

No magic bullet: A review of some popular interventions to improve reading fluency

In this article **Tom Nicholson** outlines the building blocks of fluency, exploring what is meant by prosody. He reviews the efficacy of the practice of repeated reading as an intervention to improve fluency, and he challenges us to see how fluently we can read Dickens aloud.

What is a fluent reader?

A fluent reader is able to read effortlessly, that is, can understand the text material, can read it quickly, and with very few errors. If reading aloud, they can read with expression. The key features of the fluent reader are comprehension, effortless reading, and speed. Students with reading difficulties, however, tend to lack these skills.

The building blocks of fluency

Two building blocks of fluency are speed and accuracy. These require automaticity of word recognition (LaBerge & Samuels, 1974; Samuels, 1979). Automaticity predicts fluency

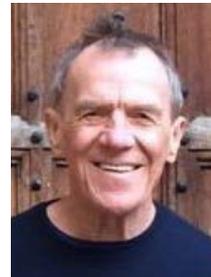
(Roembke, Hazeltine, Reed, & Murray, 2020). When word recognition is automatic, the reader puts minimal cognitive effort into reading words. It means that the reader has acquired expert orthographic mapping skills enabling them to store words with high specification in their mental lexicon so that word recognition occurs as soon as the words appear (Roembke et al., 2020). This automaticity enables fast and accurate word recognition and frees up the mind to concentrate on the meaning of the text (Martin-Chang, Ouellette, & Madden, 2014; Perfetti, 2007).

The key features of the fluent reader are comprehension, effortless reading, and speed.

However, fluency in oral reading is not just speed and accuracy. It includes prosody. Prosody refers to expression when reading. It is the music of everyday speech (Wennerston, 2001). To achieve prosody teachers will draw attention to punctuation clues, encouraging the reader to pause at the end of a sentence, change intonation for questions or exclamation marks, pause at commas, and so on. Reading with expression involves thinking about what you are reading, thinking about the listener, making the listener feel that the story is worth telling, that it involves many emotions, e.g., exciting, terrifying, wild, amusing, strange. The music of prosody brings the story or even an article to life.

You might be thinking, does it matter to read with expression when most reading is silent? I think it is important for some classroom activities. For

example, I visited a Year 12 English class once where the teacher asked one student to read a film review to the class. It was quite slow and soon someone in the class asked if she could speed up. She said, "You read it then!" It was painfully slow, but she was not to be messed with. The other student did not ask again, and in fact nobody did.



Why do some students struggle with prosody?

To me, prosody is not a cause but a result of speed and accuracy. If you do not have those first two building blocks of fluency, then you will not achieve the third building block. A study that showed this clearly was Clay and Imlach (1971). They compared fluent and dysfluent seven-year-olds. The fluent readers read at 100 words per minute with less than one percent error rate while the lower ability readers achieved a rate of only 14 words per minute and 34 percent error rate. The fluent readers read with much more expression. There was very little pausing from one word to the next, their tone varied, and they only used stress at the end of wider units such as clauses. In contrast, the lower achieving readers paused longer between words, read in a monotone, and stressed almost every word. The good readers in this study were just so much faster and more accurate.

I think this is why they had so much expression. In contrast, the unfortunate poor readers were reading material that was too hard for them – no wonder they lacked fluency.

The music of prosody brings the story or even an article to life.

Are you a fluent reader?

One way to check your own fluency is to read a passage aloud and time yourself with the stopwatch function on your smart phone. Try the following 200-word passage in Table 1 from the beginning pages of David Copperfield (Dickens, 1850).

“In the name of heaven,” said Miss Betsey, suddenly, “Why rookery?”

“The name was Mr Copperfield’s choice,” returned my mother. “When he bought the house, he liked to think there were rooks about it.”

“Where are the birds?” asked Miss Betsey. “The rooks – what has become of them?”

“There have not been any since we lived here,” said my mother. “We thought – Mr Copperfield thought – it was quite a large rookery; but the nests were very old ones, and the birds have deserted them a long while.”

“David Copperfield all over!” cried Miss Betsey. “David Copperfield from head to foot! Calls a house a rookery when there’s not a rook near it, and takes the birds on trust, because he sees the nests!”

“Mr Copperfield,” returned my mother, “is dead, and if you dare to speak unkindly of him to me ...”

My poor dear mother, I suppose, had some momentary intention of committing an assault and battery upon my aunt, who could easily have settled her with one hand, even if my mother had been in far better training for such an encounter than she was that evening. But it passed with the action of rising from her chair.

Table 1. Extract from David Copperfield

How did you go? An adult reading the passage will take about 60 seconds. Using the stopwatch on my smart phone, I timed the reading of an 11-year-old. The student read it the first time in

2m 35s, which is 77.4 wpm [steps to calculate wpm: $2\text{m } 35\text{ s} = 155\text{ seconds} - \text{divide } 200\text{ words in the passage by } 155 = 1.29. \text{ Multiply by } 60 = 77.4$]. On the second reading, the student read the passage in 2m 1s, which is 99.2 wpm. On the third reading, the student read it in 1m 59s, which is 100.8 wpm. It was not as fast as the average 11-year-old (see the Appendix) but it was quite a big improvement in speed. In terms of accuracy, there were some miscues: “rookery” read as “rocky”, “dare” as “dar”, “momentary” as “memory”, and no attempt for “deserted” or “intention”. On each reading, if there was a miscue I gave the correct word. There were fewer miscues on the second and third readings. The repeated reading exercise led to definite improvement in speed. Practice helped.

Repeated reading. Where did this approach start?

Unassisted repeated reading.

Samuels (1979) was one of the first to write about an “unassisted” approach to repeated reading for students with reading difficulties. “Unassisted” means reading aloud with no assistance. The method involved reading short passages multiple times. As students repeated the same short text, the teacher monitored their progress to see if their rate of reading improved and their errors decreased. The student kept a chart of progress. The number of errors decreased on each reading and speed increased on each reading. Students liked monitoring their progress over time. The repeated reading procedure was:

Steps in repeated reading

- 1 Select a short passage of 50 to 200 words at instructional level (i.e., 90-95% accuracy) which is a reading level that is challenging, where the student needs some help.
- 2 The student reads the passage with an emphasis on speed rather than accuracy.
- 3 Teacher or tutor makes a chart of the number of errors and the words read per minute.
- 4 The student keeps re-reading the passage until reaching a specific speed target, e.g., 85 words per minute is a target for grade 1 level (see Appendix for other grade level targets).

Assisted repeated reading.

Carol Chomsky (1976) reported a similar but “assisted” repeated reading technique that she carried out after a teacher friend said that she had five students in her class who were very slow readers and had come to a standstill. The students were 8-year-olds and had received a lot of phonics instruction but still reading one to two years below grade level. They seemed to be making no progress according to their teacher. Chomsky (1976) wrote, “In spite of their hard-won decoding skills they couldn’t so much as read a page of simple material to me. The attempt to do so was almost painful, a word-by-word struggle, long silences, eyes eventually drifting around the room in an attempt to escape the humiliation and frustration of the all too familiar, hated situation.” (p. 288)

They had no spoken language comprehension problems and had average verbal ability. Chomsky thought that the best way to build on their hard-won decoding skills was to engage their attention and to give them access to large amounts of text but not make it a struggle to read the words. To make the text easier to read she selected only audio-recorded books for students in her study.

Steps in repeated reading assisted by listening

- 1 Carol Chomsky found 24 storybooks that had been audio-recorded, each 20-30 pages long.
- 2 Each student selected a book to read.
- 3 It took 15 minutes on average to listen to the 20-30 pages on audiotape.
- 4 To show improvements in fluency, the students practiced reading a short section of the book and read this aloud to the researcher when they reached fluency.

She wrote that it took up to 20 repeated readings for one of the students to reach a point where they were able to read a short section of the book aloud with some fluency. To avoid students memorizing the text, the teacher taught decoding skills using phonics instruction and flashcards. There were significant improvements not just in fluency for practiced text but also in attitudes to reading. She said that some of the students had never read a single page on their own but now could read many pages, which was terrific in terms of self-confidence.

The research on repeated reading – a mixed picture

First the positive research. A meta-analysis carried out by the National Reading Panel (NRP, 2000) showed positive results for repeated reading with medium effect sizes of .55 for accuracy, .44 for fluency, and .35 for reading comprehension. A meta-analysis by Therrien (2004) found medium to large effect sizes for fluency (.83) and comprehension (.67). Hudson et al. (2020) reviewed 16, mostly repeated reading studies. Effect sizes varied from none through to large but on average were positive.

Stevens et al. (2017) reported a meta-analysis of 19 repeated reading

To me, for students with reading difficulties, the tough but necessary path to becoming a fluent reader is a path that has lots of easy reading practice on top of quality phonics instruction. The conclusion about repeated reading is that it may not be the magic bullet to overcome reading difficulties - but for some students it might be a positive and perhaps fun way to rebuild self-confidence.

studies. These were experimental studies, and some had a control comparison. They reported positive results but noted that very few of the studies used standardized tests to assess improvement. Lee and Yoon (2017) reported a meta-analysis based on 34 repeated reading studies, selected from 400. They concluded that repeated reading had positive effects. Effect sizes were large: for practiced passages 1.94 and for non-practiced but similar passages .97. However, they noted that very few studies used transfer passages or standardized tests.

Next, the not-so-positive research. What Works Clearinghouse (WWC, 2014) concluded that repeated reading had little to no effect for students with reading difficulties. They only accepted studies with randomized control groups.

Out of nearly 200 studies, only two met their standards. The two studies showed no clear effect on fluency and a small effect on comprehension as measured by a standardized test. Chard et al. (2009) reviewed nine studies and concluded they had too many design problems to be credible.

Is there an alternative that works just as well? Hammerschmidt-Siderach, Maki, and Adams (2019) compared repeated reading and continuous reading. The overall conclusion was that both had similar effects. This finding was similar to Wexler et al. (2010) who compared repeated reading and continuous reading of text with high school students. After 10 weeks there was no difference between the two in terms of improvement on standardized tests. This was a similar conclusion to Therrien et al. (2013). In their short review of research on repeated reading, they concluded that it improved speed but probably not comprehension. The speed increase was probably due to multiple practices. They suggested that reading continuous text might also give similar practice and at the same time build general knowledge and vocabulary, both essential for comprehension.

Conclusion

Unassisted repeated reading seems a good idea for a classroom task like making a speech or rehearsing a part in a play. Reading the text aloud several times will help improve speed, accuracy, and expression. Assisted reading where the teacher reads the text to the class seems a good way to help the class understand a complex text, e.g., a film review (as in the scenario we described earlier) or a complex science topic like the water cycle, or a classic novel like David Copperfield. It would be faster if the teacher read the text aloud and easier to understand.

It is not crystal-clear whether repeated reading improves general reading achievement. There is also debate as to whether it would be just as good to read continuous text rather than read the same text several times.

With some students, it might be useful to read the same text several times to build motivation - but I think that if the poor reader is struggling to read a page of text then give them something easier! Providing reading material that is easy makes for happier readers and a happier classroom. Is it good teaching to have to read a hard text multiple times? Does that make

better readers? The research is not clear about this. These are the key questions for a teacher to ask. To me, for students with reading difficulties the tough but necessary path to becoming a fluent reader is a path that has lots of easy reading practice on top of quality phonics instruction. The conclusion about repeated reading is that it is not a magic bullet to overcome reading difficulties - but for some students, with texts that are not too hard for them to read, it might be a positive and perhaps fun way to rebuild self-confidence.

References

- Carver, R. P. (1973). Effect of increasing the rate of speech presentation upon comprehension. *Journal of Educational Psychology, 65*(1), 118-126.
- Chard, D. J., Ketterlin-Geller, L. R., Baker, S. K., Doabler, C. & Apichatabutra, C. (2009). Repeated reading interventions for students with learning disabilities: Status of the evidence. *Exceptional Students, 75*(3), 263-281.
- Chomsky, C. (1976). After decoding, what? *Language Arts, 53*(3), 288-296.
- Clay, M. M., & Imlach, R. H. (1971). Juncture, pitch, and stress as reading behavior variables. *Journal of Verbal Learning and Verbal Behavior, 10*, 133-139.
- Hammerschmidt-Snidarich, S. M., Naki, K. E., & Adams, S. R. (2018). Evaluating the effects of repeated reading and continuous reading using a standardized dosage of words read. *Psychology in Schools, 56*, 635-651.
- Hasbrouck, J. & Tindal, G. (2017). *An update to compiled ORF norms (Technical Report No. 1702)*. Behavioral Research and Teaching, University of Oregon.
- Hudson, A., Koh, P. W., Moore, K. A., & Binks-Cantrell, E. (2020). Fluency interventions for elementary students with reading difficulties: A synthesis of research from 2000-2019. *Education Sciences, 10*(52), 1-28.
- LaBerge, D., & Samuels, J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6*, 293-323.
- Lee, J., & Yoon, S. Y. (2017). The effects of repeated reading on reading fluency for students with reading disabilities: A meta-analysis. *Journal of Learning Disabilities, 50*(2) 213-224.
- Martin-Chang, S., Ouellette, G., & Madden, M. (2014). Does poor spelling equate to slow reading? The relationship between reading, spelling,

and orthographic quality. *Reading and Writing*, 27, 1485-1505.

National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel: Teaching students to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). U.S. Government Printing Office.

Perfetti, C. (2007). Reading ability: Lexical quality to comprehension. *Scientific Studies of Reading*, 11(4), 357-383.

Roembke, T. C., Hazeltine, E., Reed, D. K., & McMurray, B. (2019). Automaticity of word recognition is a unique predictor of reading fluency in middle school students. *Journal of Educational Psychology*, 111(2), 314-330.

Samuels, S. J. (1979). The method of repeated readings. *The Reading Teacher*, 32, 403-408.

Stevens, A. A., Walker, M. A., & Vaughn, S. (2017). The effects of reading fluency interventions on the reading fluency and reading comprehension performance of elementary students with learning disabilities: A synthesis of the research from 2001 to 2014. *Journal of Learning Disabilities*, 50(5), 576-590.

Therrien, W. J. (2004). Fluency and comprehension gains as a result of repeated reading: A meta-analysis. *Remedial and Special Education*, 25(4), 252-261.

Therrien, W. J., and Watt, S. J. (2013). Repeated reading. In Hattie, J., and Anderman, E. M. (Eds.), *International guide to student achievement* (pp. 320-321). Routledge.

Wexler, J., Vaughn, S., Roberts, G., & Denton, C. A. (2010). The efficacy of repeated reading and wide reading practice for high school students with severe reading disabilities. *Learning Disabilities Research and Practice*, 25(1), 2-10.

Wennerstrom, A. K. (2001). *The music of everyday speech*. Oxford University Press.

What Works Clearinghouse (2014, May). *Students with reading disabilities: Repeated reading*. Institute of Education Sciences.

Appendix

What is an average reading speed for a student?

The reading speeds shown in Table 2 are from Hasbrouck and Tindal's (2017) detailed norms for oral reading fluency (ORF). They show words read correctly per minute (wcpm) for the average student at the end of the school year. An average 10-year-old reads at about an adult conversational rate (150 words per minute), which is similar to having the text read aloud to them (Carver, 1973).

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|----------------------|-----|
| Grade 1 (age 6 to 7) | 60 |
| Grade 2 (age 7-8) | 100 |
| Grade 3 (age 8-9) | 112 |
| Grade 4 (age 9-10) | 133 |
| Grade 5 (age 10-11) | 146 |
| Grade 6 (age 11-12) | 146 |

Table 2. ORF results for students at the 50th percentile in grades 1-6.

Note: Words read correctly per minute (wcpm) takes into account the number of words read incorrectly (miscues). It is more conservative than calculating words per minute (wpm)

Steps to calculate are:

- 1 Total number of words (W) = 200
- 2 Total miscues (M) = 5 miscues
- 3 $W - M = 200 - 5 = 195$ words
- 4 Total reading time in seconds (T) = 155 seconds
- 5 Words read correctly divided by number of seconds = $195 / 155 = 1.25$
- 6 Multiply the number of words read correctly per second by 60 seconds = $1.25 \times 60 = 75$ wcpm

Tom Nicholson is a freelance writer. Current work includes updating the New Zealand Dyslexia Handbook (Nicholson & Dymock, 2015), writing an online course on the teaching of phonics, waiting for Godot, and dabbling in urban sketching. Tom's previous life was as a professor, teaching literacy education at The University of Auckland and at Massey University, New Zealand.