

Analysis of Reading Progress for Neurodivergent Readers (Mainly Dyslexic) using Visual Reading Strategies with Structured Saccade Overlays©. (February 2023)

The Visual Reading course is based on 3 main concepts. The first is that silent reading speeds can be dramatically improved by gaining control over the accuracy of saccades through using the Structured Saccade Overlays©. The second is that comprehension can be improved by good use of metacognitive reading strategies, even when speed increases. The third is that reading skills develop best when the reader is enabled to read texts that interest them.

The process involves 3 coaching elements.

1. Explaining how and why to use the structured saccade overlays with their chosen reading material, and how to use and develop metacognitive reading strategies
 - a) This is primarily handled by the initial coaching session (around 40 minutes), and
 - b) reinforced through subsequent coaching.
2. Ongoing coaching to ensure that the reader gains maximum benefit from using the overlays and that their comprehension keeps improving
 - a) This is handled by a series of weekly coaching sessions (usually about 10 minutes long). How many the reader needs, depends on their 'practice' and coaching needs. On average, most readers need 4 of these, but a small minority only need 2 or 3, while another small minority may need 5 or 6.
3. Coaching in how to move on from using the overlays and keep improving their silent reading effectiveness after the coaching ends.
 - a) This is handled by the final coaching session (usually 20 minutes)

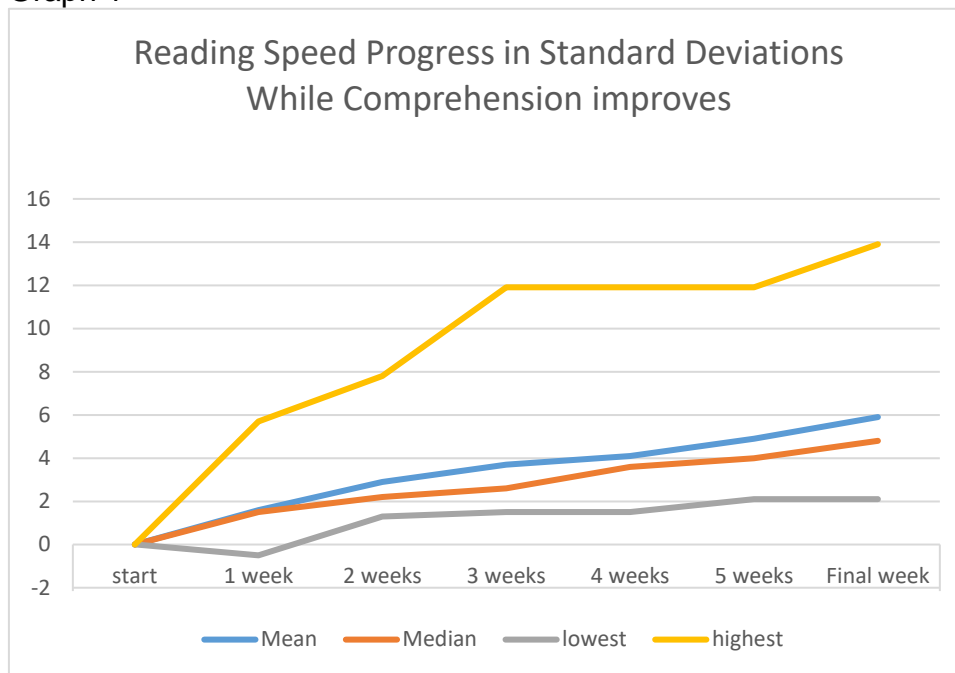
Consequently, the total coaching time needed is, on average, less than 2 hours. For 'practice', readers are asked to read independently for a minimum of 10 minutes a day, using the overlays. During this whole process, readers are encouraged to read passionate interest texts to acquire the advanced reading skills before applying them to more difficult texts. On average, reading excellence is achieved with around 6 hours 'practice'. Without 'practice', there is no progress. It is very much all about learning by doing.

We have been capturing the reading speed improvements (in the context of improved comprehension) for most of our neurodivergent readers since October 2021, presented in Table: 1 and Graph: 1 below.

Table 1

Reading Speed Weekly Progress in Standard Deviations While Comprehension Improves							
n=57	start	1 week	2 weeks	3 weeks	4 weeks	5 weeks	Final week
Mean	0	1.5	2.8	3.6	4.1	4.9	5.9
Median	0	1.4	2.1	2.5	3.4	4.3	5.2
Lowest (A)	0	-0.5	1.3	1.5	1.5	2.1	2.1
Highest (B)	0	5.7	7.8	11.9	11.9	11.9	13.9

Graph 1



Standard deviation calculations are based on postgraduate readers (non-dyslexic), when reading for meaning ($n=327$). The 'average range' of reading for meaning speeds was calculated as 131-248 words per minute (wpm). This means that 1 Standard Deviation is represented by 59 wpm, and the mean reading speed is 190wpm. At that speed, postgraduates were able to answer, on average, 53% of straight forward questions correctly. The texts used were suitable for 12 year olds, so were not challenging for postgraduates. The standardisation process demonstrated that postgraduates very rarely use any metacognitive reading strategies, even though they knew they would be tested on their comprehension, and their reading in general, was not as effective as is generally assumed.

We recognise that standardising reading tests is problematic, because reading comprehension in particular is dependent on a wide variety of factors, not least of which is prior knowledge. Nevertheless, this gives us a baseline framework to work with.

Features of the Reading Progress

The first important feature is the large gains achieved by all the dyslexic readers in very little time. After just one week of 'practice', the **mean** and **median** improvement is 1.6 and 1.5 Standard Deviations (SD) respectively, and has already achieved high statistical significance ($p<.0000$). Very few educational interventions, particularly with reading, achieve 1.5 SD progress in total. The final improvement for **median** scores is 5SD.

Table 1 and Graph 1 above show progress across 4 categories. The first is the **mean** progress achieved. We can see that this is very similar to the **median** progress at the beginning, and then the **mean** gradually separates from the **median** progress, particularly at the end. This is explained by some individuals making very dramatic progress, inflating the **mean** score achieved. This can be seen, for example, with the individual student (B), who made the most progress in this cohort.

Consequently, **median** scores represent a better reflection of progress for most students, since the **median** is the score achieved by the individual in the middle of the cohort. The progress achieved is slightly less dramatic, but better reflects the experience of most students. The 4th category is the progress achieved by the individual (A), who made the least progress in this cohort. This allows us to compare the highest achiever with the

lowest, but also to identify some of the issues experienced by those who benefit least in terms of reading speed.

Student (A) did not start with a particularly slow reading speed (154 wpm- which is very close to the mean score for this cohort). The problem was that she had learnt to read at some speed without understanding what she was reading. This is very common among a subgroup of dyslexic students who can use phonics fluently, and can appear to rattle off reading, but all their working memory is discharged in that mechanical process, leaving very little for understanding. They have often not learned any strategies at all for monitoring meaning. Indeed, another student in the sample started 'reading' at 400wpm, without any idea at all about what they had just 'read'. Consequently, these students need to learn to slow up their reading and develop better monitoring for meaning strategies and enable reading to become a more visual process. This can be seen by the drop (-0.5 SD) from the first measure of student A's reading speed and one week later. This particular student, for whom English was not her first language, made 2.1 SD progress overall in reading speed, although most of her real progress involved developing good comprehension skills, which is not captured by her reading speed score.

Weekly Progress

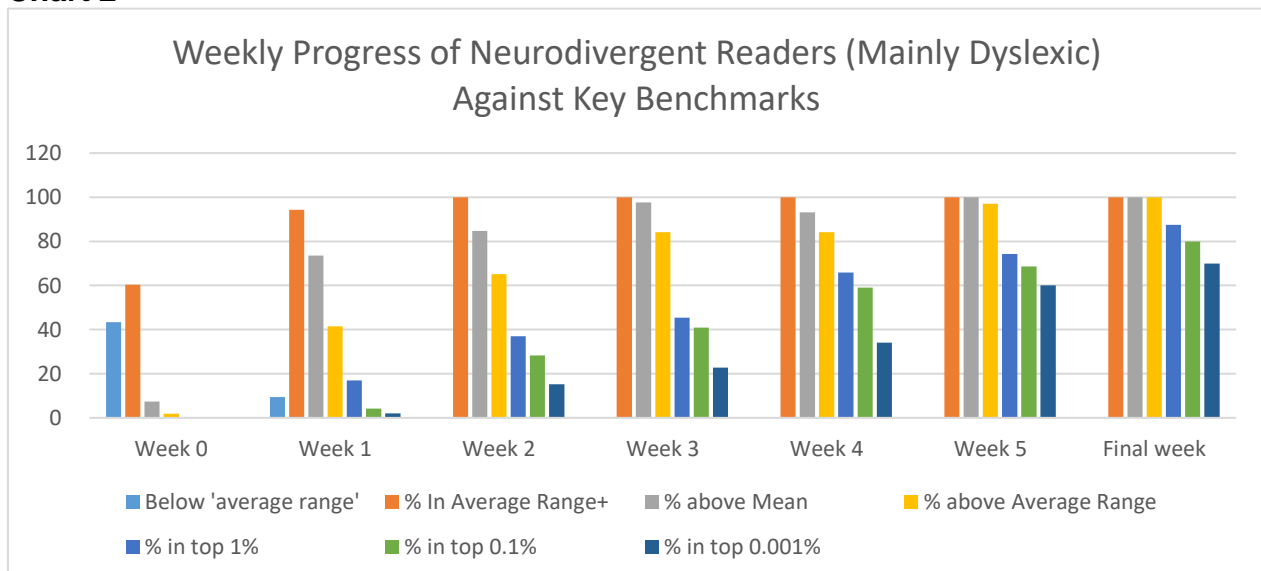
1st Week

In terms of weekly **median** progress, the biggest improvement across the group is in the first week (1.2 SD). This is due to a 51% increase in reading speed (with improved comprehension). In real terms, an initial **median** of 146 wpm, has increased to 220 wpm (standardised scores [SS]: from 89 to 108, or from 23rd to the 70th percentile), while comprehension has improved. This is a shift from towards the bottom of the average range, to near the top. The correlation between starting speed and improvement is low ($r=0.455$) and can be interpreted as explaining just 21% of the improvement.

Before starting Visual Reading, 43% of neurodivergent readers are below the reading for meaning speed of postgraduate readers. 7% are above the mean and just 2% were above the average range (top 15%) of postgraduate readers. We can see the weekly progress of all the neurodivergent readers against key benchmarks in Chart 2 below.

7 of these readers are children, and the pattern of scores and progress are strikingly similar to neurodivergent adults. 43% are below the average range, and 14% were above the mean before starting Visual Reading.

Chart 2



After just one week with less than one hour coaching, and reading with the Structured Saccade Overlays for 10 minutes a day (about one hour in total), we can already see a dramatic improvement. Only 9% are still below the average range, 74% are above the mean, 42% are above the average range (top 15%), 17% are in the top 1% and 4% are in the top 0.1%.

14% of the children are still below the average range (bottom 15%), 71% are above the mean, and 14% are in the top 0.01%

2nd Week

In the second week, we see a further improvement in **median** score, leading to a total of 2.1 SD. This represents an increase in **median** score to 273 wpm (SS 122), or top 7% of postgraduate readers. The correlation between starting speed and improvement is low ($r=0.422$) and can be interpreted as explaining just 18% of the improvement.

After two weeks with less than 1 hour coaching and around 2 hours of reading using the Structured Saccade Overlays, we see further dramatic improvement. 0% of the readers are below the average range (bottom 15%), 85% are above the mean, 65% are above the average range, 37% are in the top 1%, 28% are in the top 0.1%, and 15% are in the top 0.01%

Similarly for the children, 0% are in the below average range, 86% are above the mean, 29% are in the top 1%, and 14% are in the top 0.01%

3rd Week

In the third week, we see a further improvement leading to a total of 2.5 SD. This represents an increase in **median** score to 300 wpm (SS 129 or top 3% of postgraduate readers). The correlation between starting speed and improvement is low ($r=0.39$) and can be interpreted as explaining just 15% of the improvement.

After 3 weeks, 98% are above the mean, 84% are above the average range, 45% are in the top 1%, 41% are in the top 0.1%, and 23% are in the top 0.01%

Similarly for children, 71% are above the average range, 43% are in the top 1%, 43% are in the top 0.1%, and 29% are in the top 0.01%

4th Week

In the 4th week, we see a further improvement leading to a total of 3.4 SD. This represents an increase in **median** score to 353 wpm (SS 143), or top 0.2% of postgraduate readers. The correlation between starting speed and improvement is low ($r=0.279$) and can be interpreted as explaining just 8% of the improvement.

After 4 weeks, 66% are in the top 1%, 59% are in the top 0.1%, and 34% are in the top 0.01%

For children, all are above the mean, 43% are in the top 0.1%, and 29% are in the top 0.01%

5th Week

In the 5th week, we see a further improvement leading to a total of 4.3 SD. This represents an increase in **median** score to 400 wpm (SS 155), or top 0.0001% of postgraduate readers. The correlation between starting speed and improvement is low ($r=0.211$) and can be interpreted as explaining just 4% of the improvement.

After 5 weeks, 74% are in the top 1%, 69% are in the top 0.1%, and 60% are in the top 0.01%

For children, all are above the mean with 33% in the top 0.01%

Final Week

When all the students have completed the course, we see a further improvement leading to a total of 5.9 SD. This represents an increase in **median** score to 462wpm (SS 171), about 3 times faster than at the beginning and in the top 0.000004% of postgraduates. The correlation between starting speed and improvement is low ($r=0.332$) and can be interpreted as explaining just 11% of the improvement.

In the final week, after receiving around 2 hours of coaching, and having read for a week without the need for the Structured Saccade Overlays, all the students are above the average range, 88% are in the top 1%, 80% are in the top 0.1%, and 70% are in the top 0.01%

Similarly for children, all are above the average range, 57% are in the top 0.1%, and 43% are in the top 0.01%

Student (A) achieved a reading speed of 273 wpm (SS 122), or top 7% of postgraduate readers, with a very large improvement in comprehension.

Conclusion

The impact of Visual Reading with Structured Saccade Overlays is dramatic and consistent. While it can improve the reading effectiveness for any reader, changing a poor reader into a world class reader in less than 2 months is, we would suggest, unprecedented and potentially life-changing. Student feedback confirming individual experiences can be read on our website (see below).

The progress across the group over time is surprisingly linear. This suggests that further coaching could increase reading for meaning speeds even further, and this will inform our work going forward. However, the most striking feature of these results is just how easy it is for dyslexic readers to acquire world class reading skills in a short period of time with little effort. Most of this sample are in Higher Education, but it includes 7 children (8 to 16 years of age), 3 of whom made some of the most dramatic progress (500 and two achieved 800 wpm). We now have a number of approved Visual Reading coaches in schools, and we are looking forward to analysing the data that emerges for children and will repost on this as soon as we can.

If you would like further information about Visual Reading with Structured Saccade Overlays, or would like to become an approved coach, or wish to purchase overlays, please contact Dr Ross Cooper: rosscooper@gmail.com, or look at our website, <https://outsidersoftware.co.uk/>