Reading Fluency

What Is Reading Fluency?

The NRP defines fluent reading as reading with “speed, accuracy, and proper expression” (also known as prosody; NICHD, 2000, p. 3-1). A recent literature review investigated these three key elements of fluency in greater detail (Kuhn, Schwanenflugel, Meisinger, Levy, & Rasinski, 2010). Speed and accuracy generally increase along with effortlessness and a lack of intention or conscious awareness. When reading is effortless, readers don’t struggle to recognize words. Because they do not devote all of their mental resources to word recognition, fluent readers are able to focus on comprehension as a result. Fluent reading also occurs without intention or conscious awareness. Although fluent readers still read letter-by-letter and word-by-word, these processes happen so quickly that one does not even realize it is happening. Additionally, fluent readers automatically read when exposed to text; they do not even need to initiate the act of reading. Proper expression or prosody encompasses intonation and phrasing. Appropriate phrasing may help one remember and comprehend information. Intonation may be helpful in emphasizing important points or introducing new topics. However, certain aspects of prosody may not develop until later in childhood. The impact of proper expression on reading comprehension is not well understood.

Although there is general consensus about the critical elements of reading fluency, varying degrees of evidence have been placed on speed, accuracy, and proper expression. Some define reading fluency as skilled reading that allows one to read and comprehend at the same time. Within this perspective, speed, accuracy, and prosody are indicators of fluency as opposed to fluency itself (Samuels, 2006). Common to both views of reading fluency is the emphasis on skilled reading that allows one to focus on the meaning of text.

History of Research on Reading Fluency

The importance of speed and automaticity in reading development was first suggested by Huey (1905). He suggested the importance of practice in learning something new, the end result being speed, automaticity, and the role of the conscious mind in completing the act. However, not much research on reading fluency or automaticity was conducted in the decades following Huey’s book. Since this was during the time when behaviorism dominated psychology, little research on reading, or other psychological processes, was conducted. During the 1960s and 1970s, researchers began to describe the process of reading. For instance, LaBerge and Samuels (1974) published their influential paper on automatic information processing in reading. In this paper, they explained why fluent word reading facilitates comprehension. Competing theories and definitions of reading fluency development have emerged since, but LaBerge and Samuels’ theory remains influential in current research.
NRP Findings

The NRP’s review focused on two common practices in reading instruction: guided reading and encouraging students to practice reading. Guided reading was defined by the NRP as encompassing repeated reading, paired reading, radio reading (practicing a passage multiple times and reading it like you’re a newscaster on TV or the radio), and other variations on these procedures meant to provide practice in fluent reading. Encouraging students to read encompasses sustained silent reading programs, reading incentive programs, and variations on these programs that encourage independent or recreational reading.

Guided reading overall had a moderate effect size of .41, and this practice positively impacted reading fluency, reading comprehension, and word recognition. Moreover, guided reading was found effective for students with reading problems from elementary school and into high school. Research on encouraging students to read on their own was sparse, but most studies in this area looked at overall reading achievement as opposed to reading fluency and most did not monitor the amount of reading students actually did. Overall, these studies did not find a positive impact of encouraging students to read independently on reading outcomes.

The NRP concluded that encouraging oral reading with feedback and other forms of guidance may lead to reading gains for proficient readers and struggling readers. They emphasized that although reading fluency is not the end goal of reading instruction, it gives an indication of a reader who can easily recognize words and will likely be able to comprehend what they read as well.

Current Research

The NRP referred to reading fluency as a “neglected”, though critical, aspect of reading (NICHD, 2000). In the years since the NRP’s report was published, reading fluency assessment, instruction, and intervention have each been widely researched. Related to instruction and intervention, most of the research has focused on creating and improving methods to provide the guided practice than many students need in order to read fluently. Reading fluency is, for the most part, an observable skill. Most reading fluency assessments simply require a student to read from a passage while the examiner records the number of words correct and incorrect within a prespecified length of time. Most of the research around reading fluency assessment has been focused on establishing appropriate uses for assessment data and ensuring assessments are reliable and valid for their designated purposes.

Implications for Teaching

The NRP’s meta-analysis found more support for explicit fluency instruction (e.g., repeated reading) than for implicit fluency instruction (e.g., silent independent reading; NICHD, 2000). Therefore, it is not surprising the recent research has focused on teaching methods that incorporate guided practice as opposed to silent reading.
Peer-Assisted Learning Strategies (PALS)

PALS (Fuchs, Fuchs, Mathes, & Simmons, 1997) is a peer-assisted, supplemental reading program that has been studied in research from grades 2 through high school (PALS extensions, called K-PALS or First-Grade PALS, focus on phonemic awareness and phonics and are described in the phonics and phonemic awareness papers). Fuchs and colleagues (1997) described the PALS procedure: teachers rank all students in the classroom based on reading skills, divide the classroom in half (with one higher-performing and one lower-performing half), and pair the highest performer in the top half with the highest performer in the bottom half, continuing until the lowest performer in the top half is paired with the highest performer in the bottom half. (It is recommended that partners change every few weeks, and teachers can use their discretion in forming pairs, as long as there is one stronger and one weaker reader.) This ensures that the higher performer will provide a good model for the lower performer, but the gap in skills will not be large enough to cause boredom on the part of the higher performer. After forming pairs, teachers implement PALS three times per week in 35-minute sessions. In pairs, students complete activities that focus on reading practice, retelling, summarizing, and predicting. Students learn word correction procedures that are used during each activity.

The impact of the PALS program and other peer-assisted learning methods is encouraging. Studies investigating PALS have generally found positive outcomes on reading fluency and reading comprehension. These findings are consistent across elementary and middle school students (Fuchs et al., 1997; Sporer & Brunstein, 2009; Calhoon, 2005). Additionally, one investigation found that effects were especially strong for students with disabilities and low performing students (Fuchs et al., 1997). Another study investigated the use of PALS with English language learners in third through sixth grade; PALS resulted in strong growth in comprehension skills (Sáenz, Fuchs, & Fuchs, 2005). A meta-analysis of peer-assisted learning curricula found an overall effect size of .59 and even greater effects for schools with urban and minority students (Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003). This review was not specific to the PALS program, although 5 of the 90 included studies were investigations of the PALS program specifically.

Fluency-Oriented Reading Instruction

Fluency-oriented reading instruction (FORI; Stahl & Heubach, 2005) uses Chall's (1983) stage model of reading to move children from labor-intensive, accuracy-driven decoding to the automatic fluency stage of reading. The general sequence used in FORI is, (1) teacher reads a story from the basal reading curriculum to the class, and the class discusses the story; (2) students read the story at home; (3) students read the story with a partner in class; and finally, (4) students write or do worksheets about the book. In a two-year study of the effects of FORI, students on average made nearly two year’s growth and effects were strong for struggling readers as a separate group. A variation of FORI was implemented and compared to control classrooms; students who received FORI on average showed greater gains in reading comprehension than
students receiving standard classroom instruction (Kuhn et al., 2006). A similar program, called wide reading, resulted in significant gains over control classrooms on overall reading achievement as well as reading comprehension (Kuhn et al., 2006). The major difference between FORI and wide reading is that wide reading incorporates three texts each week as opposed to one, and the number of repeated readings of each text is less in wide reading.

Although additional research on reading fluency programs such as FORI and wide reading is needed, initial research suggests that these programs may have some promise in accelerating acquisition of reading fluency. Additionally, many of the components of these programs are based in research: scaffolding (Vygotsky, 1978) and repeated reading (Therrien, 2004) are two such elements.

**Implications for Assessment**

Various approaches exist for measuring reading fluency, including curriculum-based measures (CBM; e.g., Oral Reading Fluency measure from the Dynamic Indicators of Early Literacy Skills [DIBELS]), diagnostic assessments (e.g., Gray Oral Reading Test, Fourth Edition), and standardized norm-referenced achievement assessments (e.g., the Oral Reading subtest of the Wechsler Individual Achievement Test - Third Edition).

Diagnostic assessments of reading fluency are useful for obtaining detailed information about a student’s skill in a given area. Although diagnostic assessments of reading fluency have been used frequently in recent reading-related studies, but have not been the focus of much research. Additionally, many of these assessments assess multiple reading skills; reading fluency may be the focus of one or two subtests within a larger assessment.

Most standardized achievement tests include a measure of reading fluency as part of a reading scale. For example, the Woodcock-Johnson III Tests of Achievement includes an Oral Reading Fluency subtest, which measures the speed at which a student reads a sentence and answers a yes/no question about the sentence. The Wechsler Individual Achievement Test - Third Edition includes an Oral Reading subtest in which students read a set of passages out loud. However, these subtests should be used along with subtests assessing other reading skills including phonemic awareness and reading comprehension. Therefore, these assessments are not useful for assessing reading fluency.

**Curriculum-Based Measurement (CBM)**

CBM is a valuable alternative to diagnostic assessments and standardized, norm-referenced achievement batteries because they can be administered quickly and repeatedly over time to measure a student’s overall reading skill. CBM measures for measuring reading fluency are readily available and generally require a student to read aloud from a grade-level passage for one minute while the administrator records words read correctly and errors. CBM measures of oral reading fluency are generally described as general outcome measures because they measure a
broad skill for which progress can be measured across an entire school year. However, these measures do not give useful information about which specific skills are strong or lacking.

CBM measures for reading fluency are included in commercialized assessment packages, including AIMSweb and the Dynamic Indicators of Basic Early Literacy Skills Next (DIBELS Next; Good & Kaminski, 2010). Various methods have been established for interpreting CBM reading fluency data. Some have established norms from nationwide databases (AIMSweb), others have established norms and normative growth rates (Hasbrouck & Tindal, 2006), while others have suggested scores that predict proficiency on high-stakes assessments (Good & Kaminski, 2002).

Most CBM measures of reading fluency (particularly those from AIMSweb and DIBELS packages) have evidence of reliability and validity; the National Center for Response to Intervention reports on the reliability and validity evidence for these and other CBM measures. Validity evidence suggests that CBM measures of oral reading fluency are strongly related to other measures of reading achievement. DIBELS Oral Reading Fluency (ORF; Good & Kaminski, 2002) level of performance and rate of growth are strongly related to standardized tests of reading achievement and state accountability assessments (Baker et al., 2008; Roehrig, Petscher, Nettles, Hudson, & Torgesen, 2007). Evidence of reliability suggests that oral reading fluency assessments at different points in time are reliable (Christ & Silberglitt, 2007; Howe & Shinn, 2002).

Despite evidence of adequate reliability and validity, some researchers have emphasized the error inherent in CBM and its effect on decision making. Christ and Silberglitt (2007) suggested that the standard error around an observed CBM reading fluency measurement is between 6 and 13 words per minute. In other words, when a reading fluency score is obtained, the student’s true score is within 6 to 13 words per minute above or below the observed score. CBM measures of reading fluency are often used to monitor a student’s response to an intervention, and in these cases, the rate of growth is often an important consideration. Christ (2006) estimated that the standard error of the slope after 6 weeks of progress monitoring is between .34 and 3.98 words per minute per week, depending on the quality of progress monitoring conditions. Ensuring that passages are of equal difficulty (Hintze & Christ, 2004) and following standardized administration procedures can help to reduce error in estimates of slope and level and lead to enhanced data-based decision making.

**Going Beyond Rate and Accuracy**

Rate and accuracy of reading are the most easily observed elements of reading. However, comprehension is the desired result of fluent reading, and prosody is thought to play a role in comprehension. Therefore, it is thought that comprehension and prosody should also be a focus in reading fluency assessment (Kuhn, et al., 2010). However, reading comprehension and prosody are more difficult to observe, and therefore measure, than reading rate and accuracy.
Oral reading prosody checklists may be employed to facilitate observation of prosody (Hudson, Lane, Pullen, 2005), but these checklists have not been a popular area for recent research.

**Implications for Intervention**

*Repeated Reading*

Interventions involving repeated reading were well-supported in the NRP report, with an average effect size of .44. Recent research has echoed the support for repeated reading. In a recent meta-analysis, Therrien (2004) found a moderate to large effect size for individuals with (ES = .77) and without (ES = .76) learning disabilities. Therrien also found that the effects of reading fluency are transferable to fluency in new passages (ES = .50). Additionally, the following key components were identified: adult (versus peer) implementation, repeating the passage three to four times, a cue to focus on speed and comprehension, a performance criterion, and corrective feedback on word errors.

*Variations on repeated reading.* Depending on how fluently a student reads, various variations on the repeated reading procedure may be employed. For instance, a student who still reads rather slowly may benefit from the instructor modeling the passage to them (often called listening passage preview), or by alternating words read with the instructor (often called supported cloze). A student who is able to read quickly but makes many errors would benefit from immediate error correction with a phrase drill. On the other hand, a student who is able to read quickly but is not motivated to do so may benefit from reinforcement after meeting a pre-specified fluency goal. In general, the repeated reading intervention is an effective intervention for struggling readers, and it may be modified in a number of ways to suit the skills of the individual student.

*Flashcard interventions*

Various flashcard methods are available to help students develop word recognition, including drill sandwich (which includes known words interspersed with unknown words, with all flashcards reviewed a specific number of times), traditional drill and practice (which includes all unknown words reviewed a specific number of times), and incremental rehearsal (described below). Each method includes feedback based on a student’s correct or incorrect responding. Word recognition is an important skill for developing reading fluency; when a student is able to easily identify words in context, fluent reading and reading comprehension are facilitated.

Incremental rehearsal helps a student build word recognition by presenting unknown words along with a high proportion of known words (Tucker, 1988). An unknown word is placed in front of a stack of known words (typically eight to nine known words are used). After the initial presentation of the unknown word, one known word is shown, and then the unknown word is shown again. The number of known words presented between unknown word presentations increases by one each time until each known word is presented. The last known
card is removed and the unknown word now becomes known; a new unknown word is added and the process repeats. The time and amount of information presented between exposures of the unknown word increases, thus shaping long-term retention of the word. Additionally, a student has many opportunities to read each unknown word and receive feedback. Although incremental rehearsal is partly based on the idea that increasing the time between presentations will shape retention, the number of opportunities to provide the word and receive feedback has also been shown to be a critical feature as well (Burns & Szadokierski, 2008).

Recent research has compared various flashcard techniques based on efficiency, words maintained over time, and words generalized to other settings. Incremental rehearsal has generally led to greater maintenance and generalization than traditional drill and practice and drill sandwich techniques (MacQuarrie, Tucker, Burns, & Hartman, 2002; Eveleigh, 2010), but traditional drill and practice has led to more words retained per minute of instructional time (Nist & Joseph, 2008; Eveleigh, 2010).

Commercialized Interventions

Many commercialized reading interventions now focus on reading fluency. For instance, Read Naturally is a computer-based intervention that enables an interventionist to implement a variation of the repeated reading intervention with a group of students as opposed to individually. Other intervention packages, such as the Helping Early Literacy with Practice Strategies (HELPS) and Great Leaps include a focus on reading fluency. Teachers and interventionists seeking an intervention to implement with students struggling with reading fluency should take care to select intervention packages with theoretical underpinnings and a research base. The What Works Clearinghouse (www.ies.ed.gov/ncee/wwc/) is one resource that reviews the research base supporting interventions in a variety of areas, including beginning reading.

References


