoring probe. He showed improvement during the course of intervention, and read 50 words correctly per minute on the final progress monitoring probe. RayShawn’s performance on his final progress monitoring probe suggests that he finished the reading program with the same reading fluency as an average child entering second grade. As a point of reference, an average second grader gains approximately 1.5 words per minute in fluency per week during the school year, and typically loses some ground in fluency over the summer months. RayShawn’s data indicated that he gained approximately 8 words per minute per week during the 16-day reading program.

The results of such comparisons of the effectiveness of interventions varied across students; the goal was to identify which intervention is more effective for a given student, not which is more effective overall. For example, some children’s fluency improved with repeated reading practice that included systematic error correction and the offer of a reward, such as a sticker, pencil, piece of candy, or game of tic-tac-toe. Others’ performance improved when the instructor read the passage aloud beforehand so that the student received a model of fluent reading prior to practice and systematic error correction.

RayShawn’s improvement is representative of the group results. The group results indicated that the children in the group who received 30 minutes per day of instruction based on the results of the prescriptive analysis gained an average of 9.3 words read correctly per minute in fluency per week (Figure 2). In contrast, a control group of children who attended the district summer school program and who also demonstrated below-average reading fluency, but did not receive one-on-one tutoring via our reading project, gained an average of 2.6 correctly read words per minute per week. A third group of children who received 15 minutes of instruction based on the results of the prescriptive analysis plus 15 minutes of instruction on individualized word lists gained an average of 7.8 correctly read words per minute per week.

Policy Implications
Typically, students lose ground in terms of academic skills, including reading fluency, during the summer. By contrast, the summer school students who did not participate in our summer program gained more than 2 words per minute per week during the 16-day district summer school program. Moreover, the students who received individualized instruction based on the results of prescriptive analyses gained between 7.8 and 9.3 words per minute per week. These remarkable gains suggest that consistent involvement in effective instruction will produce academic growth in children.

For children who are reading below grade level expectations or who are at risk for school failure, a systematic approach to identifying individualized instructional strategies and providing consistent, effective instruction using...
Those strategies appear to be one avenue toward improved student outcomes. These students showed remarkable gains with just 12 days of 30-minute tutoring sessions. Such supplemental tutoring programs could be offered during out-of-school time through after-school programs or summer programs. The one-to-one interaction with a caring adult and the consistent growth and success are other attractive—and potentially impactful—aspects of such tutoring programs.

The gains demonstrated by children in the treatment groups were remarkable in that the fluency of many children who were performing below average for their grade at the beginning of the project improved to average levels for their grade by the end of the project. Those whose fluency did not reach average levels made gains far beyond the control group. We do not know whether the gains were maintained during the month of August, when summer school was out of session and the school year had yet to begin. It is plausible that the children who participated in the reading project lost the gains they made as a result of the daily tutoring during the month in which they were no longer receiving individualized instruction. Further research is needed to examine the conditions under which fluency gains are maintained, as well as the necessary and sufficient aspects of similar supplemental instructional programs for producing generalized effects (including comprehension) in reading proficiency. The results of such research have policy implications for issues such as access to supplemental instruction during out-of-school time during the school year and summer vacation, as well as year-round schooling.

This research project is part of my larger research interest in early academic intervention as a way to circumvent future behavioral concerns that often lead to academic failure, dropping out, or significant behavior problems in school that result in a diagnosis of an emotional behavioral disorder. Despite a change in administrators at Laney Elementary last year, our team continues to partner with school personnel and district administrators. Our most recent research project focused on improving the reading fluency of fourth to sixth graders and identifying ways of providing individualized instruction that will make efficient use of resources while resulting in durable reading skill improvements for students. We hope to involve the community in providing tutoring so as to take advantage of out-of-school time to provide additional supplemental instructional support. In addition, we are designing a larger program of research aimed at addressing academic and behavioral success of children in elementary and middle schools in North Minneapolis.

Jennifer McComas is associate professor in the Department of Educational Psychology at the University of Minnesota. Her current research interests include functional analysis and treatment for problem behavior and academic skill deficits, the influence of the principles of behavior on learning, and the influence of social context on severe problem behavior.

Graduate research assistant Dana Wagner helped to coordinate the team of University of Minnesota students who served as instructors in the reading program.

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Children who received 30 minutes per day of one-on-one instruction gained an average of 9.3 words read correctly per minute in fluency per week, compared with an average gain of 2.6 correctly read words per minute per week for children who did not receive individualized instruction.