Piloting Visual Reading for children (8 to 16). Dr Ross Cooper, April 2023

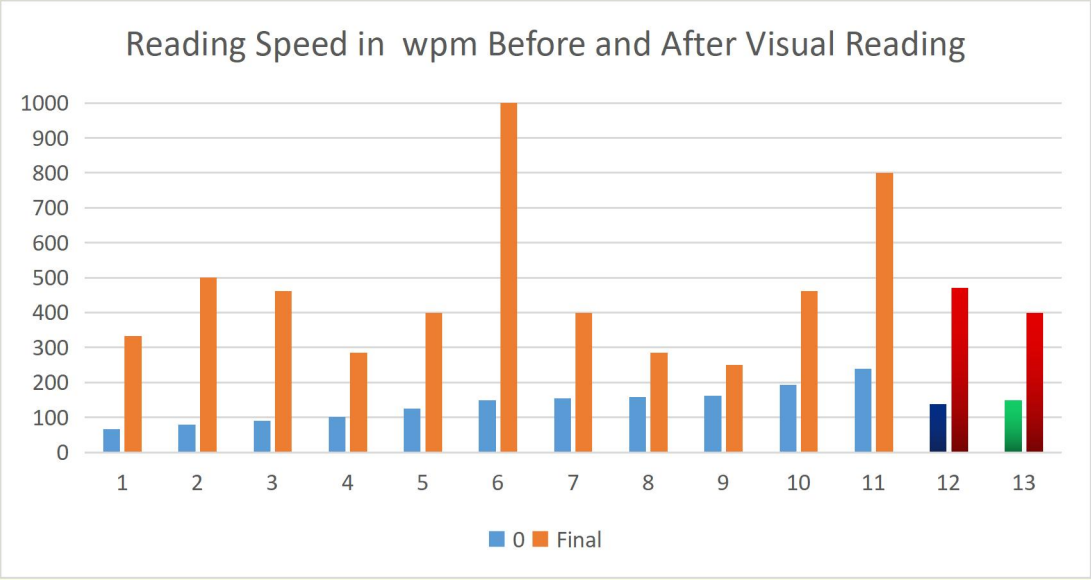
Introduction

Visual Reading with Structured Saccade Overlays© was originally developed for students in Higher Education to enable neurodivergent readers better access to academic reading (Cooper, 2023a). The median reading speed for neurodivergent adults (mainly including dyslexia) improved from 143 words per minute (wpm) to 462 wpm (99.999th percentile). All 63 adult neurodivergent participants are now above the 'average range' of postgraduate reading for meaning speed (top 15%) and 88% are in the top 1%, all with improved comprehension.

Since its introduction in October 2021, it was also recognised that it may be suitable for children, since it can be undertaken with any reading of choice at, potentially, any level of reading. It was also thought that there may be a definable threshold at which Visual Reading becomes possible, since it relies on the visual recognition of words. Part of the reason for piloting it with children was to explore whether this could be identified. But the main reason was that it was thought it could be beneficial for neurodivergent children. This has proved to be the case, with high statistical significance ($p<.0000$).

The Pilot

11 children have completed Visual Reading with Structured Saccade Overlays© (Cooper, 2023a). Three were coached by this author, four by an approved coach who is a qualified dyslexia assessor. The remaining four were coached by two Teaching Assistants (TA) who had been coached by another approved dyslexia professional. Each coach approached the coaching from the same basic principles, but varied the structure of coaching slightly. For example, the children being coached by the TAs had regular daily supervision of their reading with the overlays. Others read with the overlays independently. However, all the children made dramatic progress.



Graph 1: All **individual** progress shown, as well as the **mean** (dark blue/red) and **median** (green/red) scores.

Baseline Reading Scores

The children's baseline reading speed was measured by asking them to read something they wanted to read, and timing it. Initial reading speeds varied from 67 words per minute [wpm], slower than 98% of postgraduates when reading for meaning, to 240 wpm. To provide some context, the mean speed of reading for postgraduates when reading for meaning is 190 wpm (Cooper, 2023a). The mean baseline speed for these 11 dyslexic children is 138 wpm, the median being 150. When we coach Visual Reading, we do not attempt to accurately measure comprehension, since this depends on so many factors, not least of which is prior knowledge (Fisher et al, 2009). Consequently, an accurate representative measure of comprehension is extremely unlikely to be achieved by a standardised test of comprehension. Instead, we ask the reader to tell us what they have read, having closed the book, both after reading, and then after reviewing what they have read. We focus on ensuring comprehension and recall continue to improve while reading speeds increase (Cooper, 2023b). Should comprehension falter we encourage better use of metacognitive reading strategies, and reading more slowly until comprehension catches up. In other words, speed is determined by comprehension.

Week by Week Analysis of Reading Progress

Week 1

After just one week, their reading speeds ranged between 88 and 400 wpm. Their mean speed increased to 191 wpm (which is also the mean reading speed for postgraduates when reading for meaning), the median speed is 176 wpm (faster than 40% of postgraduates). The first week involves about 40 minutes coaching and 10 minutes a day reading with the overlays. A T-test shows that this progress achieves statistical significance ($p<0.01$).

Weekly Reading Speed Progress in words per minute (wpm)							
Pupils	**0**	**1**	**2**	**3**	**4**	**5**	**Final**
1	67	88	135	149	200	250	333
2	80	220	300	360	360	250	500
3	90	167	115	286	333	300	462
4	102	220	231	286	286	286	286
5	125	176	261	250	194	250	400
6	150	200	316	400	630	800	1000
7	154	188	230	200	240	660	400
8	158	133	158	194	222	273	286
9	162	167	207	250	215	200	250
10	194	143	154	162	214	222	462
11	240	400	500	667	800	400	800
Mean	**138**	**191**	**237**	**291**	**336**	**385**	**471**
Median	**150**	**176**	**230**	**250**	**240**	**250**	**400**

Table 1: Weekly Reading Speed Progress in words per minute.

Week 2

After two weeks, their reading speeds ranged between 115 and 500 wpm. Their mean speed increased to 237 wpm, the median to 230 wpm (faster than 77% of postgraduates). By the end of the second week, the children had had around 50 minutes coaching, while continuing to read for 10 minutes a day with the overlays. A T-test shows that this progress, unsurprisingly, achieves greater statistical significance ($p<0.002$). The statistical significance improves with each measure of reading speed over the next 4 weeks.

Week 3

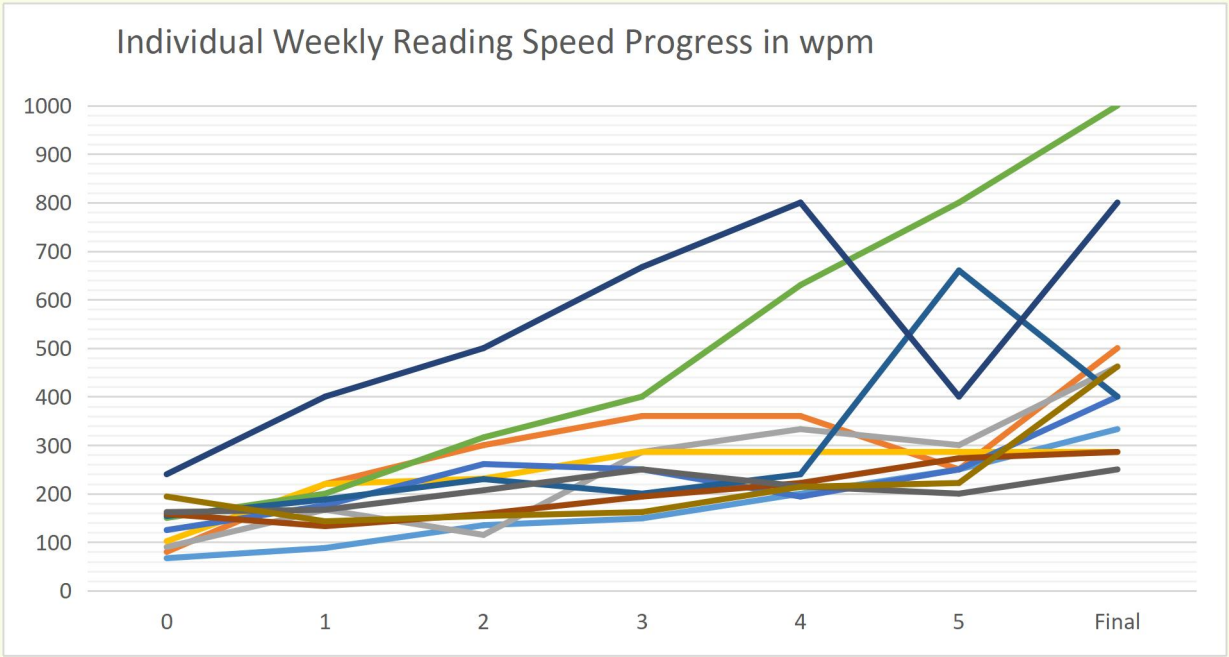
After 3 weeks, their reading speeds ranged between 149 and 667 wpm. Their mean speed increased to 291 wpm, the median to 250 wpm (faster than 86% of postgraduates). By the end of the third week, the children had had around one hour coaching, while continuing to read for 10 minutes a day with the overlays.

Week 4

After 4 weeks, their reading speeds ranged between 214 and 800 wpm. Their mean speed increased to 336 wpm, although, mainly due to the small sample, the median dropped slightly to 240 wpm (faster than 81% of postgraduates). By the end of the fourth week, the children had had around one hour and 10 minutes coaching, while continuing to read for 10 minutes a day with the overlays.

Week 5

After 5 weeks, their reading speeds ranged between 200 and 800 wpm. Their mean speed increased to 385 wpm, the median increased to 250wpm. By the end of the fifth week, the children had had around one hour and 20 minutes coaching, while continuing to read for 10 minutes a day with the overlays.



Graph 2: Individual reading speed progress in wpm.

Final Week

In the final week, their reading speeds ranged between 250 and 1000 wpm. Their mean speed increased to 471 wpm, and the median increased to 400 wpm (faster than 99.99% of postgraduates). By the end of the final week, the children had had around one hour and 40 minutes coaching, while continuing to read for 10 minutes a day, but without the overlays; at this point they have already served their purpose. It should, however, be noted that some coaches continued the coaching sessions beyond the sixth week. Speeds continued to increase, and the scores reported here are the final speeds achieved. This means that some children had more than the one hour and 40 minutes coaching despite this remaining the norm. The gains are so large and consistent across the cohort that the statistical significance is extremely high ($p<.0000$), despite the small sample of children.

The correlation between the starting speeds and final speeds is moderately low ($r=0.45$), which can be interpreted as starting speeds explaining less than 21% of the improvement, further confirming the effectiveness of the intervention.

Finding a Threshold

The 8 year old child (dyslexic and ADHD) with the slowest reading at the beginning (67 wpm), made very good progress. She is now reading at 333 wpm (faster than 99% of postgraduates), and is reported to be enjoying reading with ‘perfect recall’. The next lowest speed was a dyslexic child of 11. He began at 80 wpm, and progressed to 500 wpm with very good comprehension. Consequently, we still do not know where the threshold could be for starting Visual Reading. Until a reader fails to make significant progress, it will remain difficult to know. There is little difference between the progress made by primary age children (median speed improved from 105 to 400 wpm, and mean speeds improved from 115 to 363 wpm) compared to secondary age children (median speed improved from 150 wpm to 400 wpm, and mean speed improved from 140 to 449 wpm). These differences are not statistically significant, and larger samples will be needed to explore any differences..

Case-study outline

A dyslexic child of 15, is now understanding what she reads for the first time. She had had 2 years of specialist dyslexia support for reading difficulties and had been going to a hospital for 18 months because of her visual tracking difficulties. Reportedly, this had made little difference to her reading. At the start, she read at 150 wpm with very little comprehension or recall of what she read. She is now reading at 1000 wpm with ‘perfect recall’. Her coach reported:

> *“She has amazed herself and her teachers as she has never been able to retain anything she has read. Her grades are improving, and she has masses of confidence. This has changed her life. The first time we did this and she could remember everything, she cried.“* Sarah Wicks,

GMBPsS AMBDA APC PPM, Specialist Teacher Assessor and Literacy Consultant

Conclusions

The pilot demonstrates that in less than one term, children almost quadruple their reading speed (x3.69) while improving their comprehension. The median reading speed is now faster than 99.99% of postgraduate readers when reading for meaning. Even the slowest reader from this cohort, on completing Visual Reading, is reading faster than 86% of postgraduate readers, while 73% are in the top 1%. This has close parallels with neurodivergent adults who have completed Visual Reading, all of whom are now in the top 15% of postgraduate readers, with 88% in the top 1%.

Pupil feedback generally has been extremely positive, with reports of increased confidence, and improved grades. The slowest dyslexic child on completion of Visual Reading (250 wpm) is reading faster than the fastest dyslexic child at the beginning of Visual Reading (240 wpm).

Anecdotally, children whose comprehension is particularly low, improve their understanding and recall dramatically. The pilot has also demonstrated that this impact can be achieved by suitably coached and supported Teaching Assistants, which means the intervention could be highly cost effective.
We do not know of any other intervention to have such dramatic impact, particularly when it takes so little time and effort to implement. In most cases, the reader finds the overlays immediately helpful. However, the process for the learner can raise some difficulties at the beginning, as the reader has to relearn their approach to reading and the overlays can sometimes feel distracting, particularly for those with AD(H)D. However, these initial difficulties evaporate quickly once readers get used to using the overlays., and start to recognise the benefits of Visual Reading.

The evidence from this pilot confirms that less than 2 hours coaching and using the overlays for 10 minutes a day for around 6 weeks can transform the reading skills of dyslexic children from below average to above average, and indeed enables them all to become excellent readers.

References:

Cooper, R. (2023a) https://outsidersoftware.co.uk/wp-content/uploads/2023/02/The-Development-and-Impact-of-the-online-Visual-Reading-course.-Feb-23.pdf

Cooper, R, (2023b) An-Analysis-of-Reading-Progress-for-Neurodivergent-mainly-Dyslexic-Readers-Feb-23-1.pdf (outsidersoftware.co.uk)

Fisher, D., & Frey, N. (2009), Background knowledge: The missing piece of the comprehension puzzle, Portsmouth, NH: Heinemann.