

Reading and writing speeds and SpLD assessment

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Abstract:

While the most up-to-date versions of large-scale standardised tests are the best guides to changing norms in average reading and writing speeds for different age groups in the population, the speeds or standard scores quoted will vary according to the type and demands of the task. Assessment reports should note the type and content of the task set when commenting on performance. Best practice will draw conclusions from a range of reading and writing tasks administered, depending on the age of the person assessed and their study/work or other needs, alongside the nature of the difficulties being investigated.

- Assessments of reading and writing should be holistic.
- Simple rates of either reading or writing are not very informative.
- Oral reading tests can tell us a lot about fluency, accuracy and prosody but are not typical of adult reading practices.
- The average range of silent reading speeds is very wide.
- Both reading and writing speeds are highly variable depending upon the task and desired outcomes.
- It is fine to quote the measured reading and writing speeds in reports, **but be wary of stating 'slow' unless silent reading speed is below 175 wpm and/or writing speed is below 15 wpm.**
- Research suggests that there is little statistical difference between typically developing and SpLD writing speeds.
- It is likely to be the processing difficulties inherent in SpLDs that affect outcomes and justify exam arrangements, rather than speeds *per se*.
- Exceptionally slow reading and writing speeds are always a cause for concern.

Introduction

Some assessors have expressed concern that the Additional Guidance to the new report formats approved by SASC in June 2019 did not make specific recommendations for expected or average speeds for reading or writing, either by age or level of educational attainment. Instead the guidance stated that:

‘There is an increasing recognition that age-related norms for ‘typical’ reading and writing speeds can vary considerably according to the specific demands of the reading and writing task and different test standardisations. In particular, there are currently very few standardised measures of writing speed for adults and the available tests may focus more on aspects of legibility, copying and handwriting speed, than they do on the typical compositional and précis skills demanded in, for example, a higher education context. Typical higher level reading and writing skills and speeds are likely to differ according to the demands of the task. Assessors should take care to administer reading and writing tasks and tests that are appropriate both to the educational levels of the person assessed and to the difficulties being investigated. Where there is no standardised score to report, test outcomes and performance can be reported diagnostically.’

In the assessment of students in H.E., two figures became embedded in assessment culture following the original 2005 guidelines: an expected 25 wpm free writing speed and a expected 250 wpm silent reading rate. This paper seeks to address the problems associated with these figures and to place in context the changed advice above in the light of recent research.

Is there an average reading rate?

Children become skilled and fluent adult readers by: cracking the alphabetic code; systematic phonics instruction; sight-word learning; independent reading; orthographic learning and decoding (word-specific knowledge, word-recognition, understanding of orthographic regularities); experience with print, morphological understanding; motivation; oral language development; inference generation and comprehension monitoring; cognitive resources and automatic processing. In attempting to identify a specific learning difficulty, one element of any assessment of the reading skills of children and adults will concern what might constitute 'typical' or 'non-typical' reading fluency, speed and comprehension at any particular age.

A growing body of research indicates that reading speeds vary enormously depending not only on the word reading skills of the individual but also on the strategies used by the individual, and the design of the test. In a systematic review of literature on reading rates amongst university students, Lewandowski et al (2003) found that 'average' rates cited varied from 140 wpm to 400 wpm depending upon test design (whether or not it included measures of accuracy and comprehension, and what type of information students would be required to recall or extract) and the type of strategies students were using (e.g. scanning, skimming, reading for meaning or trying to memorise the content). Amendum et al (2018) found that on average students' accuracy and reading rate decreased as the level of text difficulty increased, but this decrease was most marked in less skilled readers, as skilled readers were able to call upon a range of strategies to assist with word reading and hence with accuracy and fluency.

Most recently, Brysbaert (2019) conducted a systematic review of a large number of studies across the world from the last hundred years. His paper is worth reading in full. Inclusion criteria were that the sample had to include a group of healthy (i.e. no reading difficulties) adults between the ages of 18 and 60 years, and the task should involve reading with comprehension, in English. He used additional inclusion and exclusion criteria to further divide the resulting studies into categories in which he performed a meta-analysis of average silent and oral reading speeds. These categories included:

- Silent reading rates for adult native English speakers
- Oral reading rates for adult native English speakers
- Silent and oral reading rates for children up to age 17, and for older people over 60, who are native English speakers
- Silent and oral reading rates for adults with English as second language

When comparing silent reading speed results for native English speakers across multiple studies Brysbaert (2019) found that the average silent reading speed for healthy adults aged between 18 and 60, with no reading difficulties, was 238 wpm for non-fiction and 260 for fiction. The speeds at which participants could read silently and understand were generally very similar to the speed at which they could listen and understand, and both were closely linked to the individual's level of language and vocabulary knowledge and comprehension (Brysbaert 2019).

This average speed of 238 for non-fiction falls very close to the figure of 250 wpm quoted in past SASC guidance. That said, the range of silent reading speeds found within the studies was very wide. For non-fiction, the majority of participants' speeds fell within the range of 175 - 300 wpm, and for fiction it was 200 - 320 wpm. Thus one can expect normal reading speeds for non-fiction to vary considerably from person to person, from 175 wpm to 300 wpm (Brysbaert 2019).

Variability in silent reading speed was greatest when speed and comprehension were measured using one short passage lasting a minute or less, or a series of short passages each lasting a minute or less, perhaps because there is much greater variation in the way that individuals interpret what is required in such tests (Brysbaert 2019). The smallest variation in reading speeds was seen for tests with longer individual passages which took a minimum of 5 minutes to read. Brysbaert concludes that an ideal assessment of silent reading rate (with comprehension) requires one long text that lasts a minimum of 5 minutes.

The average oral reading rate for healthy native speaker adults was 183 wpm (Brysbaert 2019). The range of observed oral reading rates across studies was considerably smaller and the length of the text had no significant impact upon variability in speed. A possible

explanation can be found in Ciuffo et al (2017) who measured silent and oral reading speeds (in Italian) for 325 high school and university students age 14–23. They found that mean silent reading speed progressively increased throughout this period, whilst mean oral reading speeds remained substantially unchanged. They concluded that most children have already reached the ceiling of their oral reading speed by the age of 14 (partly because their fluency cannot exceed the speed at which they can articulate the words) and that silent reading tasks could be more suitable than oral tasks as measures of decoding capability in older students and adults with dyslexia (Ciuffo et al 2017). Oral reading of continuous prose can provide useful qualitative information about accuracy and approaches to word decoding, punctuation and intonation, but oral reading rates for continuous prose may be of limited value for identifying reading difficulties.

Brysbaert also concludes that that oral reading is a useful indicator of reading proficiency when children are first developing reading skills in the first few years of primary school, but that it has limited value in higher education as silent reading has become the norm by that stage (Brysbaert 2019).

In addition to looking at native English speakers between the age of 18 and 60, Brysbaert analysed college students, older adults and non-native speakers. The number of studies that focus on college students is small, but these show that between the ages of 18 and 23 healthy students in Higher Education are likely to see a 10 to 16 wpm increase in reading speed (Brysbaert 2019). This is a relatively small increase when set within the context of the normal range of variation between students.

Studies that include older adults are also few in number, but the results of these studies indicate that after the age of 60 reductions in visual sensitivity, processing speeds and memory can all lead to slower silent and oral reading speeds. Good reading performance in old age can therefore be heavily dependent on the use of compensatory strategies (Brysbaert 2019).

Brysbaert's analysis of studies of reading speed in (healthy) speakers of English as a second-language (L2) indicates that L2 reading rates are considerably slower than for (healthy) speakers of English as first-language (L1) with L2 reading rates often falling

below 100 wpm. Again, there was a close similarity between the speed at which participants could listen and understand, and read and understand. Brysbaert concludes that the slower reading and listening speeds are linked to frequency of exposure to vocabulary and that “only when L2 readers have the same degree of exposure to L2 words as L1 speakers to L1 words, can we expect both groups to be equally efficient at reading the language” (Brysbaert 2019 p46).

Brysbaert adds a further caveat regarding estimates of reading rates, stating that they are all likely to be overestimates of reading rates in real life. Reading rate and comprehension tests tend to be very task focused and time pressured. He cites evidence that in real life people tend to “mind-wander” and multi-task when reading and that both of these factors have measurable impacts upon speed and comprehension.

Is reading rate related to comprehension?

Reading speed for continuous text does not necessarily correlate directly to comprehension. Whilst it is true that the most accomplished readers demonstrate high levels of fluency and comprehension, it is also possible to read mechanically at high speed with no comprehension, or alternatively to read very slowly but with excellent comprehension (Wallot et al 2014).

There is evidence that comprehension has an impact upon speed. Readers experience fluctuations in speed within a text, especially if they are attempting to understand as they read. They will speed up for easy-to-understand sentences and in response to structural features which make meaning clearer, but slow down when meaning is unclear (Wallot et al 2014). Studies reported in Castle, Rastle and Nation (2018), that have monitored adults’ eye movements during silent reading, have shown that reading speed is influenced by plausibility. For example, consider these two sentences: John used a *knife* to chop carrots. John used an *axe* to chop carrots. Reading times are longer for the second of those sentences, as children struggle to make sense of the implausible use of the word *axe*. Children with higher levels of oral language skill also show longer re-reading times on implausible sentences, consistent with an attempt to integrate and make sense of texts.

Brysbaert's systematic review (2019) also addressed the issue of links between reading speed and comprehension. He found strong correlations in studies between reading comprehension and listening comprehension but no consistent evidence of a correlation between reading speed and reading comprehension in typical readers. He concludes "every reader is likely to have an optimal language input rate above which comprehension declines, but under which comprehension also falls because the information comes in too slowly to be integrated into meaningful chunks" (Brysbaert, 2019, p. 39) He draws up a list of factors which have been found to contribute to comprehension: speed of visual word decoding ; rapid naming of letters or numbers; letter, name, and word matching; short-term and working memory span; metacognitive knowledge of whether your comprehension is sufficient to the task; range of book authors known; amount of reading relative to peers; auditory word recognition; speech rate; spoken text comprehension; visual acuity; word spelling accuracy; intelligence (Brysbaert 2019). It can be seen from this list that reading rate is only one of many factors that may contribute to reading comprehension.

Two recent studies (Calet et al 2017, Veenendaal et al 2015) investigated the relative importance amongst primary age children of automaticity (accuracy and speed of word reading) versus prosody (using the pattern of stress and intonation to assist with word reading and comprehension) for comprehension of continuous text. Veenendaal et al's (2015) results indicated that good prosody skills play a more important role than reading rate in assisting comprehension, whilst Calet et al (2017) found that training in prosody delivered greater increases in comprehension than training in automaticity of word reading.

This raises a question as to what measures of reading rate actually reveal about an individual? Automaticity of word reading? Speed of processing of content? Use/absence of strategies to assist with reading? Level of understanding of the language or sentence structure? Each of these areas can be measured in other more effective ways than calculating a reading rate for continuous prose and a reading rate on its own has limited intrinsic meaning.

Will an individual's reading rate and comprehension score vary from one test to another?

When evaluating reading rate and comprehension scores, those scores must be placed within the context of the design and demands of the test. It is evident that measures of reading rate should require comprehension. However, Amendum et al (2018) point out that comprehension is a complex skill which constantly develops throughout our lives as our reading skills, language skills, and general knowledge increase. It is, therefore, a much harder skill to measure than the comparatively straightforward reading fluency, and there are many different ways to assess it. This is evident in any brief comparison of comprehension tests used within diagnostic assessments. These may explore comprehension at the word, sentence, paragraph or text level. They may use multiple choice questions or require self-generated answers. They may require the individual to find specific details, key ideas/themes, direct or inferred meaning.

Some tests require the student to answer questions after just one reading, without access to the passage. The rationale for this may be that in most everyday situations (such as reading a newspaper, website or novel) an individual will only read a text once, and should therefore be able to develop understanding as he/she progresses through the text (Schroeder 2011). However, Schroeder found that when students were able to read a text only once, they perform less well on inferential content. Therefore without-text tests may not give an accurate picture of a student's inferential skills.

Studies reveal that results in comprehension tests will differ considerably from one test to another (Amendum et al 2018). Assessors need to be aware that the same individual could emerge with very different scores depending on which test has been used, which skills it measures, and whether the standardisation sample is based on age or educational level. This makes it particularly important that test content should reflect the type and level of reading required in the individual's current educational or work activities, and that the standardisation should reflect the educational level of the individual.

While there are a range of standardised tests available for assessors to use, confusion inevitably arises because (a) tests differ in what is described as typical or 'average' performance and (b) there is still disagreement about where and how to draw lines between typical or 'average' performance and non-typical performance. The practice of quoting, in an assessment report, an overall standard reading rate for a particular age-group is unhelpful not only because the statistic can be easily misinterpreted (e.g. where any score below that rate is characterised as 'below average') but also because it over-simplifies the investigation of reading difficulty.

Is there an average writing rate?

As they master the progressive reading skills described above, children use a range of further cognitive, perceptual and motor coordination resources to develop handwriting proficiency. Learning to write interacts with learning to read and spell. As with reading, typical or average performance on tests of writing speed varies depending on the nature of the task, and how long the task takes to complete. Writing tasks can involve a relatively 'low' cognitive load e.g. copying or grapho-motor speed tasks, or a progressively higher cognitive load, from dictation and free writing to compositional, creative and précis writing tasks and tasks completed under time-limited duress.

For both children and adults, the purpose of and rationale for administering writing assessment tasks within a diagnostic assessment may differ depending on the issues and difficulties being investigated. Writing speed and legibility might be a key aspect of an assessment for suspected motor coordination difficulties, whereas spelling accuracy, the inhibitory effects of poor spelling skills on compositional skills and vocabulary usage, alongside incidence of writing reversals and other writing production errors, might be the focus of an assessment for suspected dyslexia.

Assessors might also be interested in a wider set of possible constraints on written output e.g. lack of adequate study skill training and experience, the writing paralysis of perfectionism and procrastination, and other difficulties in the planning and production of a piece of writing, e.g. weaknesses in the ability to 'get started' on a piece of writing,

to use writing conventions such as paragraphing and punctuation and to notice errors etc.

There are relatively few widely available standardised tests of handwriting ability and average writing speed. As a result four sets of questions commonly arise:

- Are relatively simple handwriting tasks with low cognitive loads (e.g. copying or free writing) sufficiently predictive of performance in tasks or examinations involving writing tasks with higher cognitive demands?
- What kinds of tasks should be set and how long should a timed task last? Are there sufficient standardised criteria for analysing such writing tasks?
- How are cultural changes, in particular the use of computers, texting etc., affecting the typical acquisition of handwriting skills? Should typing speed and fluency be assessed?
- Are there agreed 'cut-off' criteria, i.e. wpm or letters per minute rates or equivalent standard scores that might signal lower than average performance according to age? Would the concept of a range of typical performance rates be more helpful?

It is important to consider the role that cultural change may have in affecting typical developmental norms in motor development. In a study of fine motor skill in Irish children (Gaul and Issartel, 2016) children's fine motor proficiency was found to fall behind the expected norms, leading the authors to question the role and impact of modern society on fine motor skills development over the past 2-3 decades. It is especially important to consider how the now widespread and early acquisition of keyboarding/texting skills may be affecting the 'normal' development of handwriting skills and, as a result, the acquisition of reading and spelling skills (Kiefer et al, 2015).

In her comprehensive review of research into the factors influencing writing speed and fluency and the appropriateness and use of writing tests, Warren (2017) notes wide variations in 'average' writing speed depending on the type and length of writing tasks set (e.g. free writing, dictation, precis, 'examination' style task, sentence completion, copying). She concludes that several interesting research studies looking explicitly at adult typical and non-typical (dyslexic) writing fluency appear to confirm that a 25 wpm 'average' writing speed is an overestimate of typical performance under examination

conditions and, if used as the benchmark for awarding extra time in examinations, will be likely to afford this arrangement to a high proportion of the student population. Given that one in five¹ (19.4%) GCSE and A level exam entries in 2019 were granted extra time, an increase of 9.2% compared to 2018, and that the proportions of students granted extra time has been steadily increasing over the past ten years, there is cause for concern about the validity of using a single norm for 'average' writing speed.

Reading and writing speeds: Key conclusions:

While the most up-to-date versions of large-scale standardised tests are the best guides to changing norms in average reading and writing speeds for different age groups in the population, the speeds or standard scores quoted will vary according to the type and demands of the task. Assessment reports should note the type and content of the task set when commenting on performance. Best practice will draw conclusions from a range of reading and writing tasks administered, depending on the age of the person assessed and their study/work or other needs, alongside the nature of the difficulties being investigated.

- There is no simple average writing or reading speed by age, although the concept of typical ranges, depending on the task set, may be helpful in identifying non-typical performance.
- Average silent reading speeds will continue to rise well into adulthood, whereas average oral reading speeds will reach ceilings earlier because the need to articulate words aloud will limit how fast the text can be read.
- Ranges of typical performance on tests of oral reading speed will be narrower than ranges of typical performance on tests of silent reading speed.
- When interpreting test results and looking at what might constitute non-typical reading and writing speeds, one route will be to look at the suggested 'cut-off' points in test manuals, especially if there is information in those manuals from validity studies that show, for example, typical performance in a SpLD sample compared to the wider standardisation sample. For example, in the DASH

¹<https://www.gov.uk/government/statistics/access-arrangements-for-gcse-as-and-a-level-2018-to-2019-academic-year>

manual p.50 the authors state that a total standard score of 75 or less should be regarded as 'slow' handwriting that deserves attention, while a score of 84-74 should be regarded as 'moderately' slow handwriting that should be further investigated or carefully monitored.

- Exceptionally slow reading and writing speeds are always a cause for concern.

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