

## Dyspraxia in clinical education: a review

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# Dyspraxia in clinical education: a review

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## **SUMMARY**

### **Background**

The stereotype of the student with dyspraxia as 'clumsy and disorganised' may cause clinical teachers to be concerned about the student's performance in a clinical environment. However, if it is understood that dyspraxic students possess many strengths, as well as weaknesses, it may be that some stereotypical myths may be dispelled and more effective support offered to them. This review considers the research surrounding the experiences of students and health professionals with dyspraxia within higher education (HE), alongside the personal experiences of EW, in order to inform the development of clinical teachers in respect of their support for learners with dyspraxia.

### **Findings**

A literature review produced five relevant articles. Four studies focussed on HE students and one on doctors. A significant theme was that dyspraxia impaired learning new skills. Doctors with dyspraxia tended not to disclose their condition, due to fear of stigmatisation and negative effects on their career. Positive attributes of dyspraxia included resilience and determination to succeed. Two main adaptations to dyspraxia were highlighted; a '*difference*' view focussing on individuals' strengths, and a '*medical/deficit*' view, focussing on their weaknesses and others' negative perceptions.

### **Discussions and Recommendations**

It is important for clinical educators to understand and support students with dyspraxia – as clinical environments can be particularly difficult for them. Dyspraxia has both positive and negative effects. Here we discuss the findings of previous studies in the context of EW's personal experiences. We also present a series of practical recommendations, whilst recognising that more research is required to document their impact in clinical education.

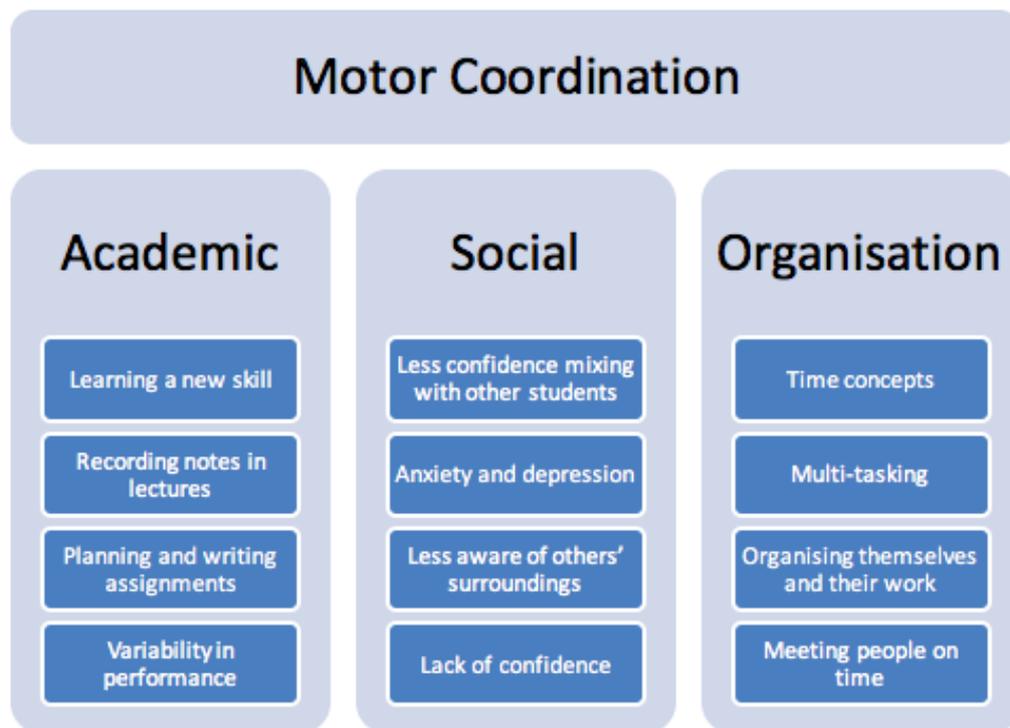
## **Background**

Dyspraxia, otherwise known as developmental coordination disorder (DCD), is one of a family of specific learning difficulties (SpLDs) that include dyslexia, dyscalculia and dysgraphia.<sup>[1,2]</sup> The symptoms associated with dyspraxia vary with age and development and may include academic, social and emotional difficulties.<sup>[3,4]</sup> Dyspraxia has been defined as “the inability to plan, organise and co-ordinate movement, it results in fine and gross motor problems and/or speech difficulties”<sup>[5]</sup>

Available data suggests a prevalence of 6-10% in the UK and US.<sup>[5,6]</sup> It is more common in men with a ratio of 4:1.<sup>[5]</sup> The number of students with SpLDs in higher education (HE) is increasing, and this is also likely to be the case in clinical education.<sup>[7]</sup> Understanding SpLDs and how they may affect students is an important consideration for those involved in medical education and supervision. For example, the UK General Medical Council (GMC) places an emphasis on supporting learners within the clinical environment, and ensuring that those with SpLDs have access to information concerning reasonable adjustments.<sup>[8]</sup> This supports the need for further understanding of dyspraxia, amongst other SpLDs.

Whilst commonly diagnosed in childhood, many remain undiagnosed into adulthood. It is important to secure a diagnosis for those at university, to enable them to access formal support.<sup>[6,7]</sup> Students, who might have negotiated their previous education with difficulty, may find that the pressures of clinical studies highlight their difficulties and necessitate their help seeking. This may prompt diagnosis in otherwise undiagnosed learners.<sup>[2]</sup>

Areas where students with dyspraxia may struggle (Figure 1) include learning new sequences, such as those required for clinical examinations;<sup>[3]</sup> tasks involving fine-motor skills such as dissections - surgical skills and blood-taking may also pose problems;<sup>[2,3]</sup> and self-organisation - arriving at meetings on time, prioritising work and judging how long tasks will take to complete.<sup>[3]</sup> It is important that educators are aware of the potential difficulties that students with dyspraxia face, so they may recognise and support them appropriately.



**Figure 1: Potential difficulties for students with dyspraxia<sup>[2,3]</sup>**

*Dyslexia* is probably a better understood condition within clinical education. A review by Locke et al. highlighted a number of support strategies that could be adopted to aid doctors with dyslexia.<sup>[9]</sup> Recent works by, the authors, Shaw et al, and Shaw and Anderson have reported the impacts of dyslexia and provided practical advice on teaching medical students with dyslexia.<sup>[10,11]</sup> Dyslexia is similarly well documented in the world of nursing education.<sup>[12,13]</sup> Although many authors conflate dyslexia and dyspraxia in their research, there is little research considering the unique experiences of those with dyspraxia in healthcare education.<sup>[6,9]</sup>

Anecdotal evidence suggests that clinical educators may have a limited understanding of dyslexia, and even less of dyspraxia. This review aims to inform clinical educators in the design of faculty development workshops on this topic. It is evidence-based and informed by personal experiences. EW is a UK medical student with dyspraxia, so has an insider's understanding of experiencing clinical studies with the condition. SS is a junior doctor in the UK – he has dyslexia. Our team have been researching dyslexia in UK medical students and doctors for the past three years. These combined experiences and expertise form the basis for this review.

We outline possible implications for dyspraxia within clinical education. Specifically, we consider the perceived strengths and weaknesses of healthcare students with dyspraxia, as well as their future career considerations. The review is aimed at clinical educators globally to: raise awareness of dyspraxia within clinical education; provide practical tips for supporting students with dyspraxia; promote an open culture; and generate further thought and discussion on this topic.

An initial, extensive literature search showed that little was published on dyspraxia within clinical education (Appendix A).<sup>[14]</sup>

### Summary of Findings

A literature review produced five relevant articles. Four studies focussed on HE students and one on doctors. Key themes included: difficulties due to dyspraxia, adapting and coping mechanisms, feelings towards disclosure as well as support received. Table 1 shows a summary of the current literature.<sup>[1,2,4,6,7]</sup>

**Table 1: Summary of Included Articles**

Article	Main Findings
<b>Griffen E et al. 2009.</b> <sup>[1]</sup>	Students with dyspraxia generally held either the ‘difference view’ – i.e. just different strengths and weaknesses to everyone else or ‘medical/deficit view’ – disadvantaged compared to everyone else. Students with dyspraxia had often had negative educational experiences such as negative treatment or epithets from academic staff.
<b>Musto J. 2013.</b> <sup>[2]</sup>	The doctors were concerned about negative stigmatisation if they disclosed their dyspraxia to their colleagues. They did not feel that their dyspraxia affected their competence in their chosen career fields, and felt they were able to often overcompensate for their perceived difficulties. However, they felt that someone with dyspraxia might struggle in general surgery.
<b>Missiuna C et al. 2008.</b> <sup>[4]</sup>	Although Students with dyspraxia’s poor motor skills persisted as they grew up, they felt better able to influence their environment by avoiding onerous tasks, such as physical activity, and finding activities where they were successful at through adapting roles and accepting their capabilities. This meant they became more confident. There were some activities, such as driving, which remained an ongoing difficulty.
<b>Kirby A et al. 2008.</b> <sup>[6]</sup>	Students with dyspraxia had more trouble with coordination and organisation than those with only dyslexia. They were more likely to be living at home with their parents; this was linked to the need for increased support due to poor organization and time management. Students with dyspraxia were less likely to be in receipt of support than students with dyslexia. . When support was given it was similar regardless of specific difficulties.
<b>Kirby A et al. 2008.</b> <sup>[7]</sup>	This study found that students with dyspraxia perceived themselves to have a number of strengths such as communication skills and determination. Coordination and motor difficulties persisted as they entered HE, meaning that students might choose to avoid courses, requiring strong motor skills.

Interestingly the themes reported were similar for both HE students and doctors, although the examples given by each group reflected their contexts (Table 2).

**Table 2: Emerging themes from the previous research on dyspraxia in both Higher Education and doctors along with the extrapolations to Clinical Education and Practice**

Theme	Example	Extrapolations to Clinical Education and practice
<b>Difficulties</b>		
<b>Clumsiness/ limited spatial awareness</b>	<i>"Very clumsy and difficult in movement"</i> <sup>7</sup>	Wards are crowded: therefore those affected may walk into objects more regularly. Practical clinical and surgical skills may be harder to learn.
<b>Learning new information</b>	<i>"[I] struggle to understand things at first."</i> <sup>6</sup>	Clinical students might have extra difficulties learning clinical examinations and skills, especially within the fast-paced ward environment.
<b>Handwriting</b>	<i>"Keeping handwriting tidy at the same time as writing quickly"</i> <sup>6</sup>	Notes are dictated quickly and students may struggle to write legibly or fast enough.
<b>Disclosure</b>		
<b>Others opinions of them</b>	<i>"It was always put down to the fact that I was a bit thick and stupid really..."</i> <sup>2</sup>	Students may take unkind comments to heart and believe they are 'stupid' or 'clumsy'. Stigmatising excludes and isolates people and can make them feel vulnerable.
<b>Lack of external support</b>	<i>"I would worry that it would damage my career prospects and I would be actively discriminated against"</i> <sup>2</sup>	They may be less likely to seek support within the hospital for fear that disclosure will have a negative effect on their career.
<b>Resilience</b>		
<b>Determination</b>	<i>"... if your bad at it, you just have to try a little bit more than someone who gets it right away"</i> <sup>4</sup>	They may be more determined to succeed and more persistent in trying to complete tasks. They may develop their own strategies to get work done.
<b>Positive coping strategies / Supports</b>	<i>"Yes, all the other stuff [support from university] was really really really useful"</i> <sup>2</sup>	They may benefit from support from the university, such as extra-time in exams and having a mentor/coach for difficult skills.
<b>Career</b>		
	<i>"I never actually thought I could do a general surgical specialty"</i> <sup>2</sup>	They may feel unable to pursue a career in general or highly complex surgery.

## Discussion and Recommendations

### Difficulties

People with dyspraxia have described difficulties with clumsiness, including: difficulty using everyday objects, dropping things, handwriting and bumping into things.<sup>[1,2,4,6,7]</sup> A participant in Kirby et al's study reported that remembering new information and new learning skills could be difficult:

*“[1] Struggle to understand things at first...”<sup>[6]</sup>*

Musto confirmed that similar problems were experienced by doctors when learning clinical examinations and surgical skills.<sup>[2]</sup> EW has personally experienced these difficulties in clinical settings – walking into objects, and struggling to learn surgical skills.

Handwriting was identified as a particular problem for students in HE.<sup>[6,7]</sup> Where medical/nursing notes are still handwritten, for example within secondary care in the UK, these may not only be read by staff, but could be required for evidence in a court of law.<sup>[15]</sup>

A simple practical adjustment is to avoid the feeling of being rushed, which could lessen the likelihood of students'/trainees' clumsy tendencies surfacing. In addition, allowing students to use their coping strategies, even if “unconventional”, may aid them in learning new skills. For example, having space to practise a skill immediately after being taught is important for EW to ensure she fully grasps the concept.

### Disclosure

Musto found that doctors avoided disclosure, especially to senior colleagues, due to concerns that it would have a negative impact on their career.<sup>[2]</sup> Another reason was the regular transition of staff, and the potential embarrassment of broaching the subject with new colleagues who might invoke stereotypes about their abilities.<sup>[4]</sup> In addition some felt disclosure could be perceived as ‘help seeking behaviour’ – a weakness which could be frowned upon whilst on placement or at work.<sup>[4]</sup> EW chose not to disclose whilst on clinical placements, as she felt she might have been discriminated against because of her dyspraxia. It may be that if clinical teachers routinely ask all students/trainees if they have an SpLD in confidence, learners may be more confident in discussing it. This certainly made a large difference for EW.

### Resilience

Students with dyspraxia may feel that they are more resilient – with regards to both educational perseverance as well as issues relating to wellbeing – than their peers, because they continually need to compensate for their difficulties.<sup>[1,2,6,7]</sup> All studies found that these

were key strengths, which participants attributed to their dyspraxia. This helped them to persevere with challenging and lengthy tasks.<sup>[1]</sup> EW is proud of the hardworking nature that she has developed to overcome her difficulties. By recognising and praising such efforts, clinical teachers can help to foster this resilience – and promote increased self-esteem.

### Career Pathways

The potential impact of dyspraxia on career pathway decisions is an area of particular interest for EW. She has often considered whether doctors with dyspraxia would wish to avoid surgical pathways, because of their motor difficulties.

Studies found that students and doctors tended to align their career aspirations with their perceived strengths.<sup>[1,4]</sup> Musto found that one participant was able to pursue a career in obstetrics and gynaecology, however the participant did not initially think they would be able to undertake a complex surgical career.<sup>[2]</sup> This resonates with EW's own feelings on the topic.

It seems particularly important to support students with dyspraxia when they are making plans for their future career, especially if they do express a wish to pursue a surgical speciality. Simple measures, such as offering further experience or support in surgery, may allow them to begin to compensate for their difficulties early on.

### Adaptation and Coping

Griffen and Pollak reported two differing perspectives on dyspraxia, with participants reporting 'difference' or 'medical/deficit' adaptations.<sup>[1]</sup> The 'difference' view is associated with resilience and individuals focusing on their strengths. The 'medical/deficit' view focuses on difficulties encountered due to their dyspraxia, and often leads to increased external support but negative connotations.<sup>[1,4]</sup> Some people may embrace both aspects to different extents, causing internal conflict over how they perceive their ability.<sup>[4]</sup> However, Missiuna et al. reported that most participants had developed some positive coping strategies by adulthood.<sup>[4]</sup>

By adopting and promoting a 'difference view' clinical teachers may be able to support students/trainees in developing and maintaining a positive perception of their ability. This may help them both academically and emotionally.

### Support

Many areas have been identified where students/trainees with dyspraxia may benefit from extra support. Both doctors and HE students struggled with handwriting and learning new skills.<sup>[2,6,7]</sup> Fast-paced clinical environments may magnify difficulties with acquiring new skills.<sup>[2]</sup> Simple measures, such as slowing down if a learner seems to be struggling to keep up, could make a significant difference to a student with dyspraxia - whether they have disclosed or not. Similarly to previous recommendations for teaching medical students with *dyslexia*, we suggest treating all students as though they may have dyspraxia.<sup>[11]</sup> In doing so, educators may unknowingly provide students/trainees, including those with dyspraxia, with a better learning experience, without the need for disclosure. If this became the norm, it might promote a more open culture in which students feel more able to disclose any problems.

### **Further Thoughts**

The fear of disclosure highlighted here is not specific to dyspraxia. It has also been documented in students with dyslexia.<sup>[9,16]</sup> This may be a response to a 'medical/deficit' view from the wider community, and consequently individuals may adopt a concealment strategy because they are concerned about negative reactions from colleagues and teachers. Preconceptions and stereotypes may be due to a general misunderstanding of dyspraxia, which is complicated by the varied nature of the problem. Clinical teachers need to be comfortable and confident working with students/trainees with dyspraxia, to avoid conferring this negative stigma.

Those with a 'medical/deficit' view may be more active in seeking help in the clinical environment and, therefore, educators/supervisors might be expected to provide reasonable adjustments. When talking to students who have disclosed dyspraxia, it is important to make it a positive experience. Educators should discuss their individual needs

and how they might best support them. This is particularly important in SpLDs due to the spectrum of problems that individuals face, and the advanced coping mechanisms that previous research has shown many of these students have developed through their studies.<sup>[1]</sup>

Once a student has disclosed their dyspraxia, it is also important not to make presumptions about their ability, other than to offer appropriate support. Dyspraxia does not affect intelligence and these individuals may have strengths in other areas, such as communication skills and resilience.<sup>[6,7]</sup> However, students sometimes feel that they are treated differently, in a global sense, by their peers once they have disclosed.<sup>[1]</sup>

Lack of disclosure can make it difficult to offer effective support to students. By increasing awareness and reducing the stigma surrounding SpLDs, students may feel more confident in disclosing to their condition and developing positive coping mechanisms. In turn this may facilitate more appropriate support to be offered to enable them to attain their full potential.<sup>[1]</sup>

#### Key learning points for discussion and reflection

- Dyspraxia is a common SpLD that affects motor coordination, organisational skills, short-term memory, and time keeping.
- Discussing dyspraxia with students/trainees may give them more confidence to disclose their difficulties and coping strategies.
- Slowing down slightly may reduce the likelihood of clumsy tendencies surfacing, and increase the likelihood of them remembering information.
- By adopting a 'difference' view we may promote a more positive attitude towards dyspraxia, encouraging students/trainees to do the same.

## Conclusions

Although *dyslexia* is becoming better understood within clinical education, *dyspraxia* remains a largely unknown entity. We have highlighted both positive and negative aspects of dyspraxia, alongside potential implications for clinical practice and support. It is hoped that the issues presented here might spark a wider discussion during faculty development sessions surrounding dyspraxia within clinical practice. Ideally this should promote further reflection considering appropriate teaching adaptations and ways to improve support for these students.

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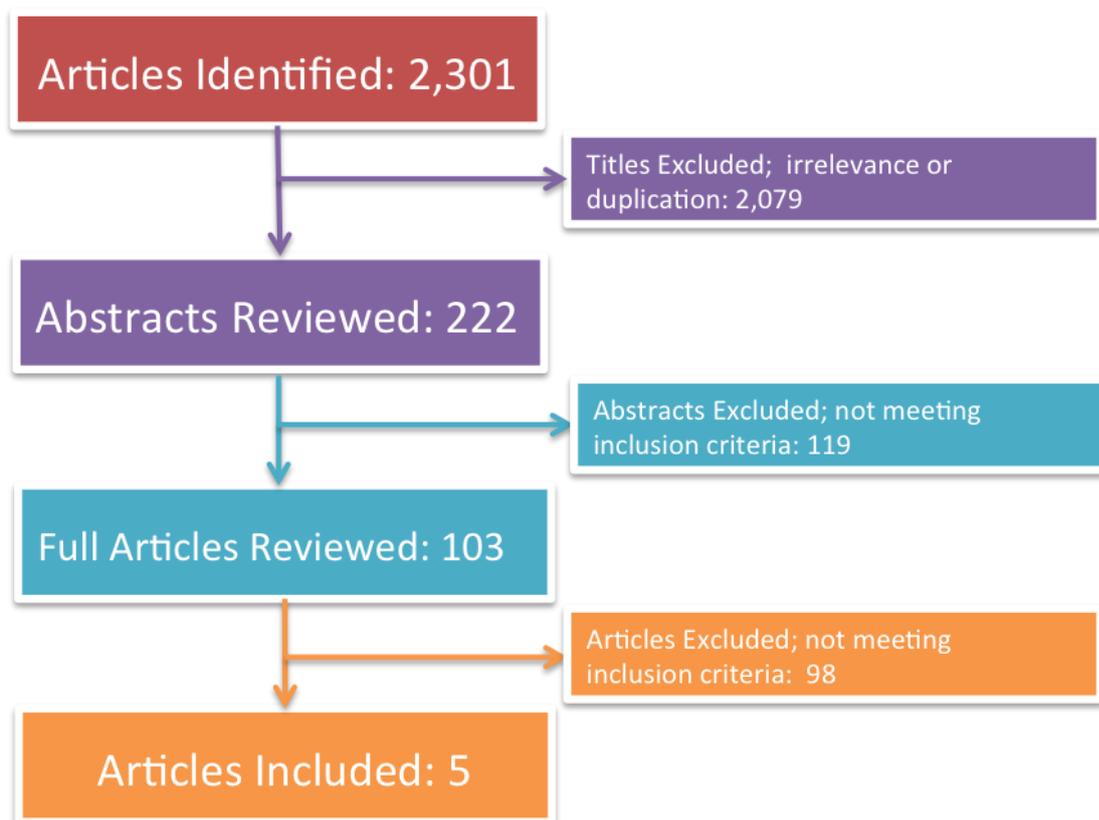
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Appendix A: PRISMA Diagram overview of search strategy.<sup>[15]</sup> The following databases were searched with no restrictions; Medline, CINAHL, ERIC, PsychINFO, The Cochrane Library and Google Scholar. The terms “dyspraxia” and “medical student” (and appropriate synonyms, including “DCD”, student”, and “healthcare professionals”, in various combinations) were used. All original papers exploring the experiences of HE students or healthcare students/professionals with dyspraxia were included.

