

Journal of Neurodiversity in Higher Education

aDShe

Association of Dyslexia Specialists in Higher Education

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Hello and welcome to the fourth edition of this journal.

This year aDShe has added another professional string to its bow – aDShe members can apply for a Practitioner Project Award. Applying for something like this could feel a little daunting, so I have taken editors' prerogative and written an article to show what I did with a small Teaching Innovation Award that I won for some small-scale practitioner research within my own institution. I hope this may spur you on to thinking about how this is an opportunity to use a little bit of money to follow up on that idea you have, to try out different ways to address issues that arise during your 1:1 specialist study support sessions. It could be around planning essays, reading strategies, revision strategies, how to get the balance between teaching editorial skills and proofreading. The article is deliberately **not** written in an academic style because I believe that practitioner research should be active and accessible; but it is backed up by theory.

In this edition, we also have an interesting and passionate article written by a student with ADHD (Mia Spence). She talks about self-esteem and confidence from a personal point-of-view but also presents some research that she did in her 2nd year as part of her coursework.

As we see an increasing number of students with autism coming for study support, Ray Martin presents a review of literature and current knowledge of autism and student transition to university. Many aDShe members enjoyed and learned much from Preetie Jagdev's workshop at last year's conference (to be repeated this year) and I feel that this is a timely article.

Finally, Linda Kirkham has reviewed a new book written by Adrian Wallbank. Adrian will be presenting a workshop, based on this book, at this year's conference. He will be available for book signings – so if you like the sound of Linda's review, you have the opportunity to buy the book at conference and have it signed by Adrian himself.

Changes are afoot for next year's edition of the journal – marking its 5th birthday – so watch out for that but don't forget that you can contribute your thoughts, research and practitioner skills by sharing them with your colleagues via The Journal of Neurodiversity in Higher Education.

Karisa Krcmar
Editor

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About the Authors:

Linda Kirkham's background is in community support, working with people with a wider range of learning difficulties and disadvantage. This led to working in Adult Basic Education and further training, gradually specialising in Specific Learning Differences. She worked at Leicester University for 8 years as part of a newly-appointed team establishing dedicated support services for students with disabilities and achieved an MEd (post-16/SpLDs). Linda has worked at Loughborough University for the last 13 years as a specialist tutor and DSA needs assessor. Linda has previously published in RaPAN and Dyslexia Action and has had her work used as part of European-wide dyslexia training.

Karisa Krcmar leads a team of specialist tutors at Loughborough University. She is a qualified mindfulness practitioner and with her colleague, Tina Horsman, has written *Mindfulness for Study*, a book for students, specialist tutors and mental health advisors about using mindfulness techniques alongside study skills. She started the Journal of Neurodiversity in Higher Education (aDShe) because she wanted a forum to share and promote the good practice of her specialist tutor colleagues whilst developing the underpinning theoretical base that makes us qualified professionals.

Ray Martin is a specialist dyslexia tutor at University for the Creative Arts, Epsom and the Dyslexia Teaching Centre in London. She also teaches about inclusive practice for the UCA in-house PGC and MA Creative Arts Education courses. One of her primary concerns as a dyslexia tutor is wellbeing, and she has run workshops on state, self-esteem and memory. She has written pieces on NLP, motivation and mindfulness for the *Patoss Bulletin*.

Mia Spence is a young, ambitious individual who has managed to turn her life around from secondary school in year 7 when she was predicted low grades, to being top of the class and coming out with A*, A and B to then be accepted as a 'Social Psychology with Criminology' undergraduate at Loughborough University. Mia trains as a 400m athlete at a competitive level. She is now progressing to her dream goal of becoming a forensic psychologist but couldn't have done it without her supportive mother who keeps her on track as well as the amazing support from her specialist tutor.

Differences in Perceived 'Anxiety' of Students: with and without Specific Learning Differences (SpLDs)

Mia Sky Spence

Introduction

I am an elite runner. I am interested in social psychology and criminology. I am a student in higher education who is achieving first class honour marks.

Oh, and I also have ADHD.

I had a diagnosis for ADHD at junior school. It was a relief for me to know that I wasn't deliberately naughty; deliberately not listening; deliberately jumping around all over the place. It was a relief for my mother, too! I have had many years to understand who I am and what my strengths are; to understand how ADHD affects my learning, both positively and negatively; and (with the help of medication) to monitor and take control of myself and my learning. But the journey hasn't been easy, and I have had stress, anxiety and mental health problems along the way. It was with this in mind that I decided to undertake a study (as part of my degree work) to find out more about how having a specific learning difference (SpLD), like ADHD, can affect a person's self-esteem. Most of the people I know at university with an SpLD didn't have an assessment until they were at university and so I was interested to know whether having an identification early in your life helps with understanding yourself.

Therefore, the research examined whether having an SpLD results in a student experiencing higher levels of perceived anxiety than those without an SpLD. The study was carried out using an opportunity sample of 213 Loughborough University students studying at a university in the midlands. 'The Study Anxiety Scale' (SAS) was used to assess perceived anxiety (Krcmar & Horsman, 2016). After completing this, students were asked to identify whether they had an SpLD. A second stage of the research addressed only those students who identified as having an SpLD ($n = 136$) to discover if there is a difference between those students who were identified in childhood and those not identified until university.

Anxiety and SpLDs

Literature shows that students with SpLDs experience high levels of anxiety (Sholapurwala et al., 2016). Alexander-Passe (no date, np) comments that:

“experience or fear of social stigma can lead people ... to camouflage the difficulties they face, to withdraw and to adopt negative coping strategies, particularly if they lack adequate support, identification and intervention. This can have lasting impact on their emotional health.”

Karande and Kulkarni (2005) stressed the importance of early diagnosis in affecting levels of anxiety. Their study considered the benefits of therapy in the general adult population and found that the later the diagnosis, the more difficult the therapy is and the lower the rate of success. However, their study only considered people in the workplace. My study explored differences in anxiety scores between students in higher education (HE) who have been diagnosed with an SpLD and those with no SpLD. It further explored whether there is a difference in perceived anxiety scores in this group, relating to *when* an individual had been diagnosed with an SpLD, as previous research has not addressed this.

SpLDs is an umbrella term referring to a group of neurodiversities that are characterised by severe and persistent difficulties in aspects of learning and information processing (British Dyslexia Association, 2017). The 'D' in 'SpLD' also goes by various other names ('disorders' and 'difficulties') but in this report, it is referred to as 'differences' which is used by Loughborough University (Alonso, 2017). Differences in learning can be evident in areas such as reading, writing, using mathematical abilities and more (Alonso, 2017). Well-being is taken into consideration in much research conducted on individuals with SpLDs (Burden, 2005). Karande and Kilkani (2005) found that children with an SpLD do not achieve school grades that are representative of their potential. This academic underachievement can result in stress and anxiety within the child (Sholapurwala et al., 2016) with feelings of inadequacy and frustration that they cannot perform (e.g. in exam conditions) or express things the way they feel they could. The same difficulties that interfere with processes of learning can also affect confidence (e.g. self-image), peer and family relationships and social interactions (Karande & Kulkarni, 2005). Furthermore, research has found that poor metacognitive skills can

lead to dependent learners and lower self-esteem, which can also lead to higher likelihood of stress, anxiety and depression (Szumko & Krcmar, 2016). On the other hand, Szumko and Krcmar argue that good metacognitive skills (understanding yourself and how you, as an individual, learn best) are crucial for academic success in higher education and for mental-wellbeing. Work by Dignath et al. (2008) has shown that metacognitive strategy training has a high (1.5) indicator on the zone of desired effects for intervention strategies in learning, thus demonstrating the benefits to students of developing good metacognitive skills (i.e. understanding **how** their brain is processing information and **how** they learn). Hence, for this study, those diagnosed with an SpLD were asked additional questions (relating to confidence and metacognition) to gain more insight into what it is like living with an SpLD, in a hope that this would demonstrate possible links with perceived anxiety.

The study tested two key hypotheses:

Null (1): There will be no significant differences in anxiety scores for those with diagnosed with SpLD compared to those with no diagnosis for SpLD.

Alternative (1): Students who have a diagnosed SpLD will report greater anxiety scores than those with no diagnosed SpLD.

Null (2): There will be no significant differences in anxiety scores for those who received diagnosis in childhood compared to those who were diagnosed at university.

Alternative (2): Students who have been diagnosed with an SpLD at university will report greater anxiety scores than those diagnosed with an SpLD during childhood.

Research Methods

Participants

In total, 213 university students were recruited using an opportunity sampling research design. There were two groups of participants: with an SpLD and no SpLD. The SpLD sample was subdivided dependent on when they were diagnosed (childhood versus university). Students registered with an SpLD with the disability services at the university were invited to participate and from this, 136 students

responded. The social networking site, Facebook, was used to recruit participants without an SpLD ($n = 77$).

Materials

An electronic questionnaire was designed using the 'Bristol Online Survey' (BOS). It comprised of two parts: (i) to measure the perceived anxiety scores of students (general wellbeing); and (ii) to separate students who have been diagnosed with an SpLD and those who have not.

The first part measured perceived anxiety using 'The Study Anxiety Scale' (SAS) which is a self-report questionnaire using a Likert-type scale (Krcmar & Horsman, 2016). The SAS has been mentioned in several conferences and has been used to assess students' perceptions of experiencing symptoms related to general and study-specific anxiety (Krcmar & Horsman, 2016). It is a 16 item self-report measure consisting of five subscales (appendix 1) and is not a normed scale but is used by Krcmar and Horsman as a starting point for discussion with students in their work as specialist tutors. The options for each question were: "never", "rarely", "sometimes", "most of the time" and "all the time". Each question is scored 1-5 (with '1' being non-applicable and '5' being very applicable) and therefore, the maximum possible SAS score is 80. Each question is designed to be simple and easy to understand. Cronbach's alpha showed the questionnaire to reach acceptable reliability, $\alpha = 0.90$ (Tavakol & Dennick, 2011).

Design

This study used a cross-sectional design and was a self-administered online questionnaire. The dependent variable was perceived anxiety scores, measured using SAS. Other variables such as 'metacognition' and 'confidence' were considered in the second part of the study to explore possible links with perceived anxiety.

Responses were coded so that when inputting into SPSS the answers would remain in their codes and treated as value labels.

Results

The analysis was undertaken using Statistical Package for the Social Sciences (SPSS). The study population was divided into sub-groups (SpLD/Non-SpLD and Childhood/University). Data shown in figures 1 - 6 all compare responses of students with SpLDs, diagnosed in childhood versus those diagnosed at university.

There was a total of 213 participants, of which 136 had an identification of an SpLD. Interestingly, a slightly greater number of students (75) had been diagnosed in childhood than at university (61). Seventy-seven students did not have any evidence of an SpLD

It was interesting to note that those students with a recognised SpLD did, in fact, report higher anxiety levels than those without an SpLD; thereby supporting Alternative (1): students who have a diagnosed SpLD will report greater anxiety scores than those with no diagnosed SpLD.

Figure 1 shows that this research confirmed the idea that having an early diagnosis will reduce later anxiety levels, as those diagnosed at university showed slightly higher scores in mean anxiety.

Further questions were asked about the impact of living with an SpLD and these were measured against anxiety scores. Figure 2 shows that interestingly, students who reported anxiety at the time of diagnosis at university did have the lowest mean anxiety score from the SAS; although those who reported feelings of confusion did also exhibit higher levels of anxiety. Those who said they had felt quite angry, showed the highest levels of anxiety.

It is worth noting that in figure 3, students who say they prefer not to talk about their SpLD show marginally higher levels of anxiety and those who feel more comfortable about it tend to be the students who have lived with the knowledge of their SpLD since childhood.

Understanding your own SpLD profile appears to confirm Szumko and Krcmar's (2016) argument about the importance of metacognition, as shown in figures 4, 5 and 6. Figure 4 shows that the lowest anxiety levels are demonstrated by students who stated that they understand their SpLD. Interestingly, the highest correlation with anxiety comes from the cohort of students assessed at university who have not

had the opportunity to develop their metacognition. Figure 5 shows a relationship between feeling 'labelled' and anxiety; and again, those students who have had time to get to know themselves evidence lower levels of anxiety. Figure 6 shows that students diagnosed both in childhood and at university who feel that having an SpLD diminished their confidence, also reported the highest anxiety scores.

Figures 1-6

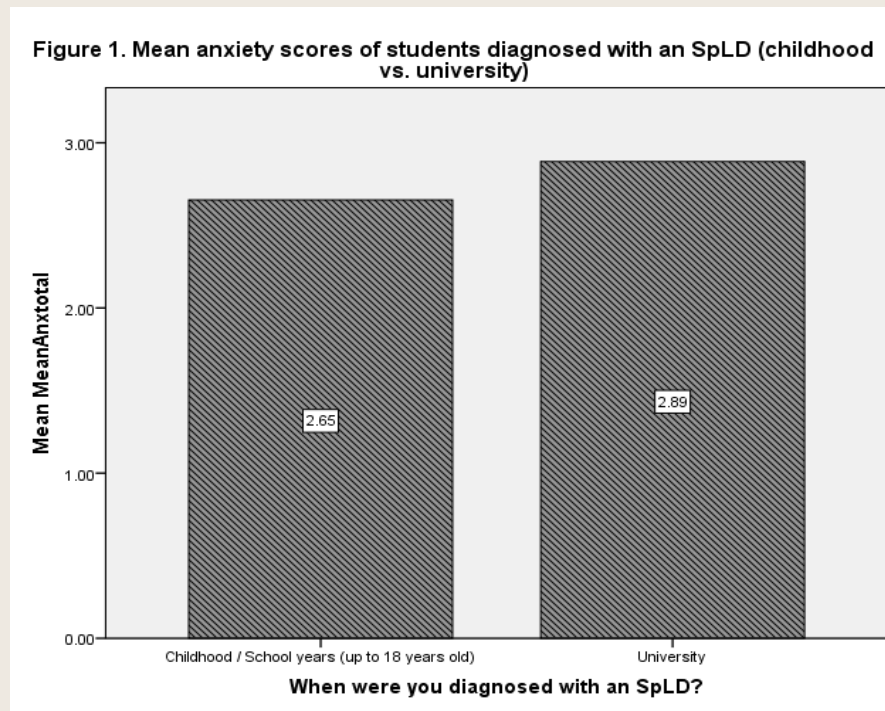
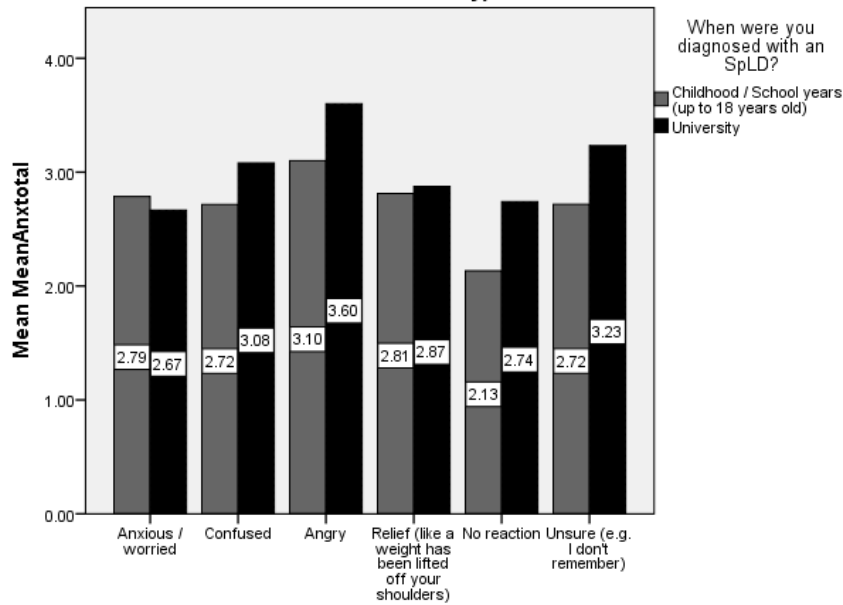


Figure 2. Differences in emotional responses to diagnosis (childhood vs. university)



When you were initially diagnosed with an SpLD, which of the following best represents your initial reaction? *Please think back to when you were very first told you have an SpLD and try to remember your first reaction (how you felt ...

Figure 3. Feelings towards talking about having an SpLD with others (childhood vs. university)

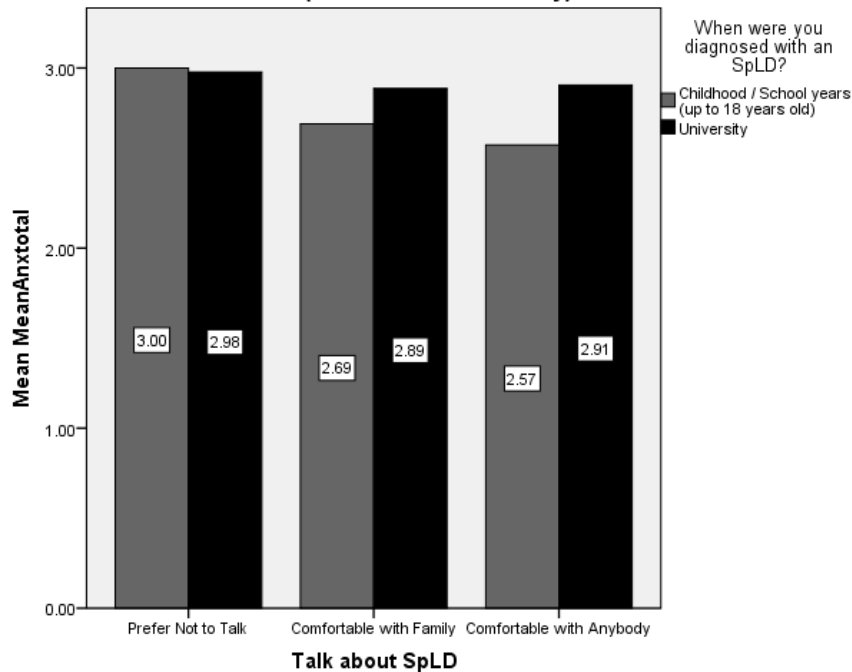


Figure 4. Students understanding of their SpLD (childhood vs. university)

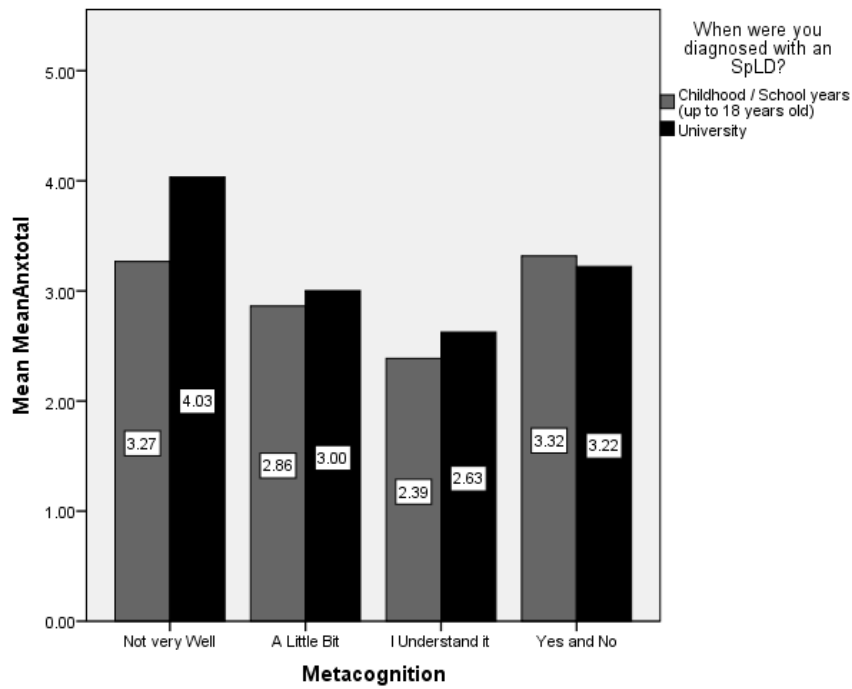
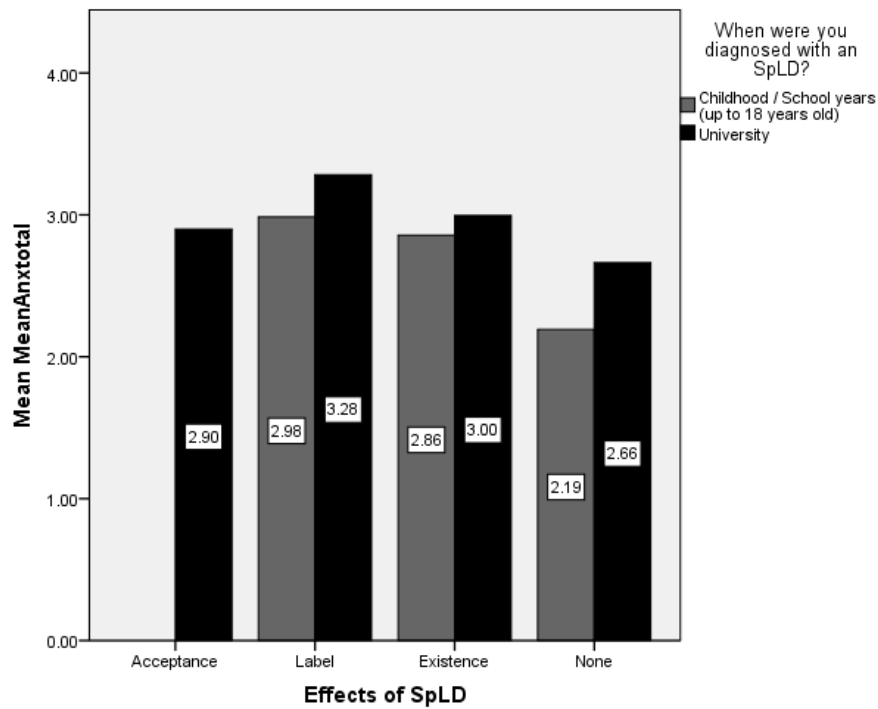
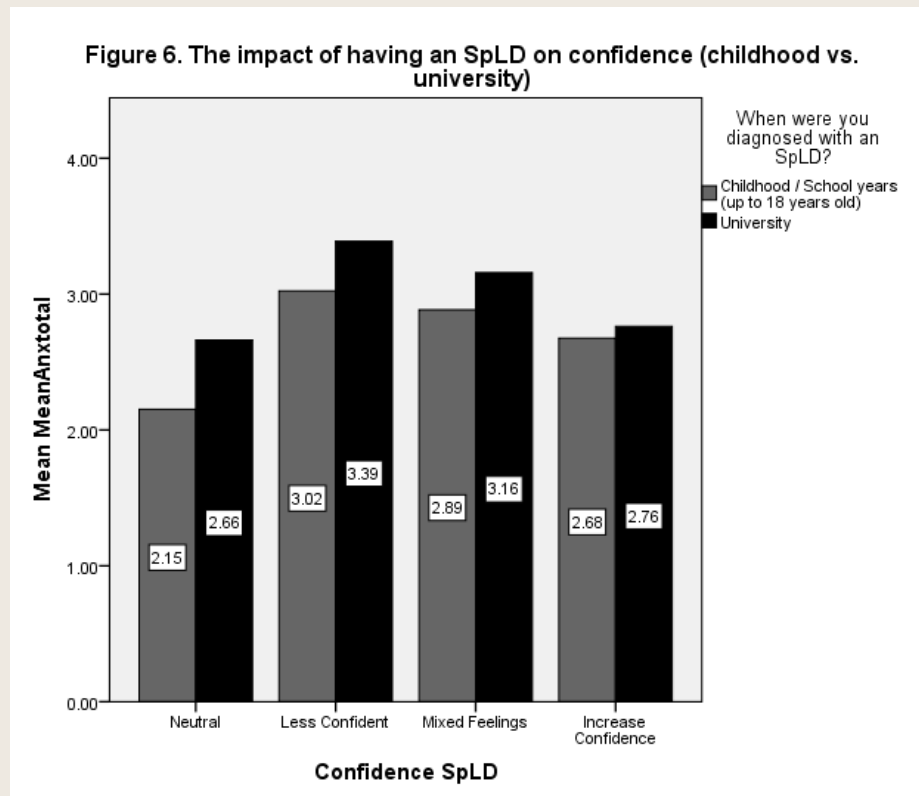


Figure 5. Negative impacts of having an SpLD (childhood vs. university)





Discussion

This research found that students with an SpLD do experience slightly higher indicators of perceived anxiety than those without. Students diagnosed in childhood had lower anxiety scores than those diagnosed later in life, at university. This would highlight the benefits of having an earlier diagnosis as it suggests that this gives time for an individual to learn how to better manage and cope with their SpLD.

The results also demonstrate a potential link between anxiety, metacognition, confidence, anger and stigma. Students who felt angry when diagnosed reported the highest perceived anxiety scores. It would have been interesting to have been able to gain qualitative data from respondents to explore more about their feelings of anger, such as who the anger is directed against (e.g. teachers, parents, self).

There is scope for future research with this.

An adult diagnosis may come as more of a shock as more respondents expressed anger and confusion when diagnosed at university. Again, this may suggest the benefits to an individual of early diagnosis allowing acceptance and understanding to happen earlier in their life, which may help account for differences in perceived anxiety scores.

The research highlights the importance of metacognition and the effect it can have on students' levels of anxiety, which supports previous research by Szumko and Krcmar (2016) and Dignath et al. (2008). Students who stated they do not know their SpLD very well reported the highest anxiety score. This contrasts with those who have a clear understanding of their SpLD, who reported the lowest anxiety scores. Interestingly, perceived anxiety scores were even higher with students diagnosed at university who claim they do not know their SpLD very well. This could have practical implications in a sense that this research could emphasise that more needs to be put in place to allow time and space for students to explore their metacognition with specialist tutors as this has been shown to affect their wellbeing (Szumko, & Krcmar, 2016).

Furthermore, results suggest a link between students who have experienced the effects of stigma on increased anxiety levels. Students who have suffered from the 'label' reported the highest anxiety scores, which was even higher if diagnosed at university.

Furthermore, only students diagnosed at university reported having difficulty with 'acceptance', which is shown to be linked with moderate anxiety. This would suggest that earlier diagnosis is important for an individual to learn to accept, better manage and cope with their SpLD (Karande & Kulkarni, 2005).

Moreover, results show that students who feel that having an SpLD has negatively affected their confidence, reported the highest anxiety scores. This again, supports the arguments of Szumko and Krcmar (2016) that highlight the effects that having an SpLD can have on confidence and subsequent anxiety levels.

Importantly, this study demonstrates that the diagnosis of SpLD may go unrecognised for a lengthy period of time, as evidenced by the increasing number of students diagnosed at university. This could suggest that students may benefit if

academics were more aware of SpLDs so that support could be put in place. At present, there is an issue with accessing additional support at many universities in terms of long waiting lists; dependence on DSA; and a shortage of qualified specialist tutors due to severe funding cuts. The results show that students with SpLDs are experiencing significantly higher perceived levels of anxiety than those without. The current experience for many students is that there is a long wait between receiving an assessment of an SpLD and the opportunity to meet with a qualified specialist tutor in order to explore the strengths and weaknesses of this and the impact it may have on their learning. The practical implication from this research is that universities need to invest more resources to adequately staff the expert specialist tutors and mental health advisors needed for student wellbeing so that students have the confidence and self-efficacy to reach their academic and personal potential.

Personal Strategies for learning (memory recall)

I would now like to share some strategies that I use successfully in my studies. Figure 7 shows an example of how I remember key points in an essay as preparation for a written exam. Each picture represents/symbolizes a key word (or trigger) to remember the relevant information.

Figure 7. Use of visual triggers



This method enabled me to memorize all the information for my exam, which I am pleased to say that I was awarded a high first for.

This first line of pictures echoes the following paragraph:

“In England and Wales, it is argued that new technologies have strengthened Law enforcement as a policing style, by providing additional ways of detecting criminal behaviour (Joyce, 2012). The National Institute of Justice (2017) argue that living in an increasingly high-tech world, means more crimes are being committed through the use of technology, such as online fraud. Thus, the police need to have particular tools to prepare for them. For example, the police are constantly working on ways to penetrate the dark web, which enables potential criminals to hide their identity when purchasing items, with the use of technology (Gehl, 2016). Therefore, the use of ‘mobile technology’ allows Law enforcement officers to keep up to date with criminal activity, continue with reducing response times and helping to protect the public (National Institute of Justice, 2017). Thus, it could be argued here that the use of technology to enhance Law enforcement policing strategies has provided a more sophisticated and “professionalised” police service (Schneider, 2009, p.32).”

Other alternative revision methods that I use include coloured flashcards (which have a key word on one side e.g. researcher’s name, with information associated with the key word on the other side e.g. research findings/what they are known for.

I also colour code key information such as highlighting general information in yellow highlighter, key names (references) in green and criticisms in orange or red as a consistent system throughout my studies. This enables me to logically organise information and its meaning in my brain. It’s a coding system used when revising and has enabled me to go far in my studies.

Conclusion

The research along with my examples of my own learning methods indicate that, although metacognition is frequently not identified as a learning priority within the DSA process, there is a strong argument for its inclusion. Whilst specialist tutors work as best they can to explore a student’s individual learning approaches, they are frequently hampered by the constraints of DSA funding which is limited and does not include time for exploration of this sort. It is argued that specialist tutors should be

given the time to adequately explore a student's diagnostic assessment with them and tools like the Executive Functions Star (see appendix 2) can be used by specialist tutors when they do not have access to a diagnostic assessment.

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Appendix 1. The Study Anxiety Scale (SAS)

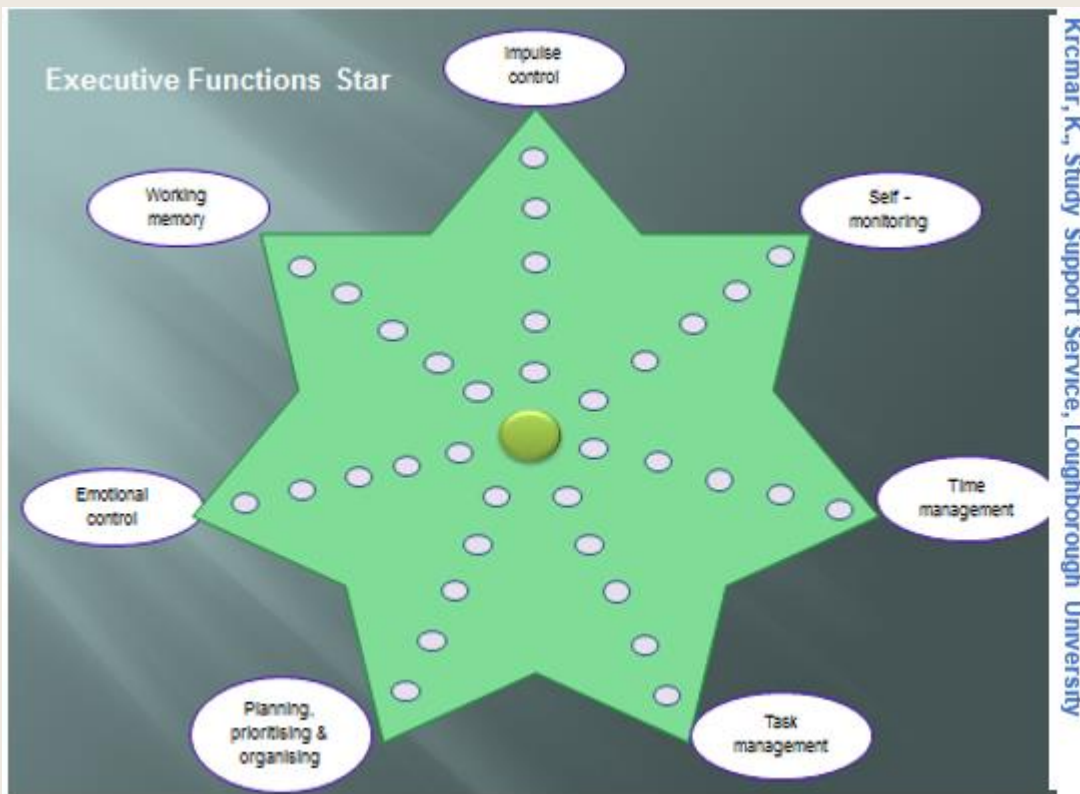
The Study Anxiety Scale

Think of how you **generally** feel about, or react to, things. Then circle your response to each question and add up your total.

Name DoB	Not true at all	Slightly true	Quite true	Very true
I regularly feel overwhelmed by the demands of my academic work				
I find it difficult to relax even when I want to				
I find it difficult to prioritise my work and my life				
I start to panic when I try to revise				
I have trouble with indigestion or problems digesting things properly				
I often have palpitations or feel my heart is pounding				
I sometimes feel really scared for no good reason				
I have sometimes been so anxious about a piece of coursework that I have avoided it				
I sometimes feel really nervous or have a feeling of dread				
I sometimes get all of a tremble or shake				
I sometimes feel I am going to “lose it” – be unable to control myself				
I often feel frustrated with myself				
I sometimes sweat a lot more than you’d expect from the weather				
I sometimes feel really dizzy or think I am about to faint				
I sometimes find myself blushing for no good reason				
I am anxious that I am never doing enough for my coursework				

Interpretation: there are no norms applicable. – simply use the score to monitor variation and improvement.

Appendix 2. Executive Functions Star



Students decide themselves where they would be on these pathways. The Star is then used as a discussion tool.

Book Review: 'Academic Writing and Dyslexia: A Visual Guide to Writing at University' by Dr Adrian Wallbank (Routledge, January 2018)

By Linda Kirkham

Dr Adrian Wallbank is a Teaching Fellow and Programme Leader for Academic Writing and Communication in the Centre for Academic Skills (CEDAS), Royal Holloway, University of London.



He has dyslexia himself, and his book is designed to “meet the visual and ‘big picture’ strengths of dyslexic learners in higher education”. Dr Wallbank aims to show that the core principles of good academic writing can be demystified and distilled into “meaningful visual images, metaphors, templates and icons”. In doing so, he has produced a beautifully laid-out and visually attractive book that covers the processes of academic writing, from reading to proofreading and editing.

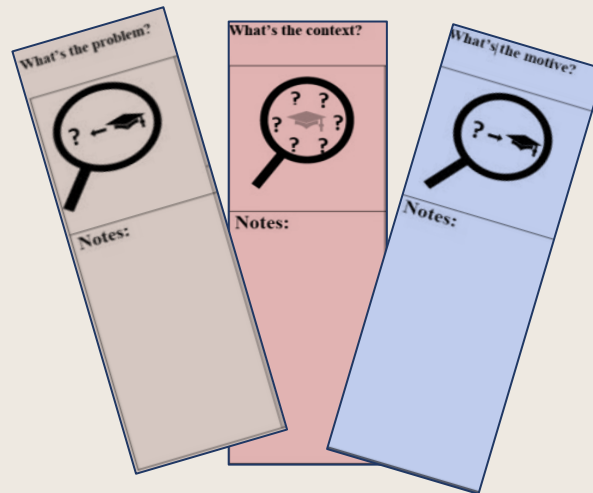
The first chapter discusses the step-up from school to university, giving clear examples of how writing approaches learnt at ‘A’ level may not adequately equip students for the more critical writing required at university, where the approach is less structured or guided and assessment criteria may be more ambiguous. The subsequent chapters are entitled:

- Reading to write
- Critical reading and thinking for critical writing
- Essay genres and structures: seeing the ‘big picture’;
- Visualising effective paragraphs: presenting your point and supporting evidence
- Presenting your argument: writing and structuring clear, effective sentences
- Proofreading and editing.

All are clearly informed by an appreciation of the strengths, difficulties and barriers for those with dyslexic learning styles, and explicit analysis of the nature of critical thinking and writing. His concern is to enable students to “embrace the challenge!” and to develop a sense of control and mastery through understanding more clearly what is demanded of them and through harnessing their own strengths. To this end, Wallbank presents a visual approach, both in the icons, colours and symbols helping with the navigation of the book, and in the images he has developed, to show the ‘shapes’ and processes of essays and arguments. I’ll admit to having curmudgeonly thoughts initially, as the cover notes claim a ‘unique’ visual approach to academic writing and composition – after all, isn’t that what ADSHE practitioners have been attempting to do for the last two decades or more? Also, on first browse, I found some of the images difficult to fathom, leading me to wonder whether many visual representations are only really meaningful to those who create them. However, many other visuals, and the analysis and logical thinking behind them, are extremely useful and insightful, offering many ideas to extract and use with students. For example, in ‘Reading to write’ (chapter 2) there are ideas for reading complex material whilst retaining the ‘big picture’, such as making a scroll from a relatively short paper or chapter, or what Wallbank has termed “dual reading” (pp 33 - 34). In addition, the section on dealing with counterarguments usefully categorises these as “refutations” and “concessions”, and gives excellent explanations, examples and visual representations on how to present these in writing using the “given and new” information principle.

The book speaks throughout to the student; however, it is possible that some would be daunted by the reading required to gain its full potential. Perhaps a post-graduate student might use it independently, but for undergraduates it seems likely to be of most value when introduced by support tutors who can mediate the text and extract the relevant ideas at the relevant time for the students’ use. The author has provided a companion website to the book, with helpful resources, including templates, icons and bookmarks as prompts and reminders that are all downloadable, (therefore saving the spine of your copy!).

My current favourites are some of the critical reading bookmarks:



There are also video presentations in which he expands upon his topics and offers further tips, again illustrated with clarifying examples. These are available at:

<http://routledgetextbooks.com/textbooks/9781138291492/default.php>

It could also be helpful to direct students to Wallbank's audio-visual presentations shared online, in particular "Picture This: Re-Thinking Academic Writing for Dyslexics". For post-graduates, he presents "Argument, Agency and Originality: Exploring your Academic 'Voice'", which investigates issues surrounding argumentation, rhetorical strategies and how authors can articulate a stance in academic writing - a more sophisticated discussion for those who wish to consider these aspects of writing and identity more deeply. Both are available at:

https://libguides.library.dmu.ac.uk/class/researcher_writing_day.

Finally, the author notes that this book has been many years in the making – this is reflected in the clarity, yet depth, of the content, which make it an absorbing and accessible resource.

Changing Places: transition into university for students on the autism spectrum. A mini meta-analysis of literature.

By Ray Martin

In 2016, University for the Creative Arts set up a project on inclusive practice to look at areas such as mental health and transitioning into further and higher education (FE and HE), buddy schemes and best use of technology to support teaching and learning. As part of that initiative, two members of the team explored transitioning into HE for students with autism. Below is the review of literature that supported the university's new initiative, piloting their customised version of the Autism and Uni Toolkit, which they developed with Marc Fabri at Leeds Beckett University.

“Grant me the dignity of meeting me on my own terms ... Recognise that we are equally alien to each other, that my ways of being are not merely damaged versions of yours. Question your assumptions. Define your terms. Work with me to build bridges between us.” (Jim Sinclair, 1993, National Autistic Society, NAS)

“Specialist training on supporting students on the autism spectrum should be mandatory for all teaching and support staff.” (Haswell et al., 2013)

“Having understanding and building trust are essential for reducing misunderstanding and building confidence with autistic people.” (NAS, no date)

Defining autism

In the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM V, 2013), individual terms such as Asperger's have been replaced by the one term diagnostic term “autism spectrum disorder” (ASD). Those diagnosed as having ASD:

“tend to have communication deficits, such as responding inappropriately in conversations, misreading nonverbal interactions, or having difficulty building friendships appropriate to their age. In addition, people with ASD may be overly dependent on routines, highly sensitive to changes in their environment, or intensely focused on inappropriate items.” (DSM V, 2013:np)

These plus other indicators such as awkward body movements and issues with eye contact may become less obvious later in life, not because there is a cure but because those with ASD have worked extremely hard to disguise them (Beardon, 2009). Their emotional responses will be atypical, and feelings and thoughts tend to be all or nothing.

People on the autistic spectrum also experience sensory information differently. They may be over or under sensitive to external and internal sensations, such as sight, sound, taste, touch, smell, balance and body awareness. For one AS person, the smell of cheese, for instance, might trigger stress. Add the noise and visual overload of an unfamiliar public space, and they may quickly move into meltdown. Their stress and anxiety levels may become extreme without their noticing, which can lead to either meltdown or shutdown. Change, such as the transition to university away from familiar surroundings, routines and people who understand their needs, can be particularly stressful (NAS, no date).

No people with autism will be the same and they may also have a co-occurring diagnosis or have no diagnosis at all. The ASPECT report (Beardon & Edmonds, 2007:5) found that of the AS adults they interviewed, 28% had a diagnosis of a specific learning difference: 23% with dyslexia, 15% dyspraxia and 15% ADD/ADHD. Of the 68% who had contact with mental health professionals, only 12% described this experience as a positive one. Later research (Gelbar et al., 2014; PAVE, 2015) reported many AS students with depression and suicidal thoughts (in the PAVE findings, 66% reported having suicidal thoughts, with 35% saying they had made plans for, or action towards, suicide). Very recent research puts the figure for suicidal thoughts and plans at nearly 75% (Jackson et al. 2017). However, students appeared “relatively comfortable” with their academic work (ibid).

At the same time, autistic perspectives can lead to unique ways of seeing the world along with idiosyncratic talents and abilities; enthusiasm, punctuality, determination and reliability are among the many qualities that students on the autism spectrum may bring to university (NAS, no date). Other strengths include “an ability to maintain intense focus, to adopt unconventional angles in problem solving, or to spot errors that others may overlook” (ibid). The contribution that autistic people can make is being recognised by many businesses across the world (Fabri et al., no date:1).

The transition: preparation

“It is generally agreed that induction programmes should focus on the needs of students and not on the needs of institutions.” (Hussey and Smith, 2010: 159)

“The key to success at university will be a good transition, where staff get to know them and how to meet their needs.” (NAS, no date)

Most researchers examining AS transitions into higher education stress the importance of “a robust support package, which includes social, emotional, practical and academic provisions” that is in place from the outset (Vincent, 2016: 53). This is seen as crucial to AS student success. Reviewing the literature, Sims (2016: 67-8). claims the key elements for success are:

- clear and timely information
- staff who have knowledge and understanding of autism
- pre-entry orientation events
- a social group for students on the autistic spectrum
- specialist mentoring
- accessible services.

The first week of university can be immensely stressful leading to sensory overload, meltdown or closedown. The noise, new smells, new spaces and people, the loss of routine and the unpredictability of the experience may well be overpowering (Sims, *ibid*).

Preparation for entry to HE can, therefore, usefully start at the point students first declare themselves as autistic. Many will want a new start, however, and will not declare themselves. Hastwell et al. (2013:17) suggest students apply for DSA six months before entry as a good starting point to begin establishing needs and concerns; it is useful if the disability officer is involved from the beginning and that AS students understand their role and how to contact them.

Student and disability officer can usefully discuss what support services the higher education provider (HEP) can offer. For example, it may be helpful to a student if, in

advance of a visit to the HEP, they could be sent photographs of the spaces AS students are likely to use. Students could be offered opportunities to see round the university outside the normal open days, so that difficulties with sensory overload can be reduced (Sims, 2016; Madriaga & Goodley, 2010).

After acceptance, incoming AS students could be offered further opportunities over the summer to familiarise themselves with the buildings, accommodation and the library, again when sensory overload can be reduced – the library and student accommodation are likely to raise specific difficulties (Madriaga & Goodley, 2010).

Meeting tutors beforehand to discuss the programme can be useful, along with an opportunity to meet Student Union (SU) officials. It is important, however, that both tutors and SU officials are clear about the ASD student's needs from the outset and how to communicate effectively with them.

Establishing a 'safe' space on campus for individuals to go when anxiety levels are too high is helpful, along with an introduction to this space so that incoming students are already familiar with it before induction.

It is helpful for the student and disability support officers to link with incoming ASD students' schools to create plans that will meet their students' needs.

Key advice on preparation for transition that came from students interviewed by Hastwell et al. (2012:61-2) was:

- Provide opportunities for students to talk to people about what would be helpful to them before they start university and make arrangements that meet the student's needs early on.
- Prospective students should go to open days and transitional support events to have a look around. This will make the transition more familiar and therefore a lot easier.
- Have people at universities who help disabled students find appropriate accommodation for the duration of their course.
- Arrange living accommodation to minimise noise and social intrusion whilst avoiding isolation by matching student interests or preferences.

Parents are often seen as vital in the planning stages for transition since their autistic children may have difficulty articulating their needs in a new environment and to new people (Hastwell et al., 2012:59). At the same time, not all students will want their parents to engage with their transition, which will need sensitive negotiation (Vincent, 2017).

In conjunction with the rapidly rising figures for ASD students entering universities (Equality Challenge Unit, 2013; HESA Student Returns), many pre-entry ASD induction programmes have been created by HEPs across the country. These tend to focus on the academic and practical, while Van Hees et al. (2014, cited in Vincent, 2016:55) argue that programmes need to be more wide-ranging.

One such programme has been the two-day Early Start Programme which was run by the learning support team at a North of England HEP immediately before Freshers' Week (Vincent, 2016). Here students, often accompanied by parents, were able to enrol early, had a library induction, an opportunity to find potential 'quiet' areas around the campus, and moved into their accommodation; activities over the two days included a time management workshop, a cookery class and walking tour of the city; students met the advice team and met other autistic students already at university to gain advice and ask questions. This programme was felt to be "worthwhile for students on social and emotional levels" (Vincent, 2016:59).

There is currently very little data to validate any specific package and, while this project has had some very positive feedback from parents and students, Vincent acknowledges that the research was on a limited scale, and feedback came mainly from students and parents who were "satisfied" (Vincent, 2016:61).

The transition

"There is no doubt the experience of university represents a series of huge academic, social, emotional and practical challenges." (Martin et al., 2008)

"I avoid pubs and the students' union like the plague." (Madriaga, 2010)

"Face up to sensory overload or face up to isolation." (Madriaga, 2010)

Despite the rise in numbers of ASD students in higher education, there is still very little information about their needs (Knott and Taylor, 2013; Jackson et al., 2017).

While the needs of the visually and physically impaired have been addressed in terms of the geography of university life, students with ASD and sensory impairments still find many spaces unusable. For some ASD students the isolation this imposes on them is welcome; for others the narrow social world left to them leads to depression. Universities should set up quiet alcohol-free spaces in which to socialise (Madriaga, 2010).

Students with AS are more receptive towards online communities for social interaction; McLeod (2010) reports on a pilot study to develop an AS online peer support network that received very positive feedback from students.

For Hastwell et al. (2013) good practice to support ASD students through transition can be summed up in their acronym: REAL (reliable, empathic, anticipatory, logical). It is suggested that these factors are central to good practice as **reliability** reduces stress caused by unpredictable change, **empathy** enables staff to understand student concerns, **anticipating** (what may cause stress) enables changes to be made in advance, and being **logical** enables students to understand expectations. (Hastwell et al., 2013 cited in Sims, 2016. Hastwell et al.'s (ibid) guidance on Transitioning and Planning is also very useful.

ASD students interviewed by Hastwell et al. (2012:61-62) have provided some guidance for a specific setting (Cambridge University), highlighting the need for a stable timetable that enables AS students to create structure and routine in their timetables. They want tutor groups that are as small as possible as large groups are hard to socially navigate and become overwhelming and unproductive (Hastwell et al., 2012:61-62). Communication needs to be factual and precise, feedback needs to be constructive and advice must be consistent.

“The golden rule in autism. We need every second of every minute of every hour scripted.” (Lipsky, 2011:26)

Strategies and Resources

Effective communication

To communicate effectively for ASD students, the National Autistic Society (no date) (in their essential online training modules) recommends the following:

- Be flexible and keep an open mind
- Autistic people often prefer clear and concrete information
- Where required, reduce verbal information. Try to be concise and to the point
- Give enough processing time before you repeat what you are saying
- Think about what the person is interested in communicating about. Sharing interests is vital to effective communication
- Stress and sensory overload can affect communication. Give the person more time and space
- Check your understanding: have you really understood the meaning of an autistic person's communication, and have they understood yours?
- Try not to take things personally in the face of seemingly 'rude' communication, autistic people rarely intend for communication to be interpreted in such a way
- Use visual and other 'non-verbal' methods to communicate.

Mentors

“People have to bear in mind that if you have AS you have probably been bullied for most of your life.” (Beardon & Edmunds, 2007:243)

“It helps to have a mentor who is knowledgeable in my subject, having an understanding Director of Studies, having a contact at the Disability Support Team who is receptive to my particular needs.” (Hastwell, 2012:61)

Although the need for specialist mentors for autistic students is widely mentioned, there is “a real scarcity of research” around their use (Sims et al., 2016:50).

Burgstahler and Crawford (2007) have suggested e-mentoring communities; McLeod and Green (2009) have examined the idea of an online 'AS portal', offering a form of

peer-to-peer mentoring/support for AS students in HE; and Hastwell et al. (2013:20) offer the following advice:

- Provide peer mentoring schemes for new students with mentors from years above within the same college and/or department. Enable contact before the start of term.
- Make online mentoring available for students who prefer this form of communication.
- Provide clearly defined role (task) descriptions for non-medical assistants (NMAs).
- Provide information explaining how and why mentoring and study skills tuition can support a student with AS. Emphasise individuality.
- Consider individual students' support requirements as part of the NMA matching process. Feedback from students often indicated a preference for someone close in age who looks more like a peer than an assistant.
- Ensure there is a mechanism to record and regularly feedback details of mentoring support sessions to the DRC from the student and mentor.
- Recruit mentors and study skills tutors with knowledge and experience of working with students with Asperger's Syndrome, an understanding of the social model of disability, and a commitment to being reliable.
- Advertise for new mentors via local NAS services, autism specialists and possibly universities that offer courses on autism from a social model perspective (e.g. Birmingham, Sheffield Hallam, Strathclyde, IOE).
- Share resources between HEIs relating to non-medical helpers (NMH) schemes. This could include examples of mentor handbooks, NMH policy, role descriptions, student feedback, duty of care policy, guidance on boundaries and research into good practice.

Brain in Hand (autism support app - info@braininhand.co.uk)

This phone app includes a diary and solutions to problem tasks as well as instant access to personal pre-planned coping strategies to address problems. It includes professional support from the NAS, whose team can track the anxiety level traffic light system on the software. The student is able to alert the team who will then respond directly using the student's preferred communication style.

The National Autistic Society (no date) reports that results amongst those using the system have been dramatic. 94% of users reported that it is having a positive impact on their life, 88% cope better with problems and feel more confident and 100% say it provides them with help when they need it. This helps people to be more confident and do more things independently, opening new horizons in daily life, education and work.

For information on getting this funded through DSA, see:

<http://braininhand.co.uk/who-we-help/helping-students-fulfil-their-potential/>

Autism and Uni Toolkit (online www.autism-uni.org/toolkits)

This is designed to give ASD students strategies for overcoming typical challenges and advocating for themselves, topics include: telling the university about your autism; managing expectations; help with getting to campus locations; typical study situations; managing difficult situations.

The toolkit is open for all UK universities to acquire. It is suggested that institutions adapt the content to their own requirements, including such information as details of buildings, the student support service. Help is available with the initial set up.

Contact Marc Fabri (m.fabri@leedsbeckett.ac.uk) for more information.

Conclusion

This review of literature around autism and students in higher education developed from our university's exploration of the transition experience into HE of students with autism. It was acknowledged that autistic perspectives can lead to unique ways of seeing the world along with idiosyncratic talents and abilities; enthusiasm, punctuality, determination and reliability are among the many qualities that students on the autism spectrum. It was also noted that despite the rise in numbers of ASD students in higher education, there is still very little information about their needs. To help universities consider the needs of students, Hastwell and colleagues (2013) have developed their good practice guide with acronym REAL (reliable, empathic, anticipatory, logical).

The article concluded with some strategies and resources available to both students (Brain in Hand) and those working with them (Autism and Uni Toolkit). I do hope that colleagues will find the time to explore these resources and will find them useful.

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www.autism-uni.org/bestpractice/

www.autism-uni.org/toolkits

aDShe CPD Days

Dates for your diary

aDShe CPD days are a great opportunity to network and to develop your professional skills.

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aDShe CPD Day South:
Saturday 22nd September, 2018

aDShe CPD Day North:
Saturday 26th January, 2019

Movement and Cognition: does walking or standing benefit thinking and learning?

By Karisa Krcmar

“Not only were long daily walks a therapeutic part of her writing process, helping her sort out her thoughts, but the sights she saw and the people she met never failed to provide new ideas for her writing”¹

Background

People who know me, know that I ‘talk with my hands’ ... a lot. I’ll often say to students: “tell me what you did at the weekend. BUT you are not allowed to move at all whilst you talk to me”. Their fingers twitch. Their shoulders shift. Their heels bounce. Their heads wiggle. I know that I can’t even begin to form words in my head if I don’t move. If you can’t even tell me about your weekend without moving, how can you develop your conceptual, analytic thinking?

That is what we ask students to do. Academic writing tends to be thought of as a purely cerebral activity, frequently resulting in feelings of “alienation, panic, fear, tears or resistance” (Clughen, 2014:293).

Many, many years ago I completed my PhD. My friends couldn’t believe that I had submitted. All they saw of me was walking round Birmingham all day (I was studying there, I didn’t make a special trip there!). They thought I was dossing. I needed those walks to be able to think through and plan my chapters. I wrote up at night, in the quiet of my room.

I was talking with a colleague about how I encourage students to move during my 1:1 sessions and she confirmed that she had recently found it beneficial to read whilst gently cycling on an exercise bike. She said that she processed and remembered far more of the text when her reading was accompanied by movement. Furthermore, we know that some of our students like to move or walk slowly as they revise for their exams and that some of our colleagues working in other higher education providers walk outside with students sometimes to help them think through issues. This approach reinforces the multisensory teaching in which we

¹ Sherrill Tippins writing about American author Carson McCullers (2006:64)

engage as one of the underlying 7 principles of specialist 1:1 study support (aDShe mindmap, n.d.)

Further thought and research was needed!

I found some journal papers and was subsequently ready to bid for some small-scale research money that was available each year at the institution where I work:

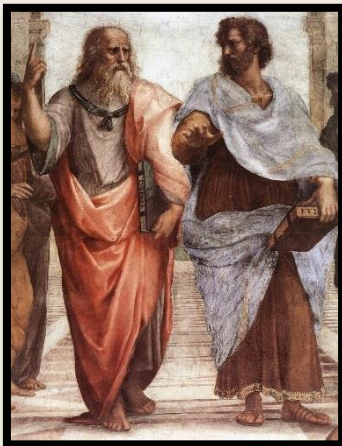
Loughborough University Teaching Innovation Award. This money was originally intended for academics to develop their teaching, but I talked with a few people and decided to 'go for it' because I teach too in my specialist 1:1 study support sessions.

My small-scale practitioner research aimed to evaluate whether standing or light movement (versus sedentary behaviour) has a positive effect on learning and processing information. I would use my specialist 1:1 study support sessions to investigate this.

Literature

Movement and cognition is not a new concept.

Historically, there are numerous examples of thinkers/teachers who walked as they thought.



Aristotle walked around ancient Greece talking to his students¹. Jesus preached and talked to his disciples as they walked from town to town.

Beethoven and Haydn famously walked through the countryside composing great symphonies as they went. Virginia Woolf, Martin Amis, Carson McCullers are just three authors who are known to have favoured walking and in 1851 philosopher (amongst other things) Henry David Thoreau is quoted as saying “me thinks that the moment my legs begin to move, my thoughts begin to flow ... The writing which

consists with habitual sitting is mechanical, wooden, dull to read” (Thoreau’s journal, 19-august-1851).

Solnit (2000:4) argues that “a desk is no place to think on a large scale” and claims that walking should be an opportunity for the mind, body and world to be aligned, leaving us free to think because the rhythm of walking stimulates a rhythm of thinking.

Experiments in 2014 by Opezzo and Schwartz considered 4 different types of activity: sitting inside; walking on a treadmill inside; walking outside; or being rolled outside in a wheelchair. They found that walking outside resulted in the most creativity and free flow of ideas. Michalko (2012:np) in the online journal *The Creative Post* talks about the benefit of “thought walking”; whilst walking, he suggests “look for interesting objects, situations, or events that are interesting or that can be metaphorically compared with whatever project you happen to be working on”.

Academics in the creative arts are exploring movement and learning. They work in an environment where their bodies create meaning in what they produce; embodied creativity is an essential part of their practice (Reeve, 2017), but they are also beginning to examine the mind/body relationship in producing thought and text.

The journal, *Creative Academic Magazine* in November 2017 dedicated a whole issue to the role of the body in creative processes and practices (Clughen & Willis, 2017). In his paper in this journal, Beard (2017:11) argues that “movement is an essential principle in the design of effective learning”. “Walk[ing] the talk”, he argues, facilitates the learning of highly complex material (ibid:12); but small movements, gestures, are also essential in helping to shape the mind. He cites how emerging technologies require us to “swipe, slide and interact with our bodies ... to control our IT devices” (ibid:11). One of the revision strategies that many of my own students successfully employ when putting arguments into their long-term memory is to hold a plastic cup in each hand and imagine 2 people they know arguing together about the concepts/facts. Each hand moves as the argument is made. These sorts of movements can start large and can then be minimised to allow this strategy to be

successfully employed in the exam room to trigger memory (more comments on exams below). In the same journal, Groth (2017:15) suggests that when we are sitting at a table or lying out on our beds (as many students do to read), our brains think that we are resting and they ‘turn off’. This, she argues, is linked to our ‘fight/flight’ reflex – we do not seem to be in any danger, so our brains and bodies can relax.

Judson (2017:33-34) has suggested 5 practices to help engage the body in learning. I have adapted them (since we are discussing movement), as 5 steps:



Employ gesture: Challenge your students to use the body to express an idea or concept, word, event or process. Students can be asked to justify and explain their movements and how they reflect meaning of a topic/concept/idea.



Seek and appreciate patterns of movement: Students don't have to be dancers or musicians to see patterns of all kinds. Ideas can be conveyed through rhythm of sound or movement.



Engage the senses: How might an abstract concept feel, touch, taste, smell, look, sound or move?



Play: All learners need to play. Play drives the growth of adult brain as well as that of the child.



Tap into emotions: We are emotional animals. Find and use cognitive tools that engage the emotions: just like these steps.

These creative, pedagogic approaches to the benefits of movement are supplemented by a growing body of contemporary, and more scientific, evidence that small, non-sedentary movements can help focus thinking. Whilst much of this science-based research has focused on school children rather than adults in higher education and tends to be centred on the science of oxygen intake and brain arousal, it is interesting to pause a moment and consider it.

Davis et al. (2011) assessed cognition and academic achievement by measuring brain activity in overweight children whilst an exercise activity happened alongside an academic task. Their results showed an increase in bilateral prefrontal cortex activity – the place in the brain where executive functions take place, resulting in specific improvement on executive functioning and mathematics. Their research, however, involved an exercise programme of 20-40 minutes a day under a control condition. Similarly, Castelli et al. (2007) found that there was an association between total academic achievement, mathematics achievement, and reading achievement in their study of pre-adolescents when they were given a programme of 30 minute ‘lessons’ originally designed to increase fitness levels. This was not something I was going to subject my students to.

Lambourne and Tomporowski (2010) considered different kinds of exercise. Interestingly, they found that cycling was most associated with enhanced cognitive performance during and after exercise, whereas treadmill running seemed to lead to impaired performance during exercise and only a small improvement in performance following exercise. Similarly, Davranche and Audiffren (2003) used cycling to measure decision-making. Sixteen participants, chosen particularly for their specific expertise in decision-making in sports, were tested with a critical flicker fusion test at rest and while cycling at 20% and at 50% of their maximal aerobic power. The results showed that moderate-intensity exercise (50% maximal aerobic power) improved cognitive performance and that low-intensity exercise (20% maximal aerobic power) enabled participants to compensate the negative dual-task effect. Duncan and Johnson (2013) studied the effects of cycling on ‘ordinary’ 10-year olds. They administered WRAT4 and found that exercise improved spelling, irrespective of the intensity of the exercise; moderate levels of exercise improved reading. Both intensity levels impaired arithmetic and sentence comprehension was unaffected.

These kinds of findings have resulted in more schools incorporating exercise and learning. Peters (2014) reported that one elementary school in North Carolina, USA has a classroom filled with exercise bikes. Teachers bring different classes into the room throughout the day. As they ride, they read. At the end of the year, the school found that the children who had spent the most time in the programme achieved an 83% proficiency in reading, while those who spent the least time achieved only 41%. This does bring up the question, though, of the type of child who may choose to spend time on the programme. This may be a confident child who likes sport and is used to achieving. I think about, say, the child with dyspraxia who may find they are having to concentrate to balance and coordinate their movement whilst also trying to read. Some classrooms at the school have an extra bike in the corner, so that those who can't sit still, don't have to. Teachers also use the bikes as a reward that happens to benefit students.

At the other end of the age spectrum, Colcombe and Kramer (2003) worked with adults aged between 55 and 80 years old and found that fitness training did have identifiable benefits for cognition. Like Davis et al. (2011) (above) Colcombe and Kramer found the largest benefit occurred with executive function processes.

Furnished with this background research, I developed my own research that was appropriate to my students and the 1:1 specialist study support session.

Research Method

This practitioner-based research worked **with** students with specific learning differences to explore **with** them, just how movement could help them process and retain information. It explored qualitatively whether students found standing whilst reading or planning an essay to be beneficial. Quantitative measures aimed to help assess the difference movement can make to reading efficiency and different types of memory.

Six participants were recruited through information displayed in the study support offices and via email. They included students from art, engineering, English and

sciences and were both undergraduate and postgraduates. I completed the ethical clearance procedure of Loughborough University.

I borrowed a standing treadmill desk from colleagues in the School of Sports, Exercise and Health Sciences and moved furniture around to accommodate it. I was unable to access an exercise bike that was suitable for this kind of research. I used the Teaching Innovation Award to buy a standing desk for my office.

In addition to their DSA-funded study support sessions, participating students agreed to two, ½ sessions to do the quantitative tests. The first week, they completed tests of reading, memory and sequencing whilst sitting. The following week they had a ½ session on the treadmill desk repeating the sequence but with different texts to avoid 'learning behaviour'. Students were trained on the way to use the treadmill and the 'safety cut out' was demonstrated to help them feel comfortable with its use. They could operate the treadmill themselves. Students set the speed of the desk to ensure comfortable, slow movement of the feet allowing simultaneous reading with the text resting on the desk. The tests were not designed to be administered at 'walking pace', nor were they designed to raise the heart rate. Students were encouraged to wait until they felt comfortable with the movement before starting the test.

'Out of date' tests were used to avoid any possible conflict with official diagnostic assessments.

Reading test: participants were asked to read 40 short sentences. They were asked to identify the correct word from a list held within brackets, to complete each sentence. For example: The headteacher was held responsible for the discipline and general behaviour of the children in the (class, school, town, street, family). Sentences became increasingly complex. Participants were timed, as well as marked for correct word.

Memory test: participants were given 1 minute to 'learn' 20 words. They were distracted by conversation for 2 minutes, then asked to write down the remembered words. This was followed by a brief discussion about their memory strategy.

Sequencing test: participants were verbally given a string of digits and asked to repeat them in reverse order. These digit strings were increased from 2 to a

possible 9 (but testing stopped when 2 consecutive strings were incorrect). For example, 4,3 to be repeated as 3,4 going up to 2,4,6,9,3,7,1,8,5 to be repeated as 5,8,1,7,3,9,6,4,2.

Tests used were: Vernon-Warden Reading Test; the Turner and Ridsdale Digit Memory Test; and Spadafore Diagnostic Reading Test.

Students were then invited to use a standing desk (Varidesk) in my office during their usual 1:1 study support sessions. The Varidesk was adjusted to suit the height of each individual student. Along with the desk came a spongy rubber mat, which students could choose to stand on. At the end of the intervention they completed a qualitative interview/questionnaire with me.

Results

Treadmill Desk

To be honest, the walking treadmill desk did not work.

Quantitative results showed that students achieved the same, or lower, scores whilst using the treadmill. On reflection I can see two possible explanations.



SpLD

Further to my comment (above) about the reading scores of children using exercise bikes in a classroom and the fact that children who didn't use the bikes much had the lowest scores, but I questioned how an SpLD (like dyspraxia) might influence this; there might be something similar going on here. It is well known that students with SpLD may also experience motor and balance issues; the Dyslexia Adult Screening Test (Fawcett and Nicolson, 1998) includes a test for stability. If students were (however unconsciously) concentrating on their stability, they would be less able to concentrate on the cognitive tasks. In fact, in discussion after the tests, several students commented that they "didn't really like that". One asked to stop before the tests began because she did not like the movement and felt stressed at feeling she had to continue walking.

General walking gait

I watched the people walking on the treadmill and, indeed, tried it myself. I watched people walking in the streets in front of me and became aware of my own walking. 'Normal' walking is very different from treadmill walking. On the treadmill, once the speed is set, it is consistent. There is also a narrow 'corridor' for walking. In reality, when we walk we often meander a little and our own speed is not consistent. This seems to me a very important difference in the freedom our brains are 'allowed' to work. Walking naturally and learning could be examined in the future, maybe, with the use of digital recordings and headphones; but that was outside of the scope of this research.

Standing desk (Varidesk)

This was the qualitative part of the research, so I will give the feedback on the standing desk as a series of quotations from the students, who all liked this (apart from one student who was indifferent).



I always stand to do my art work – I never thought about essays and stuff. This is great. It really helps.

1st year student

I've always walked to think things out – I just never thought I could do it for academic work.

(mature) PhD student (2nd year)

After standing and moving around here, I went for a walk yesterday – I took my Dictaphone with me. I've never thought of doing that before but after a bit my thoughts really did begin to flow. Why? How did it help? Why has nobody told me about this before?

All students need to know about this.

PhD student (writing up)

I'm indifferent – don't mind standing ... don't mind sitting.

2nd year student

It's easier standing up – I'm a fidget and it's easier to fidget when you're standing. I need to fidget to think.

Final year student

I was on the phone yesterday sorting out some insurance and suddenly realised that I was pacing in my room as I was talking.

2nd year student

I didn't think you're allowed to stand and move – like, at school they tell you sit still and shut up. That was always difficult! Wish I could move around in lectures – it would help me concentrate ... though teachers think that you're messing.

1st year student

I've been doing this sort of thing subconsciously. Because I know I struggle with some stuff, I have my coping mechanisms ... one is to stand and move.

Final year student

One student particularly liked the soft, squidgy rubber mat that came with the adjustable table and asked if she could take off her shoes so that she could feel it; saying:

“I can really feel my thinking”



The downside of the Varidesk was that I could find it difficult. The desk was adjusted to the height of the student ... not me. Other students (not in the study) asked to try the desk out – and requested to continue to use it (worthy of note, in itself). This meant that I could spend a whole day delivering 1:1 study support, standing at a desk that was not the right height for me. Most of my students are taller than me and one was over 6 feet tall. The desk was also at an angle that suited the student, not me. I could get to the end of the day and be tired and have stiff shoulders, etc. The desk I was able to afford is also quite bulky and heavy. It's not easy to move out of the way and so it has to sit on my desk in a closed position whilst it is not in use. This does take up quite a bit of the table space. There are more expensive, but more flexible standing desks available.

Suggestions for Study Support Sessions

This kind of approach is not available to everyone – especially those specialist tutors who are peripatetic. However, it may be possible to tack a sheet of A3 paper on a wall for students to stand and move as they think, make notes and plan. Coloured pens and a range of post-its are the basics of any specialist tutor's toolkit, are they not? Students can then take the sheet away with them for further work. If they (or you) have a problem sticking things onto walls, then try Magic Whiteboards that cling using static. You can get a roll at many local stores or they are readily available at:

https://www.amazon.co.uk/s/?ie=UTF8&keywords=magic+whiteboard+sheets&tag=ooghdr21&index=aps&hvadid=225132968557&hvpos=1t2&hvnetw=g&hvrnd=11228916364573632751&hvpone=&hvptwo=&hvqmt=e&hvdev=c&hvdvcmldl=&hvlocint=&hvlocphy=1006891&hvtargid=kwd-300697267368&ref=pd_sl_41vfshljpk_e_p28

The way forward

This research went some to explore, albeit qualitatively and on a small scale, the benefits of movement and cognition. The students whom I saw in my 1:1 study support sessions all (but one, who was indifferent) liked the opportunity for standing and moving. They felt it benefitted them. The students I am seeing again this year have wanted to continue to stand and use the Varidesk.

My next question is: why do we make students sit when they are in an exam room?

Obviously, for logistic reasons but, whilst this research did not compare SpLD students with their neurotypical peers, I believe that more research should be done to examine whether preferring to stand and move is more typical of SpLDs or whether all students could benefit.

One student who was part of the study felt so strongly about the benefits of standing that he has now argued (successfully) to be allowed to stand and move when he wants to. He does already have the opportunity to take exams in an individual room so he is not disturbing others. Whilst his department was initially somewhat 'sceptical', they did agree to allow this. It has also been difficult to get the Varidesk moved to and from the allocated exam room. If standing desks become more widely available in universities, then these issues will diminish.

I would like to recommend that more institutions make this equipment available to students in study spaces (e.g. libraries) and more research is done on the cognitive and creative benefits of cycling inside and walking outside

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