

# **Neurodiversity and dyspraxia**

## **Mary Colley**

This article aims to cover a large amount, in terms of both theoretical perspectives and practical advice. It will begin with general definitions of dyspraxia and AD(H)D, the theories about these types of neurodiversity and the indicators of them in students. It will go on to provide guidance, for both general and specialist staff, on how to support dyspraxic and AD(H)D students. Finally, the article offers information for students themselves. Students will be referred to as dyspraxics and ADDers, as this kind of language is simpler and more friendly; however, it is essential to remember that we are talking about people who are primarily students. They are not defined or circumscribed by their labels, and many of their experiences may be shared by the majority.

The two types of neurodiversity have been dealt with together because in 40-50% of people they overlap. Gillberg amalgamated the two and called them DAMP - Deficit in Attention and Motor Perception (e.g. Gillberg 2003).

There is much more research done on AD(H)D than dyspraxia, and this will be reflected in the article. It will go into some detail about the nature of both, as they are often misunderstood. Many people will not be accurately identified; frequently students are identified as dyspraxic

when they experience organisational challenges but not motor co-ordination issues. The afore-mentioned are far more likely to have AD(H)D than dyspraxia, as poor co-ordination as a child and/or as an adult is an essential part of dyspraxia.

## **Definitions**

### **Neurodiversity**

Dyspraxia and AD(H)D overlap with many other varieties of learning difference, particularly dyslexia and Asperger's Syndrome, as shown in the diagram below. In fact, it is the norm rather than the exception to experience more than one type (Grant 2009b).

### **Dyspraxia**

Dyspraxia can be defined as 'an impairment or immaturity of the organisation of movement. Associated with this may be problems of language, perception and thought' (Dyspraxia Foundation 2009). It used to be called 'clumsy child syndrome,' motor control deficit or 'minimal brain damage'. It is now also known as perceptuo-motor dysfunction or, more commonly, developmental co-ordination disorder (DCD).

Dyspraxia varies in form and severity. Motor coordination weaknesses may be primarily those of fine or gross motor control, or both; they are reflected in a range of everyday experiences, including bumping

into objects and people, poor balance, and difficulty with everyday tasks such as housework and cooking.

Dyspraxia also typically includes weaknesses in short-term memory, visual processing and visual tracking. These weaknesses are reflected in such everyday experiences as forgetfulness, disorganisation, difficulty following instructions and/or directions, and going off at tangents. In some instances 'reading' non-verbal face and body signs may also be a challenge. Some dyspraxics are hyper-sensitive to touch, sound or light, and many report sleep difficulties (Grant, 2009a).

For dyspraxic students, their obvious lack of physical co-ordination and manual dexterity makes them vulnerable to criticism and bullying. This can have a knock-on effect: the more they are criticised and bullied, the worse their emotional and behavioural issues become.

### **AD(H)D**

AD(H)D stands for Attention Deficit (Hyperactivity) Disorder. The 'H' is usually placed in brackets because not everyone experiences hyperactivity. The American manual, DSMIV (American Psychiatric Association 1994) defines AD(H)D as a single condition with three sub-types:

- mainly inattentive
- mainly hyperactive/impulsive

- the combined type.

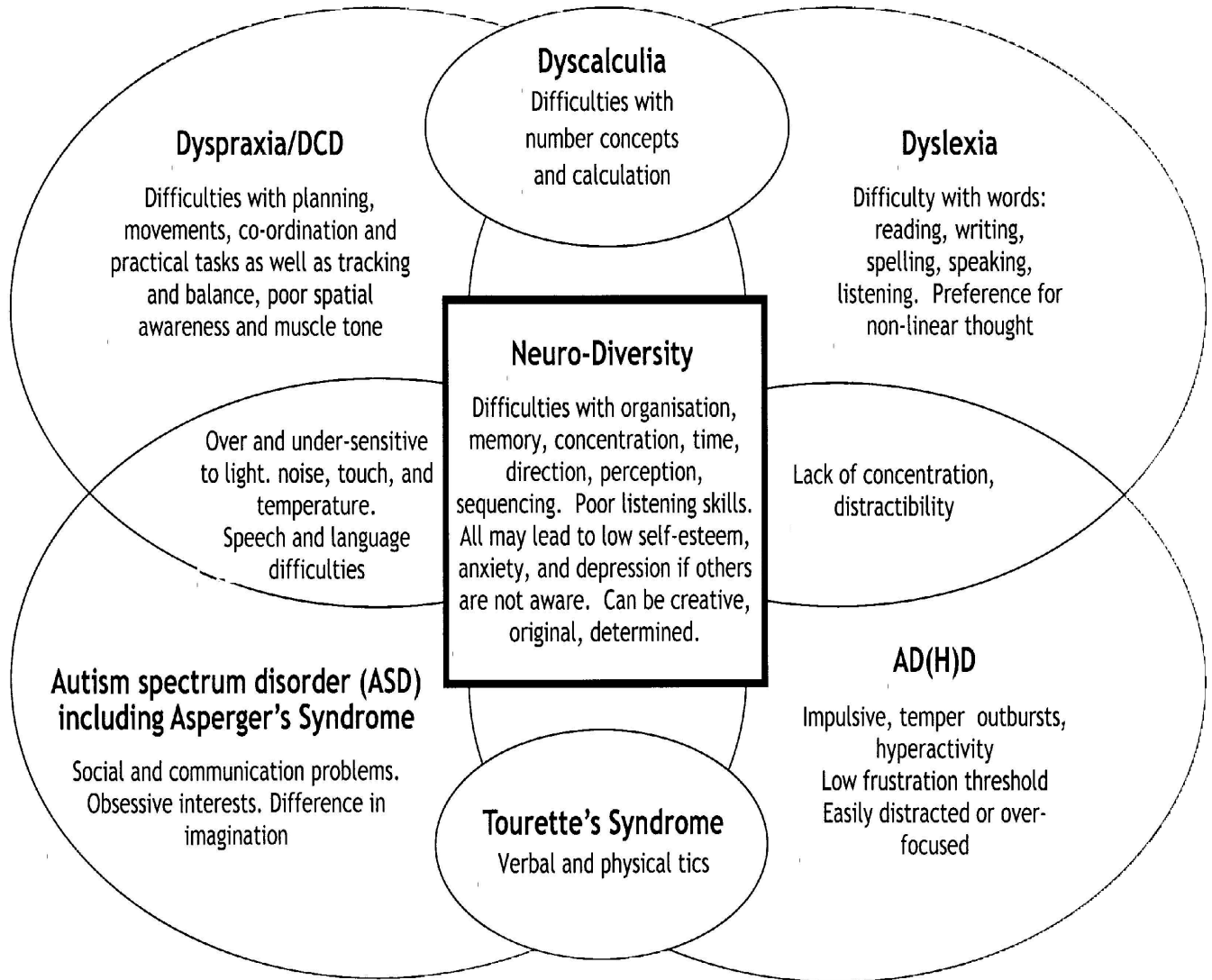
There is also a checklist in the DSMIV listing 18 factors that indicate AD(H)D. Nine factors indicate the inattentive type and nine constitute the hyperactive/ impulsive type. The individual needs to experience six in one section to be considered inattentive or hyperactive/impulsive. If they score six from each section, they are considered to experience the combined type.

AD(H)D is defined by Barkley and Murphy (1998:1) as “a specific developmental disorder ...that comprises deficits in behavioural inhibition, sustained attention and resistance to distraction, and the regulation of one’s activity to the demands of a situation (hyperactivity or restlessness)”. Poor behavioural inhibition and self-regulation are seen by Barkley (1997) as the central impairments in AD(H)D.

AD(H)D was first described at the beginning of the 20<sup>th</sup> century as a defect of moral control. It has also been called hyperkinesis, just ADD, and, like dyspraxia, minimal brain damage. As a neuro-biological impairment, AD(H)D is now covered by disability legislation in the UK (DDA 1995, 2005), as is dyspraxia.

## The Make-up of Neuro-Diversity

This is a document for discussion, concentrating mainly on the difficulties of those with neuro-diversity. It must however be pointed out that many such people are excellent at maths, co-ordination, reading etc . We are people of extremes.



(Source: Developmental Adult Neurodiversity Association)

## **Executive Functions and Impaired Inhibition in Dyspraxia and AD(H)D**

Both dyspraxia and AD(H)D are increasingly seen as linked to an impairment of the brain's 'executive functions' or cognitive management functions. Drew (2009:99), writing about the characteristics of dyspraxia, refers to the executive functions as 'central processes that are most intimately involved in providing organization and order to our actions and behaviour.'

Barkley (2006:316 & 321) writing about AD(H)D views behavioural self-control as dependent on four executive functions: nonverbal working memory (including foresight, hindsight, sense of time and concentration); verbal working memory or internalization of speech; self-regulation of emotions and motivation; and reconstitution (being able to learn from experience). He believes these impairments lead to motor control and execution deficits, both gross and fine, for example poor handwriting. These, of course, are also the primary indicators of dyspraxia.

Impairment of these executive functions also affects a person's ability to integrate, regulate and prioritise other cognitive functions (Grant 2009b).

*A student begins to write up research project which is due to be handed in the next month, having done only a limited amount of preparation. She has collected the research data, but cannot find some important books when she needs them. She delays the report while she rushes around searching for the book. She then feels hungry and goes to get some food, after which she completely forgets that she was looking for a book. She starts writing the report without the necessary book, and soon realizes she can't proceed without it – so she begins the search all over again. After a bit, she finds the book at the bottom of a disorganised pile, and has to start again – but by this time she is tired and stops working. The next day, she can't find the rough plan she had made for her report, but continues nevertheless - without any planning or system – but it's more haste less speed! A friend then pops around to see her, and she instantly stops working. She finally settles down again, after her friend has gone, and tries to re-focus her mind on her project; however, all sorts of other thoughts take over her mind, and she becomes totally obsessed with another project that she finds far more interesting, which she begins to work on for a short time. She eventually manages to bring herself back to her research project, and forces herself to write frantically for an hour or so – only to realize that she has strayed completely off the subject, and has to start yet again. She finally finds her missing plan, but can't read her handwriting – and then manages to spill coffee over some of the notes, making them unreadable. This erratic, unregulated behaviour continues day after day, until the student fails to meet her*

*deadline and has to ask for an extension that she may not get.*

*(Adapted from 'The Disorganised Cook' (Denckla 1996, cited in Brown 2006:11))*

## **Characteristics of dyspraxia and AD(H)D**

Before going on to learning support in college or university, it is useful to take an overview of the characteristics and the types of barrier typically faced by dyspraxic and ADDer students.

Students who are dyspraxic and/or ADDers may have difficulty in a number of areas including:

- manual and practical work (dyspraxia only)
- personal presentation (dyspraxia only)
- spatial skills (dyspraxia only)
- hyperactivity and impulsivity (AD(H)D only)
- attention span and distractibility (Both dyspraxia and AD(H)D)
- memory and organization (Both dyspraxia and AD(H)D)
- written expression (mainly dyspraxia)
- visual and oral skills (mainly dyspraxia)
- numeracy skills (mainly dyspraxia)
- difficulties with social, communication and emotional behaviour (Both dyspraxia and AD(H)D).



## **Manual and practical work (dyspraxia only)**

The challenges of manual and practical work can affect dyspraxic students in numerous ways. They often have struggle with using keyboards and mice. Their handwriting is usually slow and poor/illegible and their work is often messily presented. They may be challenged by science courses, having frequent spills in the laboratory and difficulty taking accurate measurements. They are also very likely to experience challenges with craftwork and operating photocopiers. In addition, the everyday tasks that students have to cope with in university residence or digs can be overwhelming – for example, using washing machines, ironing, shopping, cooking, and using can-openers.

*As soon as I arrived on campus everything started to go wrong. It was the practical things that challenged me: close to tears, I'd spend up to an hour trying to get the key in the door to my student digs. I couldn't find my way around campus and it was a nightmare trying to work out how to use the washing machine or change the duvet on my bed. All of these simple tasks were a massive challenge, but I felt ashamed so tried to hide my problems from the other students. I couldn't even open a bottle of wine or make someone a cup of tea as it would take me so long.*

Nicky

Because of their difficulties with practical tasks, work experience can also prove hard for dyspraxic students. They might well find using new machines a challenge. On top of this, their social skills can be lacking.

#### Personal presentation and spatial skills (dyspraxia only)

Dyspraxic students may also have gross motor difficulties. They tend to be untidy and ruffled, have a clumsy gait and poor posture. They may frequently bump into things and trip over. They can also be poor at sport. However, these difficulties may be less of an issue at college than they are at school or in the workplace.

#### Hyperactivity (AD(H)D only)

Restlessness and constant movement are typical behaviours for many ADDers. Students may find it almost impossible to remain still throughout a lecture, and will begin to fidget or to talk to other students or keep going out 'to the toilet'. Some may rock in their chairs, drum their fingers, or search their bags for items. Some may sit still – but will not follow the lecture because of a stream of thoughts whirling around in their brains. Lecturers and other students are likely to become infuriated by this behaviour. Other ADDers will be very tired because they have general sleep problems.

## **Impulsiveness (AD(H)D only)**

Impulsivity is another common feature of ADDer students, who frequently interrupt other students and lecturers in the middle of seminars or lectures. It is almost as if they are speaking their thoughts aloud and cannot control their outbursts. ADDers often seem to have a need for immediate gratification which can also lead to addictive behaviour such as substance abuse, over-eating or impulse buying.

They may be very impatient and need constant stimulation when they get bored – which they do frequently. They tend to jump from one job, or one interest, to another. 'They always want to take short cuts, starting in the middle of something rather than the beginning, as this can be very boring' (Colley 2009: 174-5).

ADDers also react against following rules and procedures; they can become angry easily and rebel against being told what to do, especially if the rules don't make sense to them. They can appear very talkative and frequently go off at tangents.

Young and Bramham (2007:15) believe that poor impulse control can have serious consequences, because it may result in aggressive and anti-social behaviour such as crime, harm to self and others, drug and alcohol abuse and driving accidents.

## **Inattention/distractibility (Both dyspraxia and AD(H)D)**

Although ADD is usually seen as an inability to focus attention, it is perhaps more correctly seen as attention inconsistency rather than attention deficit (Hallowell and Ratey 2006:5). In fact, ADDers can also over-focus – especially if the subject strongly motivates them. They may, for example, completely forget to have a meal if they are caught up in an interesting subject.

Nevertheless, AD(H)D usually occurs in the form of an attention deficit. ADDers' may lose track of a discussion or conversation, or they may lose track of time and forget appointments. DD and dyspraxic students tend to lose track in long lectures, particularly on subjects that do not interest them.

They are distracted not only by external events (particularly noises) but also by internal thoughts, which can make them appear dreamy. Because of their difficulty focusing on a specific thing, they often make what appear to be 'careless' mistakes in writing and reading. Their failure to sustain attention will also make proof-reading very difficult for them.

ADDers and dyspraxics can also find it difficult to multi-task – for example alternating between listening to a lecture and taking notes. They may also have trouble completing routine tasks or setting study schedules.

The distractibility of ADDers and dyspraxics can also make them very prone to procrastination. They will put off doing an assignment till the last possible moment. They may delay until shortly before the final deadline, when the rush of adrenaline may help them.

### **Memory and organisation issues (dyspraxia and AD(H)D)**

Attention and short-term memory challenges can lead to other difficulties, such as with planning, time management and prioritising. ADDers and dyspraxics can lack foresight or hindsight, thus failing to learn from experience, not recognizing the possible consequences of their actions, or forgetting to plan ahead. They forget and lose things and tend to seem rushed and unprepared. For this reason, too; they are also liable to be late and miss appointments, which can be very frustrating for all concerned.

### **Written expression (mainly dyspraxia)**

Unlike dyslexics, dyspraxic people, on the whole, are not challenged by reading, but their spelling and punctuation can be very erratic. Their sentence structure tends to be awkward and confused and, like dyslexics, they often include irrelevant material in their essays and reports. On top of this they find proof-reading very difficult, and can be slow to complete their work. Of course many are dyslexic as well as dyspraxic. (However, there are some dyspraxics who have no problem

at all with written work, such as Victoria Biggs (2005) who wrote a book about her experiences.)

### **Visual and oral skills (Mainly dyspraxia)**

Many dyspraxic students will have trouble keeping their place while reading and writing. They cannot look easily from one place to another, e.g. from the whiteboard/screen to their notebook. They will often have difficulty finding the word that they need, and will find it very difficult to pronounce newly-introduced words, such as *tsunami* - so many will have difficulty learning foreign languages. They may also mispronounce words, for example pronouncing '*specific*' as '*pacific*'.

They may also talk indistinctly, or too quietly or loudly, or too fast or slowly.

### **Numerical and mathematical skills (mainly dyspraxia)**

Dyspraxic students have a tendency to reverse and miscopy numbers, signs and decimal points. They tend to make frequent and apparently 'careless' mistakes although they will usually make enormous efforts to overcome this.

*I can remember understanding how to do a calculation, but always getting the wrong answer because of leaving something out or adding something incorrectly. I used to have 'careless' written all over my work, even though I'd spent hours on it. I found the red marks all over my work very humiliating.*

Mary

Geometry can be particularly difficult for people who are challenged by co-ordination, as they may find it hard using equipment such as compasses or protractors, or drawing geometric shapes. Their difficulties with spatial awareness and manual dexterity make it very hard for them to draw graphs, tables, circles and diagrams.

### **Social and emotional difficulties (AD(H)D & Dyspraxia)**

Dyspraxics and ADDers may not pick up hidden cues in conversation such as body language or 'hints' and may have difficulty displaying body language. ADDers may be over-talkative and excitable, while dyspraxics can struggle with reading body language – and with displaying it. The difficulty will be exacerbated by the low self-esteem and lack of confidence that many such students will have. Dyspraxics in particular can find everything overwhelming, particularly the amount of work they have to do, and so do not want to socialise too much. Many will have emotional problems, such as depression, anxiety and defensiveness because of a lifetime of embarrassment and criticism.

However most eventually make close friends with a few people who have similar interests.

*At university, most people think you are at least by name, the typical uni student – much partying, drinking, working too, keen to get on with life, living in a student house, etc. I'm not. I'm in my second year, living in halls of residence (most 2nd years live in houses), and finding it stressful keeping up with the workload.* Melanie

Dunford and Richards (2003) show that when children who are dyspraxic grow up, they are far more likely to be socially excluded and to have poor mental well-being, when compared with a similar non-dyspraxic group. Many ADDers and dyspraxics will find that taking alcohol and recreational drugs reduces stress, often leading to further substance misuse (Kilcarr 2001:40). According to Kessler (2004 cited in Brown 2005: 201-202), 88% per cent of ADDers have at least one additional psychiatric disorder. These include depression; anxiety disorders including Obsessive Compulsive Disorder and general psychiatric disorders.

### **Strengths and positive characteristics**

As well as looking at the difficulties encountered by ADDers and dyspraxics, it is important to note that they also have strengths. On the positive side, dyspraxics and ADDers can be creative; artistic;



original thinkers; and good at strategic thinking, lateral thinking and problem-solving. Many will be determined, hard-working and highly motivated – and this can go some way to overcome their difficulties. Many will develop their own strategies to deal with some of their difficulties.

ADDers' high levels of energy and their tendency to risk-take can enable them to make new discoveries; and their penchant for hyper-focusing may lead to them to see things that others do not. Many ADDers in particular also have entrepreneurial tendencies (Kirby 2007).

Finally, it is necessary to remember that very few dyspraxics or ADDers will experience all the challenges mentioned above. They should all be treated on an individual basis.

### **Transition and choosing the right college/university**

ADDers and dyspraxics frequently find it daunting when they move from home to college. They will face new temptations such as alcohol and drugs; and if they have moved away from home, they will probably find it very difficult to cope with the routine tasks of everyday living on their own. Brown (2005:135) says that the separation from day-to-day contact with parents is hugely challenging. They will need support from both parents and schools, to help them prepare for this life-change (Hallowell & Ratey 2006:199-205).

If they leave home to study, they have no family around to help them organize their studies or their everyday life. If they are on medication (e.g. for AD(H)D) they may have trouble organizing their medication. Because of their disorganisation, they will be even more likely than other students not to get enough sleep, which will exacerbate all their problems.

Brown (2005:136) provides a description of a typical ADDer student starting college:

*When I actually got to campus it felt good; nobody really cared when I went to bed or when I got up or whether I ever went to class. Most nights I went out for beers with some guys from my dorm and smoked some weed on our way back. Back in my room I would stay on the internet as late as I wanted .... After a while I just gave up on going to classes. I was hopelessly behind. That's how I failed all my classes. I got kicked out at the end of the year. (Brown 2005:136)*

In the months running up to college, ADDer and dyspraxic students should arrange to look around the university/college individually. At this time, they could ask whether there are support groups, and they should arrange to visit the disability/dyslexia department, to see what services are offered. They should also look at what the student accommodation is like and whether there are any quiet places to study, such as carrels (small separate compartments) in the library.

They will also need advice on choosing suitable courses. If possible, they should look for a course that strongly motivates them and uses their creative skills. The heavier the course, the more overwhelming it can become for the student. They will therefore need to take into consideration how much reading and writing the course will involve. It is essential for all students to ensure that their chosen course matches their strengths and minimizes extreme challenges.

*I chose to do a history degree with a wide choice of different historical periods to specialize in. The period I chose was the Middle Ages – in which I particularly chose a course on Medieval South-east Europe, partly because I was interested in it – but I have to admit also partly because there were very few books on the subject written in English – and I wasn't expected to learn to read Bulgarian or Serbian! The alternative to this course would have been one on modern British history, which had an enormous number of books to read and would have been quite overwhelming for someone like me with dyspraxia and AD(H)D. Mary*

## **HELP AND SUPPORT**

A strategic policy on disability and equality should also be in place, with provision for constant evaluation, modification and enforcement. There should be a policy regarding neurodiversity in general, with a section on AD(H)D and dyspraxia specifically.

There is an urgent need for all college and university staff fully to accept the fact that AD(H)D and dyspraxia are real impairments, not just a lack of willpower or a behavioural issue. Academic staff need to learn to look out for typical signs of dyspraxia or AD(H)D. They may then refer students to learning support staff, but it is also vital for lecturers to convey awareness of neurodiversity to their students, so that disclosure of learning difference is encouraged and inclusive practices and adjustments can be put in place.

Another area that educational and support staff need to be aware of is how students are coping with general day-to-day living - such as money-management, and organizing their workspace - as these are likely to be a challenge for students with dyspraxia or AD(H)D.

Many students will arrive at college without a formal identification, not knowing that they are experiencing a learning difference - or, if they do know, may not wish to declare it. Either way, they are likely to have poor self-esteem, and will need a supportive university or college to help them tackle this. All counsellors should be trained to work with

neurodiversity. Students may also need help from support staff to obtain formal identification, especially for AD(H)D.

### **Student disability services**

The most appropriate place for dyspraxics and ADDers to obtain support should be their college's learning support unit (which may come under something called Student Services, and may be linked to a disability team). These departments should provide assessment of students' needs when necessary and help ADDers get medical diagnoses if they want to take medication. It may be that students will get the help they need from the 'dyslexia Support' unit, rather than a general disability department.

Student Services should also offer a range of advice and practical support, including help with obtaining student grants, particularly the Disabled Students' Allowance, as many students arrive without having organised this - mainly because they cannot afford to get the necessary educational psychologist's report.

The student support department should also, with the student's permission, inform tutors and lecturers of the student's disability/learning difference and needs.

It is important that dyslexia and disability staff are properly trained and informed about both dyspraxia and AD(H)D. (Many know very little about AD(H)D). They should also be prepared to advocate with academic tutors or lecturers on behalf of dyspraxic and AD(H)D students. Other academic staff also need to receive effective staff development.

*I found the disability co-ordinator and staff really good, but the lecturers were really ignorant.*

Miranda

### **General accommodations in college courses**

Lecturers should encourage dyspraxic and ADDer students in seminars and tutorials as much as possible – giving them extra time to frame and answer questions. Dyspraxics and ADDers also tend to need more time to complete their coursework. Staff need to understand that it takes the average dyspraxic/ADDER a far greater time, and much more effort than other students to prepare and write reports and essays.

There is a range of accommodations that staff should be aware of, that can help make college achievement less difficult and less stressful for ADDer and dyspraxic students. Colley (2009) lists a number of ways to support AD(H)D students, which are equally applicable to dyspraxic students. These include:

- giving students more feedback than average because of issues regarding memory and self-esteem
- as far as possible, giving them a distraction-free environment to work in (including the use of headphones to block out sound)
- provision of notes before lectures; or scribes to take notes for the students; or digital sound recorders
- encouraging ADDers and dyspraxics to sit at the front, where they can concentrate more easily and are less distracted by noise and movement.
- breaking down everything into little segments. The whole can seem overwhelming. Frequent breaks need to be taken as well.
- availability of teaching and other materials in a variety of clearly laid-out formats (e.g. large sans serif fonts; bullet points, headings, tables, diagrams; lots of space; and the choice of coloured paper)
- the provision of carrels (separate quiet sections in libraries) because of their difficulty with concentrating and easy distractibility.

- help from tutors (both college tutors and specialist dyslexia/dyspraxia tutors) with prioritising books in reading lists.
- extensions of hand-in dates, if necessary, in order to keep on top of their workload
- good directions, clear maps and signposting around the library and the campus
- extra time during exams (which ADDers and dyspraxics are entitled to be given because of their slower processing speed)
- the option to use a computer during an exam, especially for dyspraxics because their writing can be very slow and illegible
- The option for scribes to write or type their exams, especially if they have difficulty using computers (mainly dyspraxics)
- a separate quiet room for exams in order to avoid distractions.

Dyspraxic and AD(H)D students should also receive guidance from specialist dyslexia tutors, for example with planning coursework and essays, including the use of concept maps. Offering templates of other written essays and reports can be extremely helpful. Tutors should



offer help with basic grammar, punctuation, paragraphing and writing structure, and training in proof-reading skills is essential. Such training is not however usually adequate on its own. They may also need help from an outside proof-reader (Hallowell & Ratey 2006:37).

Tutors also need to help dyspraxic and ADDer students with memory techniques, skim-reading and scanning for information, as well as work-scheduling and time-management, in order to meet all their deadlines for handing in essays and coursework.

### **Learning & Teaching styles and techniques**

'Experience has demonstrated that adjustments made for disabled students can often benefit all students. Inclusive teaching is good teaching' (Open University). There follow some examples of teaching that many ADDers and dyspraxics prefer.

Cooper & Bilton (2002:68) found that students who experience AD(H)D usually prefer an active, concrete learning style and the same is true for many dyspraxic students. They tend to learn better from interaction, observation and experience.

Colley(2009:183) writes: "Student-centred and interactive learning such as Problem Based Learning (Murray and Savin-Baden 1999) can be beneficial, particularly to ADDers, who often do not like authority. This teaching style can foster better understanding and retention of

facts, and can motivate students. This is vital for students who have poor short term/working memories.”

Multi-sensory teaching is essential. It helps students focus more easily on the subject. It is important that lectures are presented in a way that uses the visual, auditory and kinaesthetic modes. For example, videos, pictures, diagrams and concept maps help the visual learner; the auditory learner will benefit from a lecture that is delivered in a slow and audible manner; and the kinaesthetic learner will appreciate the lecturer being as interactive as possible, allowing the students actively to experiment and role-play the information. The provision of notes before a session can offer all these sensory modes – giving students printed notes to see and physically write on, at the same time as hearing the lecture being spoken.

*‘Actually the more of my five senses that I use at a given time, the easier it is for me to solve something or pay attention.’ Peter*

‘Over-teaching’ and repetition is also very important (Colley, 2009:183). Nothing should be left to the imagination. Everything needs to be spelt out clearly. The main points of the lecture need to be repeated. A flow-chart or concept map of the session should be used if possible. Students need to see the bigger picture.

Slides should be as uncluttered as possible. Key learning outcomes need to be made clear to the students - and they should be returned to at the end of the session (Crabtree, 2006:27-28).

Praise and understanding are also very important, because most dyspraxic and ADDer students have experienced misunderstanding and criticism which will have caused their self-esteem to plummet. Colley (2009:181) writes: "Maintaining empathy can be very difficult - for example, when the student has forgotten all his notes for a seminar for the umpteenth time. In such cases, it is best to make a neutral remark rather than a disparaging or hostile one. If the student is being disruptive and keeps interrupting in a seminar, it is best to stay as neutral as possible. Getting angry or sarcastic will only inflame the situation. Often a student will seem rude when in fact they do not mean to be at all."

## **Other help and Support**

Learning support staff can advise them of the benefits of good nutrition, regular meals and taking omega 3 fatty acids. Regular exercise and relaxation are also very important for ADDers, as for all types of neurodiversity. Dyspraxics and ADDers can benefit greatly from yoga, meditation, Tai Chi, Brain Gym, or simply regular walking. The relaxation calms the mind and so enhances focus and concentration.

## **Technological hardware (mainly dyspraxia)**

The provision of the correct technological hardware can be almost more important for the dyspraxic student than is the software. They may need computers with large, ergonomic monitors and keyboards. They also need chairs that allow them to sit in the correct position and at the right height to use the computer efficiently and comfortably. It is essential that dyspraxic students, where necessary, have computer mice that are easy to manipulate and control, as they often find it very difficult to use mice efficiently. They may need a larger mouse of a different shape, or an *Anir* mouse which is shaped like a joystick, or a roller ball mouse. Cordless mice are particularly helpful. These students may also benefit from the use of a laptop computer, so that they can work wherever they are, to make up for their slower working pace.

Because of their difficulty taking lecture notes, they will also benefit from a digital sound recorder - which is valuable for small group and individual meetings as well. The use of a scanner is also important, to enable them to copy text into computers, to be read aloud by appropriate software packages.

## **Technological software**

Computer software can be highly beneficial to dyspraxic students and ADDers. However, they will need a lot of extra training in order to

make full use of these packages. Helpful software packages include **TextHelp Read and Write** which, among other things, reads text aloud to help students revise and to check for errors in their writing; and planning software such as **Mind Manager, Inspiration, Mindful** or **Mind Genius**. Predictive text software such as **Penpal** can help greatly to cut down on typing errors that dyspraxic students frequently make, as well as helping to speed up their typing. Students should also learn how to add words to the **Autocorrect** tool in Microsoft word, to allow them to enter abbreviations for difficult spellings. **Post it** is a simple and easy aide-memoire that sits on the computer desktop. It can also be used to devise timetables and planners. **Microsoft Publisher** can be a very good program for students who are dyspraxic and much easier to use than other design programs such as Quark Express. It has numerous templates for brochures, posters and newsletters etc., which if used correctly can produce professional-looking documents.

### **Equipment and gadgets (mainly dyspraxia)**

There is a range of equipment and gadgets that can help dyspraxics and ADDers to work more efficiently.

#### **Equipment to help mainly with course work**

For both dyspraxics and ADDers:

**Watch Minder** is a normal watch with added functions. The watch can be programmed to make a sound at set times, to act as an external reminder to complete tasks.

### **Palm top organizers**

### **Digital mini disk recorders**

**Student Organiser Pack:** [www.calasc.co.uk](http://www.calasc.co.uk)

**Skoach:** a scheduling and organising tool designed for ADDers but also good for dyspraxic people. 'It helps with planning tasks and has a 'Task Tree' function whereby tasks can be broken down into manageable steps. (.....) It also has a visual timeline which lets you gauge your progress which is great for staying on task. It even keeps track of interrupted or unfinished tasks, puts them back in the task list and lets you record last/next action which helps you stay on track' (Linda Fox [www.lindafoxytypepad.com](http://www.lindafoxytypepad.com)).

**Microsoft Outlook** can also be a good organising tool.

Mainly for dyspraxics:

**Talking calculators** can help students check they have entered the correct figure, which is particularly important to dyspraxic students with their fine-motor and concentration difficulties. Calculators with

large keys can be far easier to manipulate than those with typical small keys.

**Special compasses**, such as the **circle scribe disk compass** ([www.circlescribe.com](http://www.circlescribe.com)).

**Special scissors** & trimmers with large grips can make it easier to cut in straight lines.

**Corrective pens** such as *Tippex*

**Special pens** that are easier to hold and write with, such as those made by Berol or Pilot; these have large grips and are fibre-tipped.

**Rulers with a ridge down the middle** can be easier to manipulate.

Equipment to help mainly with everyday living (dyspraxic students)

*Diacem*, a type of sticky plastic, can be used to secure objects in the laboratory (or when cooking in student digs).

**Cordless Kettles**

**Jar openers**

## **Ergonomic potato-peelers**

More information on these gadgets and many of the computer programs mentioned above can be obtained from the following places:

The Ergonomic Society: [www.ergonomics.ork.uk](http://www.ergonomics.ork.uk)

The Dyscovery Centre: [www.dyscovery.co.uk](http://www.dyscovery.co.uk)

Disability Living Foundation: [www.dlf.org.uk](http://www.dlf.org.uk)

Nottingham Rehab Supplies: [www.nrs-uk.co.uk](http://www.nrs-uk.co.uk)

Iansyst: [www.dyslexic.com](http://www.dyslexic.com)

## **Social skills Training**

This can be really useful for both dyspraxics and ADDers, in particular assertiveness training. This can help students to be less aggressive or passive, and build up their self-esteem and confidence. (It is important that others should understand that dyspraxics and ADDers can seem quite rude on occasions, but usually don't intend to be.)



## **Occupational and Perceptual therapy**

Some dyspraxic students are being helped with these therapies at university. Occupational therapists can help with organisation, and also with using the types of equipment listed above.

## **Mentoring**

Mentoring can provide valuable support to dyspraxic and ADDer students. It is often no good just telling a student *how* to plan and organise: they may need somebody to help them every day with life-skills and practical support.

*My mentor is using this programme with me, and it's beginning to change my life. William*

## **Counselling**

Counselling - especially Cognitive Behavioural Therapy (CBT), or neuro-linguistic programming (NLP) - can make a real difference to ADDer and dyspraxic students. (Other types of more discursive therapy can be counter-productive and frustrating.)

*I couldn't get a handle on my studies until my counsellor sat down with me and explained thoroughly (...) what areas are affected by ADD. A junior history major (cited in Nadeau ed. 1995:299)*

A CBT programme designed specifically for ADDers (and also very helpful for dyspraxic people) has been produced by two AD(H)D specialists, Susan Young and Jessica Bramham. The programme is called *AD(H)D in Adults: A psychological guide to practice (2007.)* The programme includes combating negative thinking; anger and anxiety management; social skills training; time management and prioritisation; problem-solving; and relaxation therapy. There is a companion website with downloadable materials for clients and therapists.

The section of the programme on time management is different from other time management training in that a reward system is incorporated into the time planning process. A time plan is made of progressive small steps towards set goals, and includes external strategies such as using alarm clocks and mobile phones.

## **Diet**

Diet can make a big difference. For example, fatty acid supplements such as *Eye q* and *MorEPA* can aid concentration and memory. (For more information on this, see Richardson 2003b).

Dyspraxics, especially if they have overlapping Autistic Spectrum Disorder, are more likely than others to have intolerances to wheat and dairy products, so omitting these products from the diet can be beneficial (Shattock et al. 2001).

## **Coaching**

Coaching is another intervention that can help. There are now specialist ADD coaches available in the UK, and some of them are helping ADDers and dyspraxics in university. They help to organise the everyday life of students - rather than their academic life - which is what is needed by many such students. Much of the work is done by phone and/or email, so distance is not a problem. Phone calls will usually be at regular times and 'homework' is given between sessions.

A coach acts as a partner, and not as a counsellor or parent, to provide the structure and support that students need in their everyday life. They are there to encourage, not to nag. They help get the student into a routine, for example establishing regular times to get up and to take meals. They may help establish regular times for students to de-clutter their room and files. Coaches also work with students to try to improve their social interaction. They may use role-play to help with a difficult encounter that the student has to face in the near future. Many ADDers, for example, are impulsive, and if they have been upset, may do or say something they regret. Coaches are there to point out the consequences that their actions may incur.

## **Medication**

For ADDer students, medication can alleviate some of the core features of their learning difference. It can help greatly to calm them down, and can benefit their performance in various ways. For example, it can improve their communication, motivation and concentration –

for some, enabling them to gain qualifications when everything else has failed. Medication can also make them more responsive to other interventions.

*I have to thank Ritalin for my university qualifications. Jennifer*

Stimulants such as methylphenidate (MPH) (Ritalin) or dexamphetamine (Dexedrine) are the main medications used in the UK. Most people start on MPH. A slow release variety of MPH called Concerta only needs to be taken once a day, which is helpful for those who find it difficult to remember to take their medication. A non-stimulant drug that helps ADDers is also available (Atomoxetine/Strattera).

However, some people cannot, or choose not, to use medication – and for some the medication does not work. Sometimes the side-effects may prove too much. Some common side-effects are headaches, insomnia, weight-loss, nausea, and anxiety. Some fear the possible addictive properties of medication. Others may fear the medication will hamper their spontaneity or creativity. There is also the issue of remembering to take medication, which can be particularly hard for ADDers when they are stressed – which is when they need it the most.

However, in most cases, medication is not the answer on its own. It should be used in conjunction with other strategies including those mentioned above.

Finally, some ADDers and Dyspraxics can find anti-depressants and anti-anxiety medication useful at times.

## **Conclusion**

AD(H)D and Dyspraxia often overlap with other types of neurodiversity. They both have numerous effects on university students, not only academic but also emotional and social. There are a great many undiagnosed dyspraxics and ADDers at university who are not meeting their full potential – particularly amongst those diagnosed as dyslexic – and university staff need to be aware of this. With greater staff awareness, there will be more likelihood of screening and proper assessment taking place.

There are many ways to help ADDers and dyspraxics. University authorities and staff can accommodate, teach and support them and enable them to meet their potential. Psychological interventions, including coaching and counselling can be helpful, as well as medical interventions. However, as with all types of neurodiversity, the most effective way forward is for the FE & HE environment to be as accessible and inclusive to all as possible.

## **Acknowledgement**

Thanks are due to Diana Bartlett for her advice and support on the mechanics of writing this article.

## **Bibliography and Further Reading**

American Psychiatric Association (1994) *DSM-IV-TR Diagnostic and Statistical Manual of Mental Disorders*. Washington DC, APA

Barkley, R.A. (1997) *Behavioral Inhibition, Sustained Attention, and the Executive Functions: Constructing a Unifying Theory of ADHD*  
Psychological Bulletin **12** (1) 65-94

Barkley, R.A. & Murphy, K. R. (2<sup>nd</sup> ed. 1998) *Attention Deficit Hyperactivity Disorder. A Clinical Workbook* New York, The Guildford Press

Barkley R.A. (3<sup>rd</sup> ed. 2006) *Attention-Deficit Hyperactive Disorder. A Handbook for Diagnosis and Treatment*. New York, Guildford Press

Biggs V. (2005) *Caged in Chaos - A Dyspraxic Guide to Breaking Free*, London, Jessica Kingsley

Brown T.E. (2005) *Attention Deficit Disorder. The Unfocused Mind in Children and Adults*. New Haven, Yale University Press

Colley M. (2006) *Living with Dyspraxia: A guide for adults with Developmental Dyspraxia*. London, Jessica Kingsley

Colley M. (2005) Learning Support for Dyspraxic Students. Pollak D. (ed.) *Neurodiversity in FE and HE: Positive Initiatives for Specific Learning Differences*. Conference Proceedings, Leicester, De Montfort University

Colley M. (2009) Attention Deficit (Hyperactivity) Disorder. Pollak D. (ed.) *Neurodiversity in Higher Education. Positive Responses to Specific Learning Differences*. Chichester, Wiley-Blackwell

Cooper P. & Bilton K. M. (2<sup>nd</sup> ed. 2002) *Attention Deficit/Hyperactivity Disorder. A practical Guide for Teachers*. London, David Fulton

Cousins M. & Smyth M. (2003) *Developmental Coordination impairments in adulthood*. Human Movement Science **22** 433-459

Deponio P. (2005) *Inclusion and supporting individual difference: ADHD and other specific learning differences*. International Special Education Conference, Glasgow. [www.isec2005.org.uk](http://www.isec2005.org.uk) (accessed 20th March 2009)

Drew S. (2005) *Developmental Co-ordination Disorder in Adults*. Chichester, Wiley

Drew S. (2009) Dyspraxia - What's in a name? Pollak D. (ed.) *Neurodiversity in Higher Education. Positive Responses to Specific Learning Differences*. Chichester, Wiley-Blackwell

Dunford C. and Richards S. (2003) *Doubly disadvantaged: a report of a survey on waiting lists and waiting times for occupational therapy services for children with developmental coordination disorders.*

London College of Occupational Therapists, National Association of Paediatric Occupational Therapists

Dyspraxia Foundation (2009) *Definition of Dyspraxia.*

[www.dyspraxiafoundation.org.uk](http://www.dyspraxiafoundation.org.uk) (accessed 20<sup>th</sup> March 2009)

Gillberg C.A. (2003) *Deficits in attention, motor control and Perception: a brief review. Archives of Disease in childhood* **88** (10) 904-10

Grant D. (2009a) Definition of Dyspraxia.

[www.dystory.co.uk/2009/03/david-grants-dyspraxia-definition/](http://www.dystory.co.uk/2009/03/david-grants-dyspraxia-definition/)  
(accessed 20<sup>th</sup> March 2009)

Grant D (2009b) The psychological assessment of neurodiversity.

Pollak D. (ed.) *Neurodiversity in Higher Education. Positive Responses to Specific Learning Differences.* Chichester, Wiley-Blackwell

Hallowell E.M. and Ratey J (2006) *Delivered from Distraction. Getting the Most out of Life with Attention Deficit Disorder.* New York, Ballantine Books



Kelly K. and Ramundo P. (1996) *You mean I'm not lazy, stupid or crazy?* New York, Simon and Schuster

Kirby A. (2005) Partners Collaborating in Training for Individuals with Specific Learning Disabilities. [www.pactsproject.com](http://www.pactsproject.com) (accessed 20<sup>th</sup> March '09).

Kirby D. (2007) The Entrepreneurial tendencies of young people with ADHD and traditional students: are those with ADHD nascent entrepreneurs? *8<sup>th</sup> International ADDISS Conference on Attention Deficit Hyperactivity Disorder: how do you solve a problem like ADHD?* London, ADDISS

Losse A., Henderson, S.E., Elliman, D. (1991) *Clumsiness in Children – do they grow out of it? A 10-year follow-up study.* Developmental Medicine and Child Neurology **33**, 55-68

Mooney J. and Cole D. (2000) *Learning outside the lines.* New York, Simon and Schuster

Murray I. and Savin-Baden M. (1999) *Staff development in problem-based learning.* Teaching in Higher Education **5** (1)

Nadeau K.G. (ed) (1995) *A comprehensive guide to attention deficit disorder in adults.* New York, Brunner/Mazel

Nadeau K.G. (2006) *Survival guide for College Students with ADHD or LD*. Washington DC, Magination Press

Open University (2006) Making Your Teaching Inclusive.  
[www.open.ac.uk/inclusiveteaching/](http://www.open.ac.uk/inclusiveteaching/) (accessed 11<sup>th</sup> February 2009)

Pollak D. (ed) (2009) *Neurodiversity in Higher Education. Positive Responses to Specific Learning Differences*. Chichester, Wiley-Blackwell

Quinn P.O. (ed.) (2001) *ADD and the College Student*. Washington DC, Magination Press.

Richardson A. (2003a) Fatty Acids in Dyslexia, Dyspraxia, ADHD and the Autistic Spectrum - An Overview  
[www.fabresearch.org](http://www.fabresearch.org) (accessed 20<sup>th</sup> March 2009)

Richardson A. (2003b) *Nutrition in Behaviour and Learning: Dyslexia, Dyspraxia and ADHD and the Autistic Spectrum – Can Fatty Acids help?* Food and Behaviour Research, [www.fabresearch.org](http://www.fabresearch.org) (accessed 20<sup>th</sup> March 2009)

Richardson A. and Montgomery P. (2005) *The Oxford-Durham study: a randomized controlled trial of dietary supplementation with fatty acids in children with developmental coordination disorder*. *Pediatrics* **115**(5) 1360-1366

Shattock P, Whitley P. and Savery D. (2001) *Autism as a Metabolic Disorder: Guidelines for Gluten and Casein Free Dietary Intervention*. Autism Research Unit, University of Sunderland

Werenowska N. (2003) *I Can't Drive a Car and Can Hardly Tell my Left from my Right'* Zest Magazine

Young S. and Bramham J. (2007) *ADHD in Adults. A Psychological Guide to Practice*. Chichester, Wiley

## **Sources of Further Information**

### **Websites**

[www.achieveability.org.uk](http://www.achieveability.org.uk) A charity based in London celebrating the talents of Neurodiverse adult people.

[www.adders.org](http://www.adders.org) An organisation based in the UK. Includes many very useful articles on all aspects of ADHD, e.g. on how to go about getting a diagnosis on the NHS

[www.addiss.co.uk](http://www.addiss.co.uk) Attention Deficit Disorder Information Services; one of the UK's leading organisations for ADHD

[www.chadd.org](http://www.chadd.org) Children and Adults with Attention Deficit Disorder. The US leading organisation on AD(H)D. Articles on all aspects of ADHD, including coaching

[www.additudemag.com](http://www.additudemag.com) Contains the latest information and features on AD(H)D

[www.key4learning](http://www.key4learning) A UK-based site for matters relating to neurodiversity especially in the workplace

[www.drthomasbrown.com](http://www.drthomasbrown.com) The site of Dr Tom Brown with latest opinion and information on ADHD

[www.lindafox.typepad.com](http://www.lindafox.typepad.com) The website for UK-based coach Linda Fox

[www.oneaddplace.com](http://www.oneaddplace.com) Contains a comprehensive ADD screening test for adults written by Dr Daniel Amen

[www.add.org](http://www.add.org) The Attention Deficit Disorder Association; a US-based group for adults with AD(H)D

[www.addplanner.com](http://www.addplanner.com) A software planner specially devised for adult ADDers. Users can programme it with appointments and be given a warning about how much time they have. Useful for those who like assertive technology