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## Safe and Effective Prescribing with Dyslexia: A Collaborative Autoethnography

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## Safe and Effective Prescribing with Dyslexia: A Collaborative Autoethnography

### Abstract

Prescribing medicines is the most common patient-level intervention made by doctors in the United Kingdom. However, this is associated with a potential for harm. Whilst dyslexia can bring many strengths, it also impacts reading and writing abilities and therefore has the potential to contribute to errors in the prescribing process if dyslexic doctors are unsupported. This paper explores the experiences of Seb – regarding prescribing and prescribing education – as a dyslexic medical student and doctor. We hope that this might spark more research on this overlooked issue. This is a collaborative, analytic, autoethnographic study within an interpretivist paradigm. Firstly, Seb wrote an autobiographical account; he was then interviewed by Mike. The interview audio-recording was transcribed verbatim and both data sources were thematically analysed. Emerging themes included: learning to prescribe, coping, struggling and support, errors, near misses and handwritten charts, and moving forward. Specific issues included a deficiency in active learning/assessment at an undergraduate level, a lack of support, and potential safety concerns regarding handwritten charts. Electronic prescribing was felt to be a positive step forwards for both safety and accessibility. Our findings suggest that further consideration of specific supports is needed to assist dyslexic trainee doctors in the prescribing of medicines, so as to prevent the clinical environment acting to disadvantage them. They also suggest that we may need to review the ways in which we teach and assess this vital skill at an undergraduate level.

### Keywords

dyslexia, doctor, medical student, prescribing, medical education, collaborative autoethnography

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## Safe and Effective Prescribing with Dyslexia: A Collaborative Autoethnography

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Prescribing medicines is the most common patient-level intervention made by doctors in the United Kingdom. However, this is associated with a potential for harm. Whilst dyslexia can bring many strengths, it also impacts reading and writing abilities and therefore has the potential to contribute to errors in the prescribing process if dyslexic doctors are unsupported. This paper explores the experiences of Seb – regarding prescribing and prescribing education – as a dyslexic medical student and doctor. We hope that this might spark more research on this overlooked issue. This is a collaborative, analytic, autoethnographic study within an interpretivist paradigm. Firstly, Seb wrote an autobiographical account; he was then interviewed by Mike. The interview audio-recording was transcribed verbatim and both data sources were thematically analysed. Emerging themes included: learning to prescribe, coping, struggling and support, errors, near misses and handwritten charts, and moving forward. Specific issues included a deficiency in active learning/assessment at an undergraduate level, a lack of support, and potential safety concerns regarding handwritten charts. Electronic prescribing was felt to be a positive step forwards for both safety and accessibility. Our findings suggest that further consideration of specific supports is needed to assist dyslexic trainee doctors in the prescribing of medicines, so as to prevent the clinical environment acting to disadvantage them. They also suggest that we may need to review the ways in which we teach and assess this vital skill at an undergraduate level.

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### Introduction

*Although newly qualified doctors are usually protected from the requirement to undertake high-risk practical procedures, they are often expected to prescribe powerful drugs from their first day of clinical work. (Maxwell & Walley, 2003, p. 496)*

The prescribing of medicines is the most common patient-facing intervention made by doctors in the United Kingdom (UK) (NHS Digital, n.d.). However, this is associated with a potential for harm, and may become increasingly challenging as our population ages and medical care becomes more complex (Maxwell & Walley, 2003). Green et al. (2020) explain that drug errors cause 712 deaths a year in England and contribute towards a further 1708. In 2017 the World Health Organisation introduced the aim, alongside corresponding support, to “reduce the level of severe, avoidable harm related to medications by 50% over 5 years, globally” (Medication Without Harm section). Training in safe and effective prescribing is

therefore an important aspect of medical education in the UK (Maxwell & Walley, 2003). Despite this, medical students and junior doctors have reported feeling ill-prepared to prescribe medicines upon qualification as doctors (Heaton et al., 2008). Heaton et al. (2008) found that only 38% of medical students and junior (UK Foundation Year One) doctors felt confident in writing prescriptions, with only 24% confident in calculating doses. Such concerns may be reflected in trends of error rates in prescribing, most of which are associated with junior doctors (Dornan et al., 2009), even when accounting for their higher overall prescribing rate (Green et al., 2020). Furthermore, Lane and Roberts found that junior doctors expected and accepted errors as a part of their roles (Lane & Roberts, 2020). They also highlighted that their participants viewed the wider multidisciplinary team members as a safety net to pick up on their anticipated mistakes. In turn, this led to differing views on what their participants actually considered to be errors (Lane & Roberts, 2020).

Whilst the above is known of junior doctors in general, no research has explored the impacts of Specific Learning Difficulties (SpLDs) such as dyslexia on prescribing, nor has any research explored the prescribing experiences, relevant strengths, associated coping mechanisms, potential reasonable adjustments, or error trends of doctors with SpLDs other than a survey carried out by the authors (which is in preparation for publication). This dearth of knowledge was confirmed using systematic searches of online databases, supplemented by Google searches. These areas are important considerations due to the inherent differences associated with having a SpLD, which have the potential to make prescribing more challenging if undertaken in unsupported and unadjusted settings. Some examples of SpLDs are dyslexia, dyspraxia, dyscalculia, and dysgraphia (Walker et al., 2018). Within this study, we focus specifically on the prescribing experiences of a dyslexic doctor.

Dyslexia is characterised by differences in reading, writing, spelling, and phonological processing (Habib & Giraud, 2013). Whilst dyslexia brings many associated strengths, the aforementioned differences can impact activities of daily living within current socio-cultural expectations (Habib & Giraud, 2013). As such, these differences may introduce additional challenges for dyslexic doctors when prescribing medicines without adequate supports. In a recent survey conducted in the UK, Anderson and Shaw found that 61% of dyslexic junior doctors reported poor spelling, 54% reported struggling to articulate thoughts onto paper and 28% reported difficulty with calculations (Anderson & Shaw, 2020). Each of these challenges has the potential to introduce errors into the prescribing process if taking place in an unsupportive environment.

## **Views on Disability**

We take the view that disability is a socially constructed phenomenon, whereby diversity and difference present as disablement due to an inability to conform to socially and culturally imposed norms in an expected manner. The social model of disability argues that “a disability stems from issues with the attitudes of society, causing environmental, organisational and social barriers, which act to ‘disable’ an individual” (Walker & Shaw, 2018, p. 98). However, our stance here reaches beyond the social model, to align itself more closely with the situation-specific nature of the relational model, which states that disability is created by a “‘poor fit’ between an individual and their capabilities and their environment or society. In this view a person is considered to be disabled if an impairment... results in them experiencing barriers in their life” (Musto, 2013, p. 23). Broadly speaking, we wish to explore Seb’s experiences of prescribing medicines. However, more specifically, we aim to explore any systemic barriers or issues in relation to the safe and effective prescribing of medicines as a dyslexic doctor – in keeping with the relational model of disability.

This shifts the emphasis away from ‘the individual’ and scrutinises relevant social and environmental factors. We also aim to explore the educational culture surrounding the prescribing of medicines at both the undergraduate and postgraduate levels. Autoethnography is well placed to explore issues such as these due to its inherent focus on highlighting sociocultural and systemic issues. Furthermore, it allows us to make use of the wealth of insider experiences/insights of our research team in an interpretive manner.

## **Seb**

Hello. My name is Seb and I am currently a doctor working in the UK. I am also a Lecturer in Medical Education at Brighton and Sussex Medical School (BSMS), teaching in research methods. My main research interests focus on diversity in medical education, with a primary focus on neurodivergence. My PhD centred around the experiences of dyslexic and dyspraxic medical students and doctors. John (JA) and I have published a series of research papers using various approaches to explore the impacts of SpLDs on medical education and practice, and vice versa. These have included previous autoethnographies considering the experiences of dyslexic and dyspraxic medical students (Shaw et al., 2016; Walker et al., 2020). We have also created and published teaching resources on the conduct and publication of autoethnographic research (Shaw et al., 2018).

In a previous paper I have considered my own dyslexic strengths and challenges in depth (Shaw et al., 2016). In short, I am a creative and hard-working holistic doctor. My struggles with the written form relate more to speed than accuracy. I am a notably slow reader and writer, but do not struggle overtly with the stereotypical spelling difficulties so often associated with public views on dyslexia. I can also struggle with accurate reading in stressful settings. For example, I can sometimes misread dates, words, or phrases. This becomes particularly noticeable when I am in settings/situations that push me out of my comfort zone.

Over the years, I have struggled with prescribing at speed, due to my own slowness with the written form. This has resulted in senior doctors rolling their eyes at me or even telling other staff that I am slow in a derogatory manner. Experiences such as these drove me to propose this study to John and Mike. As a dyslexic doctor my views are grounded in the neurodiversity paradigm, and I approach this study with a vested interest in improving support for dyslexic junior doctors in relation to prescribing, whilst promoting our many strengths. I also feel passionately about improving the educational journey for dyslexic medical students and doctors.

## **Study Rationale and Aims**

As part of Seb’s clinical role, he is required to prescribe medicines on a daily basis. Given his background as an established dyslexia researcher and also a prescriber, he felt well placed to explore the impacts of dyslexia on prescribing using his own experiences. Given Mike’s expertise in prescribing education and John’s expertise in qualitative approaches, they were also well suited to support Seb in this venture. In a previous debate article we have explored some thoughts regarding the possible impacts of dyslexia on safe and effective prescribing (Shaw et al., 2019). We considered the potential benefits of electronic prescribing systems, double checking, and dyslexia awareness training (Shaw et al., 2019). In this study, we aim to take this a step further by formally exploring Seb’s experiences of prescribing medicines as a dyslexic doctor, using a collaborative, analytic, autoethnographic approach. Farrell et al. (2015) explain that “there are few examples of autoethnographic research in medical education, and many areas would benefit from this methodology” (p. 974). Such

studies can act to highlight issues within educational systems from an insider perspective, helping to provide insight and to open the potential for positive change.

## Methods

### Autoethnography

This study took the form of a collaborative, analytic autoethnography within an interpretivist paradigm. We sought to explore Seb's experiences of prescribing medicines as a dyslexic doctor, whilst seeking deeper sociocultural meaning. An autoethnography is the product of three core components – the autobiographical experiences of its author(s) (“*auto-*”), an ethnographic analysis of these experiences (“*-ethno-*”), and academic writing (“*-graphy*”) (Denshire, 2014; Grant, 2019). In essence, autoethnographic studies represent insider research in its truest form – embracing both its risks and benefits – where the author(s) use their own insider experiences to explore the culture of the group(s) to which they belong (Shaw et al., 2018). Over the years, John and Seb have been refining their own approach to autoethnography based upon their own beliefs and skillsets, for example, through the inclusion of in-depth interviews. A recent example of their approach can be found in their paper, “*Dyspraxia in Medical Education: A Collaborative Autoethnography*” (Walker et al., 2020).

### Analytic Autoethnography

Broadly speaking, there are two schools of autoethnography – evocative and analytic. Within evocative autoethnography, the end product is a rich narrative, which sheds light on the world of the individual in question (Anderson, 2006). These seek to elicit empathic, emotional responses from readers – focusing on an epistemology of emotion (Anderson, 2006). Analytic autoethnographies, however, step beyond the pure narrative to include a formal, sociologically-focussed analysis (Anderson, 2006). As such, analytic autoethnographies are more in keeping with symbolic interactionism and adopt an approach that more closely aligns with mainstream social science research standards (Anderson, 2006). Rather than presenting uninterrupted stories, analytic autoethnographies strive to scrutinise relational processes and potential underlying social structures behind the stories. The incorporation of formal data collection and analysis can therefore result in the presentation of themes, as is the case within this study.

Our own previous work with autoethnography has incorporated a more explicit analysis and presentation of data with supporting quotes (Shaw et al., 2016; Walker et al., 2020). Here we continue to build upon the literature in this area through the consideration and presentation of a recognised, thorough, and transparent approach to data collection, data analysis, and results presentation. This is in keeping with our own beliefs on the nature of reality and knowledge.

### Collaboration and Autoethnography

Collaboration in research is a well-established concept, particularly in the context of insider research (Costley et al., 2010). Mixed insider-outsider research teams carry several benefits, such as overcoming the insider issue of being too close to the experience to see the obvious (Costley et al., 2010). A collaborative autoethnography is one that has two or more authors working to interpret autoethnographic data (Lapadat, 2017). The specific roles of these authors may differ depending on the circumstances of the study. For example, here, Mike and John each played distinct roles in the exploration and documentation of Seb's story. John and Seb were able to draw on their previous autoethnographic experience in the design of the study approach and Mike was able to bring a fresh perspective from his experience as an established

prescribing educator. The combination of these three different perspectives and backgrounds allowed for wider interpretation of Seb's story. Mike's role as interviewer also offered a second source of data to scrutinise. This insider-outsider experience is in keeping with Anderson's ethos for analytic autoethnography, whereby autoethnographers should be careful to avoid self-absorption in their own stories (Anderson, 2006). Mike and John's involvement helped to ground Seb's experiences through ongoing refinement and discussion within the team.

### **Data Collection**

Our approach to data collection closely mimicked the approaches of our previous autoethnographic studies (Shaw et al., 2016; Walker et al., 2020). Seb began by writing an autobiographical account of his own experiences in relation to prescribing. He reflected on specific experiences and also on what the potential issues might be from his insider perspective. This was then followed by a loosely structured interview with Mike over Microsoft Teams, which was audio-recorded. An interview topic guide was developed in an iterative manner by all three authors, embracing their different perspectives and areas of expertise, whilst focussing on our research aims. The following interview topic guide was used:

- His dyslexia and associated strengths/weaknesses.
- His thoughts and feelings regarding prescribing.
- His general prescribing experiences, strengths and weaknesses.
- Any specific examples/experiences with relation to prescribing.

### **Data Analysis**

Seb transcribed the interview audio-recording verbatim. This transcript, along with his autobiographical account, were then thematically analysed using the three-stage approach Chang et al. (2013) outlined for use in collaborative autoethnographies. First Seb reviewed the data to facilitate immersion. Transcribing the interview recording himself helped with this process. He then read and re-read both his autobiographical account and the interview transcript. During this time, he made notes on each regarding points that stood out to him. He then segmented the data by coding it into descriptive themes, which were grouped according to basic, descriptive categories. This was completed using pens and highlighters. He then re-analysed the descriptive categories to identify any relationships between them and to generate our final, analytical themes. These were then compared back to the original data, to ensure that the analysis accurately represented the data.

The analysis was verified by Mike and John in an iterative manner, in which any differences in interpretation were resolved in the discussion. Throughout our results section, we also present various vignettes, as is typical for autoethnographic research (Pitard, 2016) – allowing readers to develop a deep understanding of the sociocultural and environmental settings in which Seb's experiences are grounded. Our results are presented in the third person, allowing Seb to shield himself emotionally from his experiences upon publication of the paper.

### **Ethical Considerations**

Whilst insider research of this nature provides interpretive benefits, autoethnographic research carries emotional and reputational risks for those undertaking it. Researchers must also be careful to maintain the confidentiality of others. This study adopted a dual approach to its ethical considerations. Firstly, this study was approved by the BSMS Research Governance and Ethics Committee. Secondly, we adopted a relational ethical approach (Shaw, 2019).

“Relational ethics requires researchers to act from our hearts and minds, acknowledge our interpersonal bonds to others, and take responsibility for actions and their consequences” (Ellis, 2007, p. 3). Practically speaking, this was implemented in several ways. Firstly, care was taken to ensure that the autobiographical account and interview transcript contained no person-identifiable information beyond that relating to Seb himself. Secondly, certain experiences reported have undergone minor alterations (as is standard practice in such papers) in order to further ensure that no person-identifiable narratives are presented. Such practice aims to protect the emotional wellbeing of any who may fear being discussed or identified within autoethnographic work.

## Results

### Vignette 1: Prescribing Portfolio

It is a warm summer day. Seb, a third-year medical student, sat in a café with a fellow dyslexic medical student. They are drinking coffee and chatting about various aspects of their medical coursework.

Friend: *“Have you had a chance to do much of your prescribing portfolio yet?”*

Seb: *“Not really. I just can’t face sitting there and copying out the BNF” (British National Formulary).*

Friend: *“I totally agree! The list of meds seems endless, and I’ll never remember all the side effects or interactions from copying them out of a book. I dread each time I have to sit down and do some. It takes me so long to read it, and then even longer to write it back out.”*

Seb: *“I know what you mean! I wish we could learn about these in a practical or clinically relevant way. Something that wouldn’t be so abstract, or so hard with our dyslexia.”*

They both sigh. They are dreading the tedious hours ahead of them undertaking this task.

### Theme 1: Learning to Prescribe

Unlike secondary and further education, the medical school environment relied more on self-directed learning. This was particularly evident in the case of learning prescribing skills. This step away from ‘spoon fed’ information helped to develop the skills needed for lifelong learning. However, in the case of prescribing education, this expectation led to an oversight of the practical nature of this skill – instead, promoting the passive learning of facts. Such an approach to education may expose and target the weaknesses associated with dyslexia without playing to its strengths. This passive educational culture extended into the assessment of prescribing skills at an undergraduate level.

*“I remember sitting with my best friend and us freaking out about the fact that one of the questions in that exam was like ‘write 5 drugs and their interactions and their side effects.’”*

Despite a generally supportive culture at medical school, specific support with learning prescribing skills was lacking.



*“I don’t think there was anything specific in place in terms of prescribing skills... I’m not sure that it would have been something easy to come up with, unless you could offer a solution yourself that they could then look into.”*

In the world of postgraduate training, a “sink or swim” culture in relation to prescribing practice was evident. This has some dangers and there was an expectation that newly qualified doctors would effectively undertake this skill at the moment of qualification. Seb, however, felt ill-prepared to do so. This was further compounded by his awareness of the potential risks that his dyslexia introduced. He knew that prescribing was an unavoidable aspect of postgraduate medical training in the UK, but also that he could cause great harm if he made a mistake. Despite this, practical prescribing was not a prominent subject area of focus in comparison to other areas such as history taking and clinical examination skills.

*“We learnt on the job as F1s (foundation year one doctors), which was quite daunting... Because I’m very aware of how wrong it can go; I find it quite an anxious thing to do.”*

## **Vignette 2: Prescribing Safety Assessment (PSA)**

Seb (as a final year medical student) is busy revising for finals on a cold spring afternoon when his phone pings – a new email. He has passed the prescribing safety assessment. He feels a wave of relief. This exam proved particularly scary, due to the heavy reliance on reading in a time pressured setting – leading to high levels of stress and anxiety during and after the assessment. Before long, his phone pings again. This time with a text from a fellow dyslexic medical student.

*“Hey Seb, did your PSA results come through? x”*

*“Hey [friend], indeed they did. I passed! By the skin of my teeth... But it is done forever! How about you? x”*

Several hours pass without a reply. Seb gets on with his day. Around dinner time his phone pings again.

*“I failed. I didn’t manage to finish in the time. I don’t know what to do. I don’t know how much more I can put myself through! x”*

Seb reads the text. His heart sinks. His relief at passing the exam is immediately overtaken by a wave of empathic sorrow. What can he say to make his friend feel better? He feels a dreaded sense of helplessness as he begins to carefully consider his response.

## **Theme 2: Coping, Struggling and Support**

Multidisciplinary teams promoted a positive work environment. They allowed for collaboration between different members of staff which helped promote safe and effective prescribing. Easy access to pharmacists, specialist nurses, and dieticians provided an opportunity to seek answers to specific prescribing queries in a safe space without a sense of judgement. In turn, this fostered an open and supportive working environment.

*“I wasn’t uncomfortable involving the wider health team. So, if I needed to prescribe something, I was perfectly comfortable... asking the pharmacist, or any other healthcare professional... I was on a... chatty, friendly basis with all of the allied health team.”*

As echoed within undergraduate studies, no specific prescribing supports were made known during postgraduate training. This led to an inherent focus on coping mechanisms. One such example of a self-developed coping mechanism was the double-checking of all prescriptions.

*“I’m so worried about, and anxious about making mistakes that I check everything five or six times.”*

Double-checking his work reassured Seb that he was not making mistakes but added significantly to his workload. This was compounded by difficulty accessing any exogenous supports (those that were not created by Seb himself).

*“I did end up having to take chunks of leave for stress and mental health issues related to the complexity of the job, and always being told I had to go faster.”*

A culture of misunderstanding and a lack of education regarding dyslexia led to a reliance on Seb to suggest his own supportive adaptations. This, however, did not prove feasible.

*“I hadn’t been a doctor long enough to know what things should or shouldn’t be like, or what solutions might be feasible... In terms of prescribing, I couldn’t really think of anything specific [regarding requesting support].”*

Despite this lack of education regarding dyslexia amongst clinical staff, Seb noted a positive, supportive culture in general. Staff were becoming increasingly aware that colleagues may have diverse support needs that were not visibly evident. This seemed to relate to increasingly inclusive mindsets within wider society.

*“I think, even in the last three years, there has been quite a positive change in the culture around learning difficulties and invisible disabilities.”*

However, this rising awareness was unable to translate into any practical, supportive measures.

*“They were really going out of their way to try and be supportive and helpful and work out what to do, but no one really **knew** what to do.”*

### **Vignette 3: Pharmacist Discussion**

Seb, a Foundation Doctor, sat chatting to the pharmacist on his ward who has asked him to correct a colleague’s prescribing error.

Seb: *“There you go! All changed to the correct units now.”*

Pharmacist: *“Thanks Seb. I’m seeing errors on the drug charts basically every day recently.”*

Seb: *“Oh no, that’s awful. Are there any particular trends in what they are?”*

Pharmacist: *“Not really... I think some of the doctors are just getting lazy and rushing prescriptions recently.”*

Seb: *“You haven’t found any errors from me, have you?”*

Pharmacist: *“No. You are pretty good. I see your corrections of others’ mistakes on the charts a lot. I promise I will let you know if I see any mistakes from you.”*

Seb: *“Amazing – thanks! I’d always want to know so that I don’t repeat it.”*

The pharmacist leaves the room. Seb sits and reflects on this conversation. He feels confused. How can he be ‘the dyslexic doctor’ in the department, but also the one who seems to make the fewest prescribing errors? This seems somewhat of an oxymoron. However, Seb’s sense of triumph disappeared when he recognised that to be able to accomplish this feat, he spent more time than others and was considered a ‘slowcoach’. And with that thought, his bleep goes off and he is called away to see a patient.

### **Theme 3: Errors, Near Misses and Handwritten Charts**

Seb believed that dyslexic doctors have a good level of insight into their difficulties. In his case, he felt that he made fewer prescription errors than his non-dyslexic colleagues. This was complemented by his need to stay alert to the possibility of errors – as opposed to a perceived culture of comfort and complacency in some non-dyslexic colleagues.

*“I sit and think through the steps and double-check everything more... I think I’m probably safer in a lot of ways... I’m not able to become as complacent as other doctors... I [need] to think ‘how is that spelt? What is the dose of that? What is this?’”*

Seb recalled checking through the drug charts and recent investigations of each patient he saw – allowing him to review the appropriateness of each medication. This engagement of higher cognitive functions and problem-solving helped him to avoid making mistakes and also to prevent pre-existing errors from leading to patient harm.

*“I’m very good at picking up other people’s mistakes... and the pharmacists tend to love me.”*

This was, however, not effective in all settings. He found handwritten drug charts to be challenging in general. This stemmed from difficulty reading others’ entries.

*“When it comes to written drug charts... That’s where errors start to become more of an issue... I always handwrite block capitals when I do it, but other people just scrawl a line and hope it makes sense.”*

### Vignette 4: A Drug Error

It had been a busy weekend on call for Seb (a Foundation Doctor) as Sunday evening approached. As part of his duties, he had been sent by a more senior doctor to prescribe a specific medication on a patient's drug chart. On arrival, he looked at the chart. His heart sank. The pre-existing drugs were each, at best, a clear first letter followed by a scribbled line. The nurse on duty was also unable to read them. Seb had no idea what the patient was already taking. He checked the medical notes and saw that they had only been admitted in the past hour or so, and that no new medications had been started in the clerking doctor's plan. He also noted that their drug history did not include anything that would interact with the prescription he had been asked to make. To be extra sure, he then asked the patient to list the medications they were taking. "Perfect – no contraindications there then," Seb thought to himself. He prescribed the medication and carried on with the rest of his duties.

The next morning, Seb was one of several doctors on a consultant ward round. On checking the drug chart, the consultant asks, "*why is this patient taking two different forms of the same medication?*" Seb's heart sinks again. He reviews the drug chart with the consultant and the patient. They realise that the clerking doctor had already started a very similar medication but had not documented this and had not told the patient. It was the first medication prescribed on the chart but, to Seb, it remained completely illegible, even at this stage. His stomach was in knots. He felt physically sick that he could have missed this, despite all of his checks and cautiousness. If all of his coping mechanisms could still fail, what else could he do? This question haunted him for many restless nights to come. Deep down, he *knew* that best practice was to write drug names in capital letters, which had not been done, and he *knew* that other team members, who were not dyslexic, were also unable to read the prescription. Despite all rational explanation, however, he felt a deep-seated feeling of inadequacy compared to his peers, which this experience helped to reinforce.

### Theme 4: Moving Forward

Seb believed that electronic prescribing provided a less disabling experience for dyslexic doctors.

*"The move over to electronic helped me... with the electronic, you know you're gonna get it right, but it just takes longer."*

He felt this was both safer and promoted a culture of learning.

*"If I enter in co-amoxiclav... I choose if I want it IV or oral. If I choose IV, it will say to me 'would you like this 1.2g TDS?' And it'll offer you... 'this is what we expect most people to have. Is this what you would like? Or would you like to customise it for this patient to something different?' So, it both helps you to learn the doses, because you're checking it, but it also reduces the error of 'what happens if I accidentally type 12 point rather than 1 point 2.'"*

That said, these systems were not without their limitations.

*"If there's a slight misspelling, it doesn't [offer] similar variances... For example... you couldn't type in 'Vitamin K' – you had to type the full 'phyto-something'."*

These systems may also have the potential to be more accessible for doctors with diverse needs in the future.

*“Some dyslexic individuals really benefit from hearing things... So, I guess if there’s some way of having an option where a computer could say what a drug is – [one that] you’re about to prescribe... [if] it reads it out to you in a voice... That might help some people. So, it might say ‘gentamicin’ out loud and you can be like ‘good – that’s what I wanted.’”*

Such adaptations would not be possible with handwritten prescribing systems. Another accessible feature included colour coding.

*“[Where] it’s colour coded, you know you can hit this button to do this, or [that] the pharmacist hasn’t reviewed it [yet because] it’s yellow... And you can see everything about it in a very colour coded, simple way... I think that makes a big, big difference.”*

### **Vignette 5: The Clinical Environment and Prescribing**

Seb (now a Speciality Trainee doctor) is at work covering a busy medical ward. He is surrounded by various consultants, physiotherapists, nurses, healthcare assistants, and other staff. Everyone is talking and multiple telephones are ringing. He can hear a patient’s relative having a heated conversation with a social worker nearby, and a consultant teaching a medical student on his other side. Despite this, he consciously works on drowning out the background noise and distractions – it is taking all of his energy to focus. He has just reviewed a patient who is quite unwell and needs antibiotics to be prescribed as a matter of urgency. One of these antibiotics needs complicated dosing and frequency calculations based on patient blood results. Seb begins his calculations. Suddenly, he sees a shadow appear over him. He looks up to see one of the nurses looking down at him.

Nurse: *“Doctor, I have a telephone call for you.”*

Seb: *“Sorry, I’m just trying to prescribe some medicines. Do you happen to know who it is and if it is urgent? Or if I can call them back?”*

Nurse: *“I will find out.”*

Seb: *“Thank you.”*

Seb begins to re-commence calculations. He opens the blood results and gets out his calculator. A matter of seconds later, a different nurse appears standing over him.

Nurse: *“Seb, do you have a sec to look at my patient’s legs whilst the dressings are down? It was written in the clerking doctor’s notes that we should get another doctor to see them when they are off.”*

Seb: *“No problem. Just give me 10 minutes to finish what I’m doing if that’s ok? Sorry, I’ll be there as quickly as I can.”*

Nurse: *“No problem at all.”*

The nurse leaves and Seb looks back down at the drug chart, calculator and blood results. “Where was I?”, he thinks. He begins to enter the information into the calculator again. He starts again from scratch, just to make sure he doesn’t make a mistake. However, a few seconds later, one of the physiotherapists calls over from across the desk.

Physiotherapist: *“Seb, do you know if Mrs X is medically ready for us to review her? I know you didn’t see her, but I thought you might know?”*

Seb: *“Umm... Yes, I think so. But please do check the notes. Sorry.”*

Physiotherapist: *“Thanks!”*

Seb looks back down at his work, yet again. Before he can restart entering numbers into his calculator, the first nurse re-appears.

Nurse: *“Doctor, I have asked who was on the phone. It is a registrar from another team. They say they need a favour from one of the doctors here.”*

Seb: *“OK... If it isn’t specifically for me, is there no one else you could ask? Sorry, I am just trying to prescribe something for an unwell patient.”*

Nurse: *“No. I don’t want to interrupt the other doctors as they are all engaged in conversations and you are sitting over here alone.”*

Seb: *“Right... OK. Sure, no problem. Please tell them I will be there in 5 minutes if they are happy to hold.”*

Nurse: *“But they are on the phone right now.”*

Seb: *“2 minutes then... Anything... Please. I’m sorry, but the sick patient is my priority, especially if the phone call is just about a favour. I need to finish what I am doing as a matter of patient safety.”*

The nurse, clearly dissatisfied with this response, reluctantly leaves. Feeling extremely tense by this point, Seb restarts his calculations. Before he can finish, a Foundation Year One (FY1) doctor appears next to him – *“Seb, I’m sorry to bother you. I need your advice quickish about a patient.”* Once Seb has advised them, he goes back to calculating antibiotic doses and frequencies – again. This time, he manages to finish. It takes him less than 2 minutes without the interruption. He double checks his prescription and then takes a second to compose himself and to prioritise the various jobs that had come to light during the last 10 minutes or so. He also briefly wonders why nurses have “protected” drug rounds to prevent mistakes, but that this same concern and protection did not extend to the prescription of the medicines. His head is spinning. The very thought of any more reading or writing is making his eyes blur. Yet, he knows he has to “fight through” this to be viewed as an effective doctor. And with this thought, he goes to answer the phone call.

## Discussion

In this study we have explored Seb's experiences of prescribing as a dyslexic doctor. Issues that emerged included a lack of active learning/assessment at an undergraduate level, a lack of support, potential safety concerns regarding handwritten charts, and the distractions of a very busy and chaotic environment. He felt that electronic prescribing was a positive step forwards for both safety and accessibility. Many of these experiences are likely to resonate with all prescribers in some way, regardless of dyslexia. This highlights the natural spectrum of diversity and the breadth of potential systemic issues within the medical workforce.

In line with our theoretical framework, we have explored and reported several particular issues. At an undergraduate level, teaching methods focussed on learning by copying out medication names and facts – rote learning. However, 70% of dyslexic doctors report slow reading speeds, 61% report poor spelling, and 43% report slow writing speeds (Anderson & Shaw, 2020). In keeping with the relational model of disability, teaching prescribing skills in this way may unknowingly act to disadvantage dyslexic students compared to the rest of their cohort (Musto, 2013). Furthermore, the assessment of prescribing skills in time-pressured written exams may also be acting to disadvantage dyslexic students. This may also be at odds with Miller's pyramid for the assessment of clinical competencies. Prescribing is a good example of complex clinical performance, as it so often requires aspects of problem recognition, diagnostic reasoning, knowledge application, and the practical ability to write the prescription itself. As such, Miller's pyramid would suggest that this vital aspect of clinical performance (the top of the pyramid) may be best assessed in real clinical settings (Witheridge et al., 2019). This may also act to remove some potentially disabling aspects of standard assessments for dyslexic students. This could be further supported by a recent study into candidate performance in the UK Prescribing Safety Assessment, which found that candidates requiring reasonable adjustments in the exam (such as dyslexic students) were underperforming compared to their peers (Hutchinson et al., 2020). This is a dilemma requiring further research.

At a postgraduate level, we identified a particular issue with a lack of awareness of dyslexia and its associated learning differences. This lack of awareness led to a lack of exogenous support through an inability of supervisory staff to consider possible adjustments with regards to prescribing, despite displaying a willingness to try. This is another good example of systemic and societal factors inadvertently acting to disable individuals with diverse needs. This once again supports the relational model of disability (Musto, 2013). This lack of awareness of dyslexia in clinical supervisors, alongside placing the emphasis on dyslexic doctors to generate their own reasonable adjustments, may contribute to feelings of powerlessness in dyslexic doctors (Shaw, 2018). In conjunction with increasing workloads, this could further compromise their wellbeing and could potentially impact patient safety. Furthermore, some of the postgraduate experiences reported highlight a possible 'us and them' culture, whereby dyslexic doctors may unknowingly segregate themselves off from their peers in search of camaraderie. Many of the recalled conversations with fellow dyslexic doctors centred around a sense of being different in some way from the non-dyslexic doctors. This sense of "othering" is interesting and unexpected. This may in part stem from a sense of unity in their struggles surrounding prescribing, whereby they sought validation of the various aforementioned systemic and social barriers.

The clinical environment in itself was felt to be hazardous to a safe and effective prescribing process – as evidenced in Vignette 5. All too often Seb finds that real clinical environments are loud, distracting, and full of interruptions. This is just part of everyday life as a doctor in the UK NHS. However, 45% of dyslexic doctors have previously reported being easily distracted by noises and 49% have reported problems working with distractions (Anderson & Shaw, 2020). This highlights further issues. Whilst this working environment is

clearly less than ideal for any doctor to undertake complex prescribing tasks, it may, once again, act to overtly disable those who are dyslexic. We also highlighted a potential social issue concerning the prescribing of medicines that could directly impact patient safety. The various colleagues in Vignette 5 did not hesitate to repeatedly interrupt Seb, despite him being clearly engaged in the prescription of a complex medicine. This calls into question whether these early stages of the prescription process should be ‘protected’ from interruption in the same fashion as nursing drug rounds, for the promotion of best practice and patient safety – perhaps, through the provision of a designated “safe area” for prescribing. Further research is needed to explore this.

Our findings complement the work of others, highlighting that newly qualified doctors in general felt ill-prepared to prescribe, and that there was a lack of education on prescribing skills at medical school (Heaton et al., 2008; Monrouxe et al., 2017). Seb’s desire for a more practical approach to learning prescribing is supported by Linton and Murdoch-Eaton, who recommend that “prescribing training needs to simulate practice” and that “students need to engage in the whole complexity of tasks underpinning prescribing, from making the diagnosis and deciding the therapeutic intervention through to monitoring the effects of the drug for holistic understanding” (Linton & Murdoch-Eaton, 2020).

Seb’s awareness of his dyslexia fed into various coping mechanisms, which enabled him to avoid errors. He was hyper-aware of mistakes and patient safety concerns. This is at odds with the findings of Lane and Roberts (2020), who reported that junior doctors in general tended to accept errors as an inevitability in clinical practice and that this rationalisation and lack of ownership could be seen as lacking in empathy by patients or their relatives. Seb’s example illustrates how dyslexic doctors may develop an awareness and fear of making mistakes which may help them to compensate to the extent that they perform better than their non-dyslexic peers. In this sense, our findings suggest that being dyslexic may foster a more open culture of ownership over mistakes. It is possible that this may in turn have the potential to lead to improved patient outcomes and experiences. However, it is also possible that this may be something specific to Seb. This is therefore an area in need of further research. Such an awareness may also be at the expense of doctors’ wellbeing. Seb’s increased awareness led to over-compensation, increased workloads, and anxiety – thus negatively impacting his quality of life and career satisfaction. In addition, the cautionary approach to prescribing by Seb led to issues when time was of the essence, such as during ward rounds and patient admission and discharge processes. This could negatively impact workflow efficiency and generate working relationship tensions within the clinical team. This is another area that would benefit from further in-depth research.

There is currently much debate regarding the effectiveness of electronic prescribing systems. Odukoya and Chui (2013) felt that they may introduce a new source of errors and could therefore create patient safety concerns. Motulsky et al. (2015) concluded that “paper prescriptions were still perceived as the best means for safe and effective processing of prescriptions in pharmacies” (p. 1). Our results are at odds with these studies. We suggest that electronic prescribing systems could be safer, more accessible, and more educational for dyslexic doctors. At the very least, they take away the issue of illegible handwriting. This is supported by Porterfield et al. (2014), who reported that the introduction of these systems “reduces prescribing errors, increases efficiency, and helps to save on healthcare costs” (p. 1). In recognition of the crucial role electronic prescribing can play in safe and effective prescribing, the UK government has prioritised funding to enable implementation of hospital electronic prescribing and medicines administration systems (Acute Care and Workforce, 2018; United Kingdom Government, 2019). Our results also highlight the need to consider accessibility when choosing/implementing an electronic prescribing system. Such considerations are vital in order to comply with equality legislation – for example, the UK



Equality Act, which requires reasonable adjustments to be made to UK workplaces for those with disabilities (Great Britain, 2010).

Our findings regarding a perceived culture of improved acceptance of hidden disabilities are reassuring. These have recently been mirrored in a study of the experiences of dyslexic medical students during COVID-19 (Shaw et al., 2021). However, the lack of specific support for trainees in our findings requires further consideration, both at medical school and in the workplace. We feel there is a need to reframe the education and discourses surrounding dyslexia to align with the relational model of disability. There is a need to consider specific support for dyslexic doctors to assist them with safe and effective prescribing. Our results suggest that implementing electronic prescribing systems with colour coding and other accessible features may be a good first step. However, 36% of dyslexic doctors do report difficulty reading from screens (Anderson & Shaw, 2020). This highlights the importance of tailoring support to each individual, and also the need to consider accessibility options within electronic prescribing systems.

### **Autoethnography as a Self-Improvement Tool**

An important aspect of autoethnography is the inherent involvement of deep reflexivity and its potential to foster positive self-change (Cluster, 2014). Some evidence has shown that autoethnographic research can in itself act as a form of therapy for the researchers (Walker et al., 2020). Working through their culturally grounded experiences in a deep and meaningful way can help autoethnographic researchers to let go of some associated emotional baggage/burdens.

### **Seb**

Working on this study has been a long and intense journey. It has forced me to consider my own fears and anxieties in relation to prescribing, and then to open these up visibly to the world. With this approach comes a great deal of vulnerability. I have partially overcome this sense of vulnerability by writing our results in the third person. This was a conscious decision that allowed me to dissociate myself from the prose whilst still emotionally working through the issues and exposing them to the world to shed light on this culture and take a positive step for the profession as a whole. In previous autoethnographic work, we have also achieved this sense of anonymity through the introduction of pseudonyms (Walker et al., 2020).

In a similar fashion, I struggled working through some of the reviewer comments in relation to my own positioning in this study. This was a first for me, as I have not encountered emotional difficulties with reviews of previous autoethnographic work. Comments were fair and constructive in their criticism, primarily highlighting my own detachment from the narrative in places. On reflection, this was a fine line to walk for me. I needed to expose enough of my experiential and emotional vulnerability to meet our sociologically-inclined goals. However, I had to juggle this with a fear of judgement, given the often competitive and unsupportive environment of medical practice. To this day, I have my reservations about my outing within this study – not as dyslexic, but specific to my presented experiences, thoughts, and feelings. However, this is overridden by my drive for social justice within the medical profession. Through publishing this, I hope to show other dyslexic doctors that they are not alone in such experiences and to help ameliorate any potential fears for dyslexic medical students.

**Mike**

I am deeply involved in prescribing education both at undergraduate and postgraduate levels. This enables me to appreciate the continuum of the medical education journey in this regard. It was very interesting being involved in various aspects of this study as it provided an opportunity for me to interact with a product (Seb) of the medical education curriculum I have helped shape. Although I recognise that practical prescribing is a complex task and should be very heavily weighted, this was not reflected in the curriculum I was teaching on and interactions with other colleagues confirm similar in medical schools across the UK. This is quite humbling and more so when one ponders the apparent lack of support in prescribing in relation to dyslexia.

This research study has exposed me to further efforts that should be made to elucidate the issues around prescribing education in general but more specifically with dyslexia and attempts to optimise the experience for medical students and postgraduate trainees. Ultimately this might reduce the burden of prescribing errors and improve patient outcomes.

**John**

My role in this study was to provide a theoretical and methodological overview from my background in medical sociology. I had previously supervised Seb's earlier autoethnographic exploration of his experiences as a dyslexic medical student (Shaw et al., 2016). In this study I was invited to join Seb and Mike in Seb's exploration of his experiences as a medical student and doctor having to come to grips with the complex world of prescribing in medicine. The experiences and circumstances of this were sufficiently novel to justify this approach. Unlike Mike, I am not involved in teaching medical undergraduates – only postgraduates – and was therefore “academically neutral” and could provide such a neutral sounding board within the team. In our previous work, I discussed my role as a mentor to Seb and the many facets of my role which could potentially conflict. This was not the case in this study, although my background in Transactional Analysis psychotherapy could have provided insights into any personal and emotional issues – had any significant ones had arisen. I was particularly impressed by the breadth of Seb's introspections which ranged from medical school to clinical placements and his home life. His respect for others and their anonymity was also apparent and to his credit. The fact that he chose to adopt an analytic autoethnographic approach rather than an evocative autoethnographic approach meant more work but awarded us all, as a team, to get to grips with the analysis of the two sources of data available to us – Seb's autobiographical account and the interview data from Mike's interview with him. This made for a challenging but more interesting study for us all.

**Strengths and Limitations**

Autoethnography was a well-suited approach to explore our primary aims. It allowed us to make use of the wealth of experiences and insights of our research team to explore the impacts of dyslexia on prescribing from a sociocultural perspective. It also allowed us to broaden our own perspectives, and to grow as researchers throughout the process. The production of this autoethnography can allow readers to view Seb's culturally grounded experiences through a sociological lens.

Given its interpretivist nature, this study aligns itself with a subjective view on both ontology and epistemology. As such, it does not strive to produce generalizable results in the traditional sense. It presents a single, subjective case, in a single country, at a single point in

time. There may, however, be important transferable meanings and concepts found throughout Seb's story. Ellis et al. (2011, p. 1) elaborate as follows:

Generalizability is also important to autoethnographers, though not in the traditional, social scientific meaning... In autoethnography, the focus of generalizability moves from respondents to readers, and is always being tested by readers as they determine if a story speaks to them about their experience or about the lives of others they know...

### Conclusions

The prescribing of medicines is an intricate process that requires appropriate knowledge, skill, and behaviour to be performed to a safe and effective standard. This in turn might help achieve optimal outcomes for patients. Despite its many associated strengths, dyslexia also has the potential to adversely impact prescribing. Here we have presented Seb's experiences as a medical student and as a dyslexic prescriber using an autoethnographic approach. Issues highlighted included a lack of appropriate active learning/assessment at an undergraduate level, a lack of support, and potential safety concerns regarding handwritten charts. The extra time allowed during assessments at an undergraduate level is not mirrored in any protected time in the hectic clinical environments and addressing this in practice might prove quite challenging. We have elicited various cultural, social, and environmental factors that may be acting to disadvantage dyslexic doctors with regards to the prescribing of medicines. Electronic prescribing was felt to be a positive step forwards for both safety and accessibility. However, further in-depth research is now required with regards to supporting dyslexic doctors with prescribing – for example, exploring environmental optimisation.

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