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## Dyslexia and writing: poor spelling can interfere with good quality composition

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Vince Connelly is interested in the development of writing and has carried out a number of research projects with children who struggle to write such as those with dyslexia or language difficulties. He is currently European Co-ordinator of the Special Interest Group on Writing for the European Association for Research in Learning and Instruction.

## Abstract

This article reports on issues facing students with dyslexia in higher education, and reveals how tutors can offer support. It builds upon research conducted by the authors in order to raise the profile of diversity and disabilities issues. The article provides accessible advice, and calls for more research into supporting students with dyslexia.

## Prevalence and patterns

The prevalence of dyslexia in the population is debated, but can vary from 5 to 10 per cent depending on sources and definitions (Elliott and Grigorenko, 2014). It is reported that up to 4.6 per cent of higher education students in the UK have a known learning disability of dyslexia,

Attention Deficit Hyperactivity Disorder (ADHD) or other difficulty (Higher Education Statistics Agency, 2014). Dyslexia related issues make up the overwhelming majority of the reports.

The academic skills of students in higher education are higher than in the general population and so the academic skills of students with dyslexia in higher education also tend to be higher than other individuals of the same age with dyslexia (Connelly, Campbell, Maclean and Barnes, 2006). However, the attainments of students with dyslexia in higher education are generally below that of their same aged peers in higher education. For example, it has been reported that the difference in proportion of 'good degrees' between those with and without dyslexia in higher education can be as high as 10% (Richardson and Wydell, 2003).

Also, the odds of a student with dyslexia gaining a 'good degree' across the UK higher education sector are only 78% of the odds of a student without dyslexia gaining the same 'good degree' (Richardson, 2009). However, other studies have reported that very high performing students with dyslexia studying medicine at a highly selective institution showed no differences in attainment on exams compared to their peers (McKendree and Snowling, 2011).

This pattern is also reflected in the attainment of students with dyslexia in sixth form and so not surprisingly there are differences in the prevalence of dyslexia between higher education institutions across the UK. The more selective institutions average between 3.0 and 3.5 per cent prevalence of dyslexia to between 4.0 to 5.0 per cent at post 1992 institutions while over 10 per cent of students at specialist institutions, such as performing arts institutes, identify as dyslexic (Richardson, 2009; Higher Education Statistics Agency, 2013).

Thus, university students with dyslexia tend to represent a sample of individuals who, in the main, have overcome significant barriers to success in their progress through education but who are not spread evenly through the sector. Due to the success of widening participation initiatives in higher education and legislation recognising dyslexia as a disability, the overall participation rate of students with dyslexia in higher education continues to grow year on year but is still far short of the overall population prevalence. This presents a challenge for higher education but one that is there to be tackled given both the moral argument for increasing access to education as well as the legal requirements to ensure fair access to higher education for those with disability.

## Writing and dyslexia

Most people tend to consider reading difficulties when it comes to thinking about dyslexia but the ability to write well and produce coherent and meaningful text is an important factor in succeeding in higher education due, in no small part, to the heavy diet of written assessments. It is well known that individuals with dyslexia self report that writing is a struggle for them in higher education (Hatcher, Snowling and Griffiths, 2002). While reading difficulties will have a part to play in this struggle, we know a lot less about how dyslexia may constrain the quality of written compositions produced by individuals with dyslexia in higher education than we do about the consequences of poor reading.

Writing is a complex activity that requires coordinating cognitive, linguistic, and motor processes. Children learn 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. Writing takes a long time to develop to competence and is a good example of a skill that can take a lifetime to master. Therefore, when

thinking of the many demands of writing, it is not surprising that many individuals with dyslexia struggle with writing throughout their life (See Sumner, Connelly and Barnett, 2014a for a full review). University students with dyslexia often self-report that they have longstanding problems with both spelling and written expression as well as reading (Mortimore and Crozier, 2006). In support of this, a number of studies have demonstrated that the writing produced by university students with dyslexia is consistently graded lower in quality, while making a large proportion of spelling errors, in comparison to their typically-developing same age peers (Connelly *et al.*, 2006; Gregg, Coleman, Davis and Chalk, 2007; Sterling *et al.*, 1998; Sumner, Connelly and Barnett, forthcoming). Poor spelling continues to be a key marker of the writing of students with dyslexia even in higher education.

As a specific learning disorder of written language (see DSM-V in APA, 2013), the spelling difficulties that individuals with dyslexia experience could also be predicted to further constrain the writing process. Since spelling remains a persistent problem for adults with dyslexia (Bernstein, 2009) then it is possible that for these individuals more working memory resources are focused on spelling when writing and as a result the parallel processing of transcription and text generation is more difficult (in line with a capacity theory of writing, McCutchen, 2010).

Thus, text may be composed with more cognitive effort and at a slower rate with a reliance on serial, not parallel, processes. For example, it has been shown that university students with dyslexia were slower when writing (calculated as words written per minute), in comparison to their peers (Hatcher *et al.*, 2002) and that they often wrote less text (Connelly *et al.*, 2006; Gregg *et al.*, 2007; Sterling *et al.*, 1998). Further to this, a keystroke logging study found that students with dyslexia paused more often and with longer pauses when typing their compositions than a group of same aged peers (Wengelin, 2007). This difference in pausing contributed to the overall slow composition time of the students with dyslexia.

It may also be the case that some aspects of writing suffer as a consequence of diverted working memory resources. For example, sentence structure, punctuation and aspects of grammar have been reported to be less accurate in the essays of some students with dyslexia (Connelly, *et al.*, 2006; Gregg *et al.*, 2007; Sumner *et al.*, forthcoming). Appropriate vocabulary choices when composing writing (word frequency, diversity of word choices) have been shown to relate to overall quality ratings of writing and are a key component of good academic writing (Olinghouse and Leaird, 2009). Spelling is a prerequisite to expressing ideas in writing and it is conceivable that poor spellers may avoid writing words that they find difficult to spell (Berninger *et al.*, 2008).

Some work has demonstrated a link between poor spelling ability in children and adults with dyslexia and poorer vocabulary choices when writing, evidenced by a lower lexical diversity than when compared to composing the same text verbally (Sumner, Connelly and Barnett, b forthcoming; Wengelin, 2007). However, other mixed findings exist in the literature. Some studies report differences between students with and without dyslexia in mean syllable length, a measure of vocabulary (Coleman, Gregg, Maclean and Bellair, 2009; Gregg *et al.*, 2007). Others report no difference in lexical diversity or word frequency from the written compositions of students with dyslexia and their peers (Connelly *et al.*, 2006; Tops *et al.*, 2013) and not all studies have a measure of oral vocabulary making overall conclusions difficult. Therefore, some, but not all, students with dyslexia may select easier to spell words when writing than their better spelling peers.

However, it is not all negative news. There is an important part of writing where students with dyslexia seem to do as well as their peers. The quality of ideas expressed within a written essay has been reported to be as good as those students without dyslexia. The written essays were completed under time pressure and assessed blind to disability status and revealed no difference in the underlying quality of ideas expressed in the compositions (Connelly, *et al.*, 2006; Sumner *et al.*, a forthcoming). Other studies examining different writing tasks have also reported no differences in important aspects of writing, for example, the conciseness of a written summary of a text (Tops *et al.*, 2013).

Thus, we can surmise that the poorer scoring assessments of the writing of students with dyslexia may be due to a number of inter-related factors leading to writing that may have poorer spelling, poorer structure, poorer punctuation and sometimes simpler vocabulary. These poorer features of writing may obscure the underlying ideas that are being expressed in the writing of students with dyslexia. However, it is important to note that the quality of the underlying ideas is often no less than their peers.

## Academic staff and students with dyslexia

The research reviewed above shows that dyslexia does have an impact on writing in higher education. What can we do about this to ensure that students with dyslexia are given the opportunity to demonstrate their knowledge beyond the constraints of their disability?

Extra time 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 coursework and additional time during exams are reasonable adjustments for universities to make and students with dyslexia do better with extra time in exams (Gibson and Leinster, 2011). This should continue to be a key factor allowing for a level playing field for these students. It is also important to note that even simple copying tasks and note taking all take additional time for students with dyslexia (Sumner, Connelly and Barnett, 2014b).

Academic staff should also be aware that the 'surface' aspects of writing such as spelling can serve to obscure the assessment of learning outcomes when scoring a writing assessment. For example, research published in the USA showed that examples of writing with spelling errors were rated as having poorer quality of ideas than the exact same writing presented for assessment with no spelling errors (Graham, Harris, and Hebert, 2011).

As researchers we make sure we correct spelling errors before rating essays for content. This is not practical when scoring actual assessments and so informing colleagues of our own potential for marking biases is an important part of our professional education. Therefore, the importance of ignoring spelling and punctuation errors when marking the essays of students with dyslexia is supported by research and the importance of designing assessments to measure the underlying key learning outcomes should be to the fore.

Most academics due to time and resource constraints will not work with students with dyslexia to actively improve their writing skills but will often refer them to specialist services for this interventions work. There are many practitioner led writing interventions to improve the writing of

students with dyslexia. However, many of these interventions while potentially useful have not been adequately assessed themselves (Brookes, 2013).

In order to make further detailed progress intervention studies need to be carried out on the writing skills of students with dyslexia. Longitudinal studies to chart progress and instruction over time are required and finally, we need to consider the impact of using and intervening with the new and emerging digital technologies. 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.

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