

How being a poor speller can seriously limit your talent as a writer

Vince Connelly, Lynsey O'Rourke, and Emma Sumner explain that difficulties with spelling hamper the writing of people with dyslexia. It interferes with fluency, essay length, choice of vocabulary, and editing of work. There are however solutions, and this article discusses the importance of tuition, writing practice, and technology.

When we tend to think about dyslexia, most people first consider the negative impact of such a diagnosis on reading. However, when you ask people diagnosed with dyslexia what they think is their main educational difficulty arising from dyslexia then they more commonly report problems with spelling and writing. Even those adults with dyslexia who have overcome much to be able to successfully enter university continue to report anxiety over their writing and, in particular, their spelling (e.g., Hatcher, Snowling, & Griffiths, 2002; Mortimore & Crozier, 2006).

Writing is a complex activity that requires coordinating cognitive,

linguistic, and motor processes. Children begin learning to write from a young age and are expected to be able to integrate a number of related skills, such as spelling, handwriting, and vocabulary choice, within a short period of time. However, writing good prose takes a long time to develop to competence and is a good example of a skill that can take a lifetime to master due to the requirement to successfully co-ordinate the parallel operation of many cognitive demands (Olive, 2014). There has been a large amount of research produced in the last twenty years demonstrating the importance of children mastering the capability to produce fluent and efficient handwriting and spelling from an early age (See Graham & Santangelo, 2014; Limpo, Alves, & Connelly, 2017; Santangelo & Graham, 2016 and see this issue). Mastery and fluency of both handwriting and spelling allows the young writer to devote the thinking effort, or cognitive resources required, to produce meaningful text that is both linguistically appropriate and that delivers the intended written message to the reader.

It is not surprising that individuals with dyslexia often struggle with writing throughout their life. There are many research studies confirming that both children with dyslexia and adults with dyslexia produce poorer quality written compositions than their peers (See Connelly & Dockrell, 2015 for a full review). It is also the case that children



and adults with dyslexia continue to exhibit poor spelling in their poorer quality writing (Afonso, Suárez-Coalla, & Cuetos, 2015; Berninger, Nielsen, Abbott, Wijsman, & Raskind, 2008; Connelly, Campbell, MacLean, & Barnes, 2006). The requirement to co-ordinate the many cognitive demands of writing is likely to be at the heart of the difficulty with the wider aspects of writing that the child with dyslexia encounters. Put simply, if the demands of spelling (and re-reading) are high in cognitive cost to the individual, then there is less cognitive resource available to juggle all the other concurrent demands of writing. Thus the overall quality of writing, and not just spelling, suffers as a consequence. We will go on to discuss this in more detail below, in order to examine the evidence for this claim and to consider the implications for writing and the teaching of spelling for these children and their teachers.

Slow and hesitant writing is a consequence of being a poor speller

The poor speller is often a slow and hesitant writer. A number of recent studies examining the time course of writing in children with spelling and/or literacy difficulties have illustrated

that those with spelling difficulties take longer to compose text than their peers. For example, thirty-one children with dyslexia from the UK, aged 9, produced less words per minute when writing a narrative text than children of the same age - but no less than children of the same spelling capability (Sumner, Connelly, & Barnett, 2013). This difference was not due to slower handwriting (there were no reported differences in handwriting speed) but that they paused more than their same aged peers when writing and this was the crucial factor in producing less words per minute. The extra time spent pausing when composing text was predicted by spelling ability.

This pattern of slow writing, linked to longer pauses when writing, continues into adulthood for those with a diagnosis of dyslexia and even includes longer pauses in words that are actually correctly spelled (Afonso et al., 2015), which suggests hesitation at the word level. It has been found that even when simply copying sentences, children with dyslexia still wrote less overall and paused more frequently while writing, especially within words. Both spelling ability and within-word pausing accounted for over 76% of the variance in the copying success of children with dyslexia. This demonstrated that their speed of productivity was directly related to their spelling capabilities (Sumner, Connelly & Barnett, 2014).

A further detailed study of single word spelling in French confirmed that children with dyslexia, aged 11, had more dysfluent writing compared to same age peers and were seen to pause more when copying words. Some of these pauses within words were explained by the children with dyslexia glancing up much more frequently at the words to be copied (Kandel, Lassus-Sangosse, Grosjacques, & Perret, 2017). Another study found that Spanish children with dyslexia were actually slower at copying words to spell than they were at writing down the same words to dictation and this was related to having to continually check their spelling when copying (Afonso, Suarez-Coalla & Cuetos, in press).

The slow hesitant pattern of pause production is not limited to handwritten text as written production rates remain slow into adolescence when keyboarding (Torrance, Ronneberg, Johansson, & Uppstad, 2016). It also remains slow for those adults with dyslexia at university producing text on a word processor (Wengelin, 2007).

All writers need to take the time and effort to edit their writing before they complete the final product. Children with dyslexia who are poor spellers are also likely to be poor readers. This means that they will take more time to revise, if they choose to revise at all, and are less likely to be accurate at revising, especially with misspellings. It has been reported that children aged 5 to 11 years with dyslexia made a similar mean number of overall revisions as a same aged control group, but that they left more spelling errors in the final written product (Morken & Helland, 2013). Other research confirms that university students with dyslexia spend a larger proportion of revision time, during both writing and post-transcription, in dealing with their spelling errors than in dealing with other aspects of writing revision (Sumner & Connelly, accepted for publication). Thus individuals with dyslexia are poorer at spotting their own misspellings, but are also more likely to spend more time looking for those misspellings, than their peers, and so miss the opportunity to make other edits to improve the overall quality of their writing.

The poor speller may select words that are easy to spell when writing.

There is evidence that the poor speller will select words that are perhaps easier to spell than more complex and less frequent words that may actually be more appropriate for their writing intentions. A sample of 9-year-old children with dyslexia from the UK produced a written essay with less diverse vocabulary than their same aged peers. However, when asked to respond to the same prompt as the written essay, but solely in spoken form, children with dyslexia showed no differences in word choice from their same aged peers. Furthermore, spelling ability and pausing predicted 53% of the variance in the written diversity of vocabulary in children with dyslexia, demonstrating the close link between spelling and vocabulary when writing (Sumner, Connelly, & Barnett, 2016).

A less clear cut finding was reported in young adults from the United States, aged between 11 and 21 years, who produced less diverse words than their same aged peers when writing essays, but here the difference found was not statistically reliable (Puranik, Lombardino, & Altmann, 2007).

However a study on Swedish university students with dyslexia reported less appropriate vocabulary choices in writing that were related to their spelling difficulties, as compared to their same aged peers. In particular, they noted that spelling-related editing influenced the final word choice with incorrectly spelled words being replaced by more easily spelled words if they could not be corrected quickly (Wengelin, 2007).

The poor speller's writing is judged more harshly

It has been a consistent finding reported over many years that writing that contains poor spelling is judged more harshly than writing that does not contain spelling errors. Assessors rate essays with spelling errors worse on a whole range of factors than the exact same word for word essays presented for assessment with no spelling errors (Marshall & Powers, 1969, Chase, 1986, Rezaei & Lovorn, 2010). For example, essays with spelling errors present were rated as having poorer quality of ideas than the same essays presented without spelling errors (Graham, Harris, & Hebert, 2011). Assessors also rate authors of essays with spelling errors as less intellectually capable than the authors of identical essays (Kreiner, Schnakenberg, Green, Costello, & McClin, 2002). Being a more skilled reader has been shown to lead the assessor to rate spelling errors more, not less, harshly in writing, and assessors are more alert to "low level" errors (spelling, grammar) than other "higher level" errors (Johnson, Wilson, & Roscoe, 2017). Furthermore, assessors seem to assume that word processed text has been through a spell-checker and question the ability of authors whose word processed text contains spelling errors (Figueredo & Varnhagen, 2005).

Do tools such as spellcheck mean the demise of the negative impact of spelling difficulties on writing?

It might be thought that the advent of spellcheckers in word processing can deal with spelling errors in writing. However, even this is not as simple as might be expected. There has been very little work to examine the efficacy of online tools such as spellcheck on

the writing of children with dyslexia. Spellcheck assists with the revision of spelling errors (Macarthur, Graham, Haynes, & DeLaPaz, 1996; Pedler, 2001) and texts that have been edited with spellcheck active contain fewer spelling errors than when edited without spell check (Figueredo & Varnhagen, 2006). One of the few studies on the effectiveness of spellcheck reported that children aged 11 to 14 with moderate to severe spelling problems successfully corrected only 37% of spelling errors when using spellcheck to correct their own texts (Macarthur et al, 1996), but some very recent work on adults with dyslexia demonstrated that spellcheck does reduce spelling errors to almost zero in an essay writing task (O'Rourke, Connelly, Barnett, & Afonso, 2019a). Thus it is likely that children can begin to use spellcheck to correct spelling errors down to a very small percentage of the text over time.

However spellcheck is not active in the initial production of words because it is activated by errors after they are made, thus it is only available for revision of spelling errors. Therefore spellcheck, while correcting the symptoms of spelling difficulties, may not have much of an impact on the slow hesitant writing of children with dyslexia. Some other types of spelling errors may also be more difficult to detect when revising text, even with spellcheck. Just over a third of spelling errors in the Macarthur et al. (1996) sample were real word errors. Real word errors can be homophones, malapropisms or other words with similar spellings which spellcheck will not recognise as spelling errors. Fortunately homophone errors are dealt with more leniently by assessors than spelling accuracy errors (Figueredo & Varnhagen, 2006). Spellcheck also provides a list of alternate words to select when an error is detected. This requires children with dyslexia to identify the correct word from a list and so can be problematic for children with spelling difficulties (MacArthur et al, 1996). It has also been reported that university students with dyslexia looked less at autocomplete suggestions than other users due to looking at the keyboard trying to find letters (Berget & Sandnes, 2016).

Another feature of spellcheck is the red underline of any detected spelling errors as the writer types their text. It has been reported by students with dyslexia that they find this red underline more distracting than their peers do when writing. Using a keystroke-logging

programme it was also found that these students with dyslexia are 13 times more likely to immediately edit an error when a red underline is present compared to when it is not during a sentence writing task (O'Rourke, Connelly, Barnett, & Afonso, 2019b). These findings would suggest that those individuals with dyslexia are more distractible when faced by a potential spelling error.

What else can be done to help?

At the heart of the difficulties that children with dyslexia have with writing are their difficulties with reading and spelling. Thus individualised tuition that makes a positive impact on their reading skills and the amount of reading they undertake will have an impact on writing (Graham, 2000). Secondly, effective spelling tuition will also have a positive impact on writing generally. This has been shown in a comprehensive meta-analysis of the links between spelling and writing (Graham & Santanegelo, 2014). Finally, more writing practice will have a beneficial impact on reading and spelling as well (Graham & Hebert, 2011).

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There are many practitioner-led writing interventions teachers can choose from to improve the spelling and writing of students with dyslexia. A large number of these claim to be designed to assist children who struggle to keep up with their peers, including those with dyslexia. However many of these interventions, while potentially very useful, have not yet been adequately assessed (Brookes, 2013). This leads to potentially uninformed choices for teachers. In order to make further progress more detailed intervention studies need to be carried out on the writing skills of students with dyslexia. Intervention studies are expensive to implement and so ultimately the direction of teaching interventions is most often left to professional judgment.

Thus the comprehensive and confident teaching of spelling to children

by teachers in the classroom is a key component of initiatives to assist in the development of spelling and writing skills. However a number of surveys of teachers in the US, UK, Australia and New Zealand have demonstrated that larger-than-expected proportions of teachers sampled admitted that they were not that confident at teaching spelling to children who struggle (McNeil & Kirk, 2014), that they did not change their teaching style to accommodate struggling spellers, or that large proportions of their classes did struggle, thus calling into doubt their instructional choices (Graham, Morphy et al, 2008), or that they were short of resources to teach spelling and writing (Dockrell, Marshall, & Wyse, 2015). These concerns are heightened in newly qualified teachers (Oakley, 2018). This is a clear worry as teachers need to be at the heart of interventions to improve spelling and writing.

Classroom teachers also need to be aware of spelling biases when assessing writing. The evidence cited above makes it very obvious that poor spelling detracts from the assessor's view of not just spelling but other unrelated aspects of writing and the character of the child. Knowing that the child has dyslexia may help overcome spelling bias. There is no published research we could find to determine if assessors can actually turn off their bias against poorly spelled writing through knowing that an individual with dyslexia has written the text. Some limited research we have carried out on undergraduate students, where we asked students to assess an essay but to ignore spelling errors, demonstrated that they still found it very difficult to ignore the spelling errors when making quality judgements about writing (Connelly et al, in prep).

Extra time for writing does appear to make sense. Students with dyslexia are usually slow readers and often slow writers and so processing complex information takes longer. This means that extra time to complete writing assignments and additional time during exams are reasonable adjustments. There are two points to make about extra time allocations. First, children with dyslexia will need to be tutored in how best to use their set time and their extra time most effectively. It was notable in our recent studies that children with dyslexia consistently wrote for a shorter period of time despite being given the same amount of time to write as peers. So children with dyslexia are often slower and also write for less time.

Thus they need to be encouraged to keep writing in the time they are initially given. They then need explicit guidance on what to do with their extra time. For example, they may be encouraged to leave the correction of spelling errors until the end of writing, and also receive tuition in how to use strategies for revising for meaning in their extra time. Secondly, there is no clear research as to how much extra time is required to overcome the disadvantage of their spelling and reading difficulties. On the contrary there has been some research in the US to suggest that extra time works well for typically progressing students, but less so for those with difficulties (Lewandowski, Lovett, & Rogers, 2008; Goegan & Harrison, 2017). Extra time provision may be something that requires an individual approach and a careful examination of the child's writing habits and thoughtful comparisons with their peers.

Technological tools to improve spelling and writing are an obvious aid for children with dyslexia. Simple word processing, for instance, seems to confer a boost for these children (Morphy & Graham, 2012). As we discussed above, spellcheck is another obvious tool to use. However, effective use of this tool and all technological tools requires tuition for best use. This seems obvious but many teachers are not experts in these tools and this can lead to unforeseen consequences, such as the distracting red spellcheck underline for children who are easily distracted by spelling. In the medium term the development of advanced speech-to-text applications and the potential to individualise writing instruction through personalised online instruction programmes based on response to intervention principles could transform the writing of students with difficulties in the near future. But in the meantime we all need to work hard to assist children with spelling difficulties. An awareness of how spelling will impact more widely on writing is a first step in the understanding of how to begin to help these children achieve their true potential as writers.

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