Developing and Strengthening Reading Fluency and Comprehension of Poor Readers in Elementary School: A Focused Review of Research

by Kristen D. Beach and Rollanda O'Connor

During the first several years of reading development, component skills such as decoding, word recognition, vocabulary, fluency, and comprehension are tightly linked. The last two skills—reading fluency and comprehension—have received considerable attention over the last 20 years because the relationship is particularly strong across the first four years of reading development (Garcia & Cain, 2014; Jenkins, Fuchs, van den Broek, Espin, & Deno, 2003). Reading fluency is composed of several distinct dimensions, including rate, phrasing, and prosody (also called reading expression). Reading with expression, to some extent, requires comprehension of the passage being read. Although all components of fluency are important, reading fluency is typically measured as the *rate* of reading paragraphs and passages of text by counting the number of words correct per minute (wcpm) as students read aloud. For poor readers in first through fourth grade, fluency can be difficult to achieve because students must integrate the skills of decoding and word recognition, while also using ongoing comprehension to monitor whether they have read the words correctly.

The strength of the fluency-comprehension connection begs the question: Would improving the reading rate of poor readers improve their reading comprehension? Answers to this question can be gleaned from intervention studies that focus on improving students' rate of reading in a generalized way and that measure reading comprehension before and after the intervention with widely accepted standardized measures. Improving reading rate in a generalized way requires practice reading running text over weeks and months so that students become able to read any kind of text faster—not just the passages they practiced. Instructional practices to improve the reading rate of poor readers have been developed and tested on students with a range of characteristics: across grade levels, disability status, and English language ability.

In a series of studies, O'Connor and colleagues (2002; 2007; 2010; 2013) experimentally explored structural and instructional nuances of fluency interventions and their effects on reading rate and comprehension. Specifically, these researchers manipulated text difficulty, time spent on fluency practice, and instructional approach for practice. The results from these studies and others help clarify the ideal structures and practices of effective fluency interventions for early to upper-elementary school students.

Text Difficulty

The difficulty level of text used for reading instruction is of paramount concern to teachers and interventionists. Texts that are too difficult are unlikely to provide students with enough opportunity to practice reading fluently and may prevent complex processes of comprehension from activating due to increased effort reading the words (LaBerge & Samuels, 1974). Conversely, texts that are too easy do not allow enough opportunity to practice reading more difficult words that are common in mid- to upper-elementary texts. Therefore, striking a balance between ease of reading and text difficulty is an important consideration when selecting practice materials.

O'Connor and her team investigated the question of text difficulty across two studies with students in second through fourth grade (O'Connor et al., 2002; O'Connor, Swanson, & Geraghty, 2010). In each study, these researchers explored the influence of text difficulty on measures of growth in reading rate and comprehension. Participants received 7 to 15 minutes of one-to-one fluency practice with an adult tutor, 3 to 4 days per week for up to 20 weeks. The results indicated a potential threshold effect: students who read in texts with 85% or higher accuracy grew substantially more in reading rate than when reading text with 75% accuracy. Specifically, students who read text with higher accuracy grew approximately 1.5 words per week, while the growth of students reading text with low accuracy was indistinguishable from that of poor readers who received no intervention. Thus, selecting texts in which students can read at least 85% of words accurately may be necessary for fostering meaningful growth.

How Much Time Is Needed for Students to Make Meaningful Gains?

How much time is needed for reading practice becomes imperative when limited resources are available. O'Connor and colleagues' work provides guidance regarding the optimal number of intervention sessions and the length of each intervention session required for poor readers to make meaningful gains. These researchers conducted three separate studies (2002, 2010, 2013) in which poor readers in second and fourth grade engaged in fluency practice with a one-on-one tutor for varied lengths of time (approximately 10 to 20 minutes across studies). Interventions lasted from 14 to 20 weeks. The results of these studies suggest that several weeks of practice are likely to be needed before poor readers make measurable gains in rate. Furthermore, providing *months* of practice may be especially important for students with the lowest fluency (<45 wcpm); these students may require more time to generalize their reading gains to new materials. To illustrate, O'Connor et al. (2002) documented significant improvement in reading rate for second to fifth grade students *after* 8 to 10 weeks of fluency practice. Similarly, O'Connor et al. (2013) found rates of growth to be larger during the second 7 weeks of a 14-week fluency intervention. Specifically, they estimated that students grew an additional 0.5 words per week during the second 7 weeks.

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Time per intervention session is also related to gains in reading rate, but the relationship may depend on the student's grade level. Poor readers in upper elementary (e.g., fourth graders) may require a longer length of practice to demonstrate gains in rate comparable to younger readers, especially if they have deficits in other reading skills such as word identification or vocabulary (Connor, Alberto, Compton, & O'Connor, 2014). O'Connor et al. (2013) explored the extent to which time per intervention session had an impact on fluency and comprehension gains in a study with second and fourth grade poor readers. The researchers assigned students to either 10 or 20 minutes of fluency practice. Students read aloud to an adult listener in a text in which their accuracy was at least 85%, three days per week for 14 weeks. The results indicated that the length of each intervention session was unrelated to gains in reading rate for second graders; these students grew by approximately 2 words per week in each condition. Conversely, the fourth graders gained more than twice as many words in rate when they read aloud for 20 minutes per session compared to 10 minutes. Since general education reading instruction for second grade readers typically includes fluency practice in which students read aloud from text, 10 minutes of additional fluency practice three times per week may be sufficient to accelerate their gains. On the other hand, general instruction for fourth grade students typically does not include practice reading aloud from text because many fourth graders have already reached optimal rate for reading aloud (Connor et al., 2014; O'Connor et al., 2013). Also, these older readers may have more entrenched and pervasive reading deficits. Indeed, the older poor readers in O'Connor and colleagues' studies and others (e.g., Therrien, 2004; Vadasy & Sanders, 2009) demonstrated deficits on multiple measures of reading, including word identification, decoding, and vocabulary. Therefore, more intensive fluency practice may be required to remediate skill deficits for older readers, in particular.

Instructional Approach

Another major concern when developing interventions centers on the approach used for fluency practice. Effective fluency interventions commonly entail 10 to 20 minutes practice per day for several weeks and require that students read aloud and receive feedback on their errors (O'Connor et al., 2007), but the approach used for fluency practice varies across intervention. Two common approaches to providing fluency practice, each of which are considered effective (Connor et al., 2014), include Repeated Reading (RR) and Continuous Reading (CR). In RR, students read a passage several times until a predetermined criterion for rate is reached (usually 25% increase or more; Samuels, 1979). Conversely in CR (described in more detail below), students read a range of texts at their instructional level, without requirement for rereading.

The repeated practice with the same passage that is characteristic of RR allows students multiple opportunities to read the same words, each time reading them more quickly and accurately. One drawback to the RR approach is that students are exposed to fewer unique words compared to CR; low exposure may limit opportunities for vocabulary development and for practicing reading comprehension.

Moreover, students may find RR boring (Homan, Klesius, & Hite, 1993). Exposure to unique and complex text is important for older readers who are expected to read widely for understanding. CR addresses these concerns. Recall that in CR, students read across a wide range of texts, rather than rereading a limited sample. This exposure is theorized to facilitate vocabulary and comprehension development, in addition to improving reading rate. Authors of novels and expository materials tend to have a core of words they use more often than others in their writing, which also gives chapter books and novels a set of words that repeat and provide some redundancy of particular words from one page to the next. In novels, for example, this redundancy at the third grade level averages about 50%, meaning that 50% of the words on one page are likely to be found on the next page. If students have received assistance and feedback on difficult words, they will be more likely to read them correctly with the next encounter. This natural redundancy means that students who read novels in their entirety receive repeated exposure to a core of words that emulates the repetition they would receive by reading a single passage twice, but with more enjoyment and pride in reading a "whole book."

O'Connor and colleagues (2007) experimentally compared the effects of RR and CR on reading rate and comprehension growth for second and fourth grade poor readers to determine whether one approach was more effective than another. Poor readers were selected if they read fewer than 45 wpm in second grade, or fewer than 80 wpm in fourth grade. Students were randomly assigned to RR, CR, or control; those in experimental conditions read aloud to an adult listener for 15 minutes per day, 3 days per week for 14 weeks. The results indicated that students in each condition made greater gains than poor readers who did not receive intervention (i.e., the control group). No differences were found in fluency gains between the RR and CR conditions, nor were differences found by grade level, disability status, or between English Language Learners and native English speakers. Furthermore, students in both intervention conditions gained significantly in reading comprehension compared to controls. In later studies, O'Connor et al. (2010, 2013) demonstrated that students who received fluency practice that resembled CR at their instructional or independent level for 10 to 20 minutes per day, 3 days per week also made meaningful gains in reading fluency and on tests of reading comprehension. Together, these results suggest that poor readers in elementary school benefit equally from repeated reading and continuous reading interventions, regardless of student characteristics, as long as they read aloud for no less than 10 minutes (20 minutes for older readers) and receive feedback on their errors.

Effects of Rate Improvement on Reading Comprehension

Increasing reading rate is not the end goal of reading instruction and intervention. Rather, improving students' ability

to comprehend what they read is the more meaningful goal linked to academic success and positive post-school outcomes. Focus on reading rate stems from research demonstrating moderate to strong relations between reading rate and comprehension (Therrien, 2004). O'Connor and colleagues also determined whether improving reading rate would have an impact on reading comprehension skill, not just on practiced passages, but on standardized achievement tests. Their work demonstrated that as students' fluency rates increased, so did their comprehension skill. The effect was stronger for longer passages compared to passages composed of just a few sentences. Importantly, the effect of reading *rate* on comprehension was strong even after accounting for effects of word reading.

It is important to note that although the poor readers in these studies improved both fluency and comprehension through extended practice reading aloud, their decoding and vocabulary did not improve more than in the control groups; therefore, students with deficits in decoding and or vocabulary are likely to need additional intervention in these areas.

As students gain fluency, they are able to contribute more cognitive capacity to thinking about meaning; however, fluency alone may not be enough to improve comprehension. Students reading complex text must also learn what the words mean and must connect ideas across sentences and paragraphs in text to comprehend what they are reading. Therefore, developed fluency is a necessary, but not a sufficient component skill for improving reading comprehension for poor readers in upper elementary school.

Recommendations for Teachers and Reading Specialists

Across these studies, several recommendations have received considerable research support:

1. **Fluency takes time to grow.** For most poor readers, devote at least 15 minutes of time to read aloud 3 times per week for at least 10 weeks to an adult listener who can help with the hard words (O'Connor et al., 2002; 2010; 2013).
2. **Provide choices among chapter books, novels, and expository books at appropriate levels of difficulty** (students should read with more than 85% accuracy). Choices stimulate motivation to read (O'Connor et al., 2002; 2010).
3. **Both repeated reading and continuous (or wide) reading promote gains in fluency and comprehension,** as long as the listener provides assistance when needed. Older poor readers tend to prefer continuous reading (Connor et al., 2014; O'Connor et al., 2007; 2010; 2013).
4. **If students have difficulty with decoding words or understanding their meanings, provide additional intervention in these areas** (for recommendations, see O'Connor, 2007 for word reading and Vadasy & Nelson, 2012 for vocabulary knowledge).

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***Kristen D. Beach, Ph.D.**, is Assistant Professor of Special Education in the Department of Special Education and Child Development at the University of North Carolina, Charlotte. Her research interests and publications include work on the development and implementation of reading interventions for at-risk readers and English learners, as well as methods for classifying children with reading disabilities.*

***Rollanda O'Connor, Ph.D.**, is Professor and Eady/Hendrick Chair in Learning Disabilities at the University of California at Riverside. Her research centers on reading intervention for students with learning difficulties in Grades K–8.*