Dyslexia REVIEW

The Journal of The Dyslexia Guild

In this issue:

Dyslexia Action

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JOIN THE DYSLEXIA GUILD!

Dyslexia Action
Taking Action • Changing Lives

The Professional Body of Dyslexia Action

Who is it for?

For anyone with a general or professional interest in dyslexia. Members include teachers, SENCos, teaching assistants, FE and HE tutors, parents, assessors, and other advisory specialists.

The Aim

We aim to promote discussion, information and research as well as keeping members informed of developments in the field through publication and distribution.

Benefits

- Membership of our specialist library with access to online books and journals
- Dyslexia Review three times a year
- Conferences and events at reduced rates
- Guild Gallery electronic newsletter
- Preferential discounts on courses, suppliers and CPD events
- Assessment Practising Certificate
- Professional Indemnity Insurance at preferential rates for APC

Group membership is also available to schools, library services, publishers and other groups.

You get two copies of the Dyslexia Review and discounted rates for up to three delegates at our conference events.

For more information see our web page
http://dyslexiaaction.org.uk/dyslexia-guild
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Editorial

Welcome to the Spring Edition of Dyslexia Review. This season's issue has a wealth of interesting features. Barry Johnson leads the way with his article on CHC Theory and Assessment. I recommend that all our specialist assessors read this article carefully with a view to reflecting on present and future practice. With recent announcements on the reform of funding for the Disabled Students' Allowance this is a topical moment to ask, is it the DSA that drives assessment practice or are specialist teachers the ones who lead the way?

Gill Cochrane has recently participated in a new and exciting international collaborative workshop that promises interesting future research exchange and practice. Perhaps like me, you will find the comments on dyslexia from other international participants to be quite sobering. So any sharing of good practice can only be a positive and helpful way forward for those working in the international field of dyslexia and SpLD.

Two of our guest features also make interesting reading in this issue. Karisa Krcmar and Tina Horsman from Loughborough University introduce Mindfulness as an assistive study technique for university students. James Billett from Irlen UK provides an informative summary of the underpinning research to the Irlen Method which uses non-invasive technology to assist in the processing of visual information; a help to many who struggle to read black and white text.

'Members networking' is again the underlying theme of the Annual Summer Conference that we hold for Guild Members. This year we will be meeting at the lovely campus setting of Bishop Grosseteste University (BGU), Lincoln and look forward once again to a packed agenda held in the conference suite. Our theme is Dyslexia and Co-occurring Difficulties: exploring aspects of performance. We hope you too will be able to join us for some good networking this year.

Kathryn Benzine
Editor

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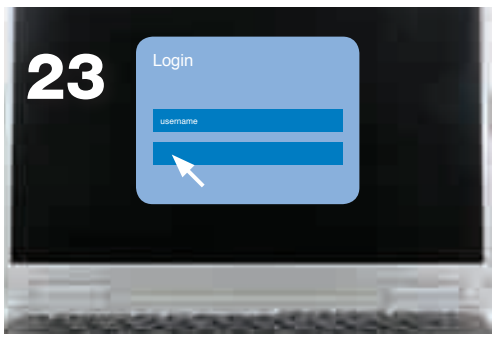

Dyslexia-friendly Passwords

Membership News

Jan Seabourne reports on news and events for Guild members.

Guild Benefits

There is a dedicated web page for members which lists the benefits and tells you how to access them with direct links to save you navigating our pages: http://www.dyslexiaaction.org.uk/guild-members

It also has filmed instructions on how to use the library catalogue and access electronic books, plus a separate film on accessing electronic journals.

Don't forget to log in to the Guild Forums to be able to discuss all the latest topics and get answers to your questions. There are specific threads for Exam Access Arrangements, Assessment and APC. We have had some interesting questions about dyspraxia qualifications, ADHD diagnosis, reading comprehension speed, and EAA for primary pupils. Get your login details from guildforums@dyslexiaaction.org.uk

Forthcoming Events

You can search for a list of Events and Training on the web page: http://www.dyslexiaaction.org.uk/events/search

Continuing Professional Development is always the sign of a committed professional and our next online CPD Courses start from 21st May 2014 http://www.dyslexiaaction.org.uk/short-courses-cpd

A great way to learn during the holidays without compromising your travel plans, our Online Summer School starts 9th July 2014 http://www.dyslexiaaction.org.uk/summer-school

Latest News

I just wanted to alert you to a great posting of news stories called "Tech Thursday". Written by Dominik Lukes, it is series of posts about assistive technology and computer tips. Previous posts have included topics on audio books, keyboard shortcuts, maths tools and memory tools. You can find a list of the posts here: http://www.dyslexiaaction.org.uk/tags/tech-thursday

New e-book available in the NDRC

Gay, Sandie and Richardson, Tina. (2013). *Using e-books and e-readers for adult learning: With a focus on adult literacy. Leicester: NIACE*

Another excellent book from the National Institute of Adult Continuing Education, this looks at e-reader devices and e-book apps, text to speech options, sources of free e-books plus uses in the classroom such as speaking and listening, writing, reading and even creating your own e-books.

See conference booking overleaf!

Guild Conference attendees networking

Constance Stewart Building, Lincoln

Join us for the Conference Dinner on the evening of the 18th June

The Dyslexia Guild Annual Conference

Dyslexia Action
Taking Action • Changing Lives

Thursday 19 June 2014 9.30am to 4.00pm

Dyslexia and Co-occurring difficulties: Exploring aspects of performance

Keynote Speakers

- **Dr Rosalind Herman,** City University: Reading and Dyslexia in Deaf Children
- **Dr Deirdre Martin,** University of Birmingham: Dyslexia in Multilingual Settings

Join us for a **specialist teacher event**, the Dyslexia Guild Annual Conference at Bishop Grosseteste University, Lincoln

- **Seminars on:** Access Arrangements, Best practice in assessment: Multisensory activities for learning, Units of Sound Reading Check and Writing Activities, Hidden Disabilities Questionnaire, Online Teaching and Learning, Read and Write Literacy Software and much more!
- **Seated lunch and a variety of exhibitors.**
- **Networking dinner and accommodation available the night before the conference.**
- **Plus on Wednesday 18 June book a place on one of our workshops.**
- **Early bird booking discount available!**
- **Members and non-members welcome.**

www.dyslexiaaction.org.uk/dyslexia-guild-annual-conference-2014

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Dyslexia Guild Summer Conference
Booking Form 2014

Book online at: http://dyslexiaaction.org.uk/dyslexia-guild-annual-conference

If you experience any problems with online registration, payment or multiple bookings call us on 01784 222342.

Delegate details:

Title (Mr/s, Ms, Other) _____ First Name _____ Surname _____

Organisation/Employer name _____ Job Title _____

Business/Home Address (please delete) _____

Postcode _____ Telephone _____ Email _____

Guild member number _____

Conference packages for Wednesday 18th and Thursday 19th June 2014

You can sign up to seminar/surgery sessions on the day.

*Early Bird rates are for bookings made before midnight on 28 May and paid by 31 May otherwise they revert to the full fee

Rate	QTY	Price	Details
Staff/ Student/ Guild member ***Early Bird**		£80	Guild members, Dyslexia Action Staff and Students on our Postgraduate, International Diploma, and Level 4 & 5 CPD Specialist Teaching & Support Courses
Guild member standard		£115	Booked on or after 28th May
Non Member ***Early Bird**		£95	Booked before 28th May
Non Member standard rate		£130	Booked after 28th May
Conference Dinner		£28	A 3 course meal on Weds 18 June on campus
Accommodation on campus includes en-suite facilities, coffee & tea supplies in kitchens plus a full English breakfast. Check in 15.00, check out 10.00. Booking for accommodation closes at midnight on 3 June.		£55	1 night for Tues 17 June
		£55	1 night for Weds 18 June
Diagnostic Report Writing CPD Event Guild Member		£130	Weds 18 June, includes lunch and refreshments
Diagnostic Report Writing CPD Event Non Member		£150	Weds 18 June, includes lunch
Dyslexia Action Literacy Programme - future plans for DILP		£30	Weds 18 June, 2-4pm, includes lunch beforehand and refreshments pm
Admin charge for non-online bookings	**1**	£25	For all payments made using this form
Total All cancellations and Invoices are subject to a £25 administration fee. NO refunds will be made on cancellations after 3 June 2014.		**£**	Prices include VAT. Bookings may be transferred to colleagues – advise us of any transfers in writing.

Card payment details		**Card Billing Address**	
Name as it appears on card		**Line 1**	
Card number		**Line 2**	
Expiry date		**Town/City**	
CV2 (3 digit number at back)		**Postcode**	

Payment Terms: We require a Purchase Order before an invoice can be raised and the £25 admin fee will be charged, call the number below or email guild@dyslexiaaction.org.uk. Please indicate name and address of invoice to be sent to:

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Dyslexia, Reading and Educational Neuroscience

Dr Chloë Marshall explains what educational neuroscience is and discusses the potential benefits for people with dyslexia.

Educational neuroscience is a hot topic. The number of scientific papers published on the intersection between neuroscience and education is increasing rapidly year on year. Earlier this year, the Education Endowment Foundation published a review of educational approaches and interventions informed by neuroscience, and at the same time the Wellcome Trust published a report surveying teachers' and parents' views on how neuroscience is affecting education (see *Further Reading*). Teachers and parents are enthusiastic about this new discipline and they want to know more.

Given that learning takes place in the brain, it might seem obvious that educators would benefit from understanding more about the brain. The aims of this article are to explain what educational neuroscience is and to discuss what the benefits of educational neuroscience might be for people with dyslexia. Will educational neuroscience be able to inform the development of more effective reading and spelling interventions, and help us to understand why they work? Will it be able to help us identify children who are likely to be poor readers before they fail to learn to read?

Neuroscience is the study of the nervous system, which consists of the nerves (peripheral nervous system), and the spinal cord and brain (central nervous system).

Cognitive neuroscience is an overarching term to describe a variety of different approaches to the study of the how the brain carries out cognitive functions such as language, thought and action. People have been fascinated by the brain for millennia, but the way in which they have been able to study it has changed through the centuries as new techniques have become available. Neuroscientists are now able to use techniques which were unimaginable even a decade ago.

Neuroimaging techniques allow neuroscientists to investigate not only the anatomy of the brain, but also, and more importantly when investigating cognitive processes such as reading, the location and time course of processing. Different imaging techniques provide different levels of spatial (i.e. which areas of the brain are active) and temporal (i.e. the time course of brain activity) resolution. Ideally, neuroscientists want images with excellent spatial resolution (to know exactly which areas of the brain are active to within millimetre precision) and temporal resolution (to know the changes in brain activity on a millisecond by millisecond basis). In reality, they have to compromise, and they use different techniques depending on whether spatial or temporal resolution is more important for their research question(s). *Box 1* introduces some widely-used neuroimaging techniques in the study of reading.

Widely-used neuroimaging techniques

Galaburda, A. (Ed.) (1993). Dyslexia and Development: Neuroimaging techniques are constantly improving and new ones being developed. MRI, fMRI and ERP are three non-invasive techniques that have contributed much to our understanding of reading.

Magnetic Resonance Imaging (MRI) uses magnetic fields to give a static image of brain structure. It uses differences in the properties of different substances in magnetic fields to visualise the brain, e.g. water (a major component of cerebrospinal fluid which bathes and protects the brain) behaves differently to fat (a major component of myelin, which coats neurons).

Spatial resolution is determined by the strength of the magnet used, and since these are now quite large, the spatial resolution is excellent.

MRI is most valuable when it can be used to understand how the different parts of the brain respond to external stimuli during particular tasks such as reading. In a technique known as **functional Magnetic Resonance Imaging** (fMRI), the blood response to neural activity is measured by comparing the amount of oxygenated and deoxygenated haemoglobin. Statistical methods are used to construct a 3-dimensional map of the brain indicating those regions which demonstrate a significant change in activity in response to the task.

FMRI is not a direct measure of neural activity: oxygen levels in the blood change in response to neural activity a few seconds after that activity has taken place, meaning that its temporal resolution is poor. **Event Related Potentials** (ERP) overcome these limitations. Measured by means of **electroencephalography** (EEG), ERPs are the electrophysiological brain responses that result directly from a specific sensory or cognitive event. This technique has the advantage that it can be used in conjunction with behaviour to determine the brain's response in specific instances (e.g. right and wrong answers in a single-word reading task). ERPs have excellent temporal resolution, accurate to a millisecond or even better, but their spatial resolution is poor.

The methods discussed so far refer to what has been termed the "area-focused approach", which is the one-to-one mapping of a particular aspect of cognition to a particular area of the brain. In reality, reading is a complex activity that is not located in just one specific region of the brain, but rather across a network of areas. Neuroscientists are putting much effort into developing a "network-focused approach" to studying complex cognitive processes such as reading, using complex analyses of fMRI data such as **functional connectivity analysis**.

We are at the stage where we understand a great deal about the cognitive processes that underlie reading. Neuroscience allows us to locate these processes in different brain regions and to understand how they unfold within and across those regions, thereby allowing cognitive theories to be tested. Ultimately, linking cognition and neuroscience gives us greater insight into reading and into how people learn to read.

For example, one of the cognitive processes essential for reading is the recognition of letters and words. Neuroimaging has located this task to an area called the Visual Word Form Area (VWFA) which lies in the fusiform gyrus, towards the back of the brain. The neural code for written words must be abstract, because we can recognize words regardless of their font, size, and colour (cat, *eat*, and ***eat*** are the same word). Yet the code must also be sensitive to letter identity and order (eat, ate and tea are not the same words). A further puzzle is that reading is a recent cultural invention, so it is unrealistic that an area of the brain has had time to evolve purely in order to recognise written words. The so-called "Visual Word Form Area" presumably evolved to process stimuli other than letters.

Indeed, neuroimaging studies using visual stimuli such as colours and objects have found that the VWFA is actively involved in processing these stimuli too – the VWFA is not just for words. Furthermore, when our visual system processes objects, it recognises them in spite of differences in orientation. We recognise an object such as an apple as being the same object whichever angle we view it from, whether from the side, from the top, or from underneath. Many orthographies, including English, contain letters which are mirror images (e.g. *b* and *d*) or rotations of one another (*d* and *p*).

The VWFA initially treats letters like other objects, and does not identify *b* and *d*, for example, as separate letters, or *was* and *saw* as different words. It is only with instruction and practice that the learner comes to realise that letters are different to other objects, and, indeed, that numbers are too (*6* is not the same as *9*, and *01* is not the same as *10*). The VWFA is plastic and becomes progressively attuned to details of the reading process as the child acquires literacy.

Another key cognitive process in reading alphabetic orthographies is the integration of letters and sounds. It is not enough to just recognise letters and sounds – readers need to know which letters map onto which sounds. In a study led in the Netherlands by Vera Blau in 2010, typical and dyslexic readers around 9 years of age were presented with 4 types of stimuli as they lay in the MRI scanner (see *Box 1* for a description of MRI and fMRI). The children (1) just saw single letters, (2) just heard (Dutch) sounds, (3) saw and heard letters and sounds that matched, and (4) saw and heard letters and sounds that did not match.

Several brain regions were activated by letters (including the VWFA) and others by sounds (including auditory cortex), and some areas were activated by both letters and sounds. Interestingly, an area of the left hemisphere called the planum temporale showed more activation for the congruent stimuli, i.e. when letters and sounds matched, than for the incongruent stimuli, i.e. when letters and sounds did not match. For dyslexic readers, not only was there less activation in auditory cortex, but there was no effect of congruency in the planum temporale: activation was no greater for congruent stimuli than it was for the incongruent. Furthermore, across all readers the magnitude of this congruency response correlated positively with accuracy on a reading task and negatively with reaction times on a letter-speech sound matching task. The study's authors concluded that letter-speech sound integration is an emergent property of learning to read that does not develop adequately in dyslexic readers. This inadequate development is presumably, they claim, a result of a deviant interactive specialization of neural systems for processing auditory and visual linguistic inputs.

It is worth noting that neuroimaging data are based on correlations, and when interpreting such data it is not easy to disentangle cause from effect. For example, if significant differences are found between dyslexic and non-dyslexic readers with respect to brain function (as

in Blau's study) or brain anatomy, are these differences responsible for the reading differences in these two groups, or do they result from the groups' different experiences of reading? That is why neuroimaging studies that incorporate reading training, or that are carried out before children learn to read, are so important.

An obvious question is whether changes can be detected in the brains of dyslexic readers who have undergone a reading intervention. In a 2010 study using ERPs (see *Box 1* for a description of ERPs), Alessandro Angrilli and his colleagues in Italy investigated how brain plasticity was affected by phonological training. Dyslexic readers around 11 years of age used a computerised programme called WinABC (http://www.impararegiocando.it/WinABC50.htm), which aims to improve both reading speed and accuracy by training phonological awareness, for 10 minutes a day for six months. Typical readers also took part in the study, although they did not do the training – they just served as comparison group for the ERPs before and after the dyslexic group's training.

ERPs were recorded pre- and post-training whilst participants read pairs of words, and participants had to judge whether the words (1) rhymed, (2) were semantically related or (3) were written in the same case. Of interest was the rhyme judgement condition, i.e. the phonological task. The comparison group of typical readers showed activity in the left, posterior part of the brain. The dyslexic group pre-training instead had activity distributed equally across both hemispheres. After training, however, this activity had shifted to the same site as that recorded in the typical readers, namely left posterior. In addition, behavioural tasks showed that the training had improved reading speed and digit span, so that the dyslexic group no longer scored significantly worse than the typical readers. Furthermore, those children who had the greatest reading speed improvement were those with the greater leftward shift in brain activity.

These results are appealing. However, one question we should bear in mind is the following: what if a reading intervention were shown to be effective with respect to reading behaviour (be it accuracy, fluency or comprehension) but that no brain changes were evident upon neuroimaging – would we trust the intervention any less? Presumably not, and nor should we.

It is also worth bearing in mind that not all interventions that claim to be based on neuroscience are effective. For example, Brain Gym is proposed to "balance" the hemispheres of the brain so they work in an integrated fashion, thereby improving learning. Brain Gym also draws on ideas about perceptual-motor training, i.e. that learning problems arise from inefficient integration of visual, auditory and motor skills. Through the use of 26 different physical exercises, Brain Gym is claimed to bring about dramatic improvements in, amongst many things, reading, writing and maths (http://www.braingym.org/about, accessed 23rd Feb 2014). The Education Endowment Foundation's recent review (see *Further Reading*) cautions, however, that "in addition to flaws in its theoretical basis, there is a lack of published research in high quality journals to make claims about the practical effectiveness of programmes such as Brain Gym, at least in terms of raising achievement" (p.20). The so-called "scientific" evidence on which Brain Gym is based is more in the realm of myth than reality (see Box 2). There is little credible evidence of Brain Gym's theoretical basis, let alone robust evidence that it is an effective intervention for reading.

Neuromyths

A report by the Organisation for Economic Co-operation and Development (OECD; see Further Reading) highlights the growing number of misconceptions about the brain that exist among professionals in the field of education. These so-called "neuromyths", defined by the OECD as misconceptions "generated by a misunderstanding, a misreading, or a misquoting of facts scientifically established (by brain research) to make a case for use of brain research in education and other contexts", may have adverse effects on educational practice.

One example of a neuromyth is that learning is improved if children are taught according to their preferred learning style. The VAK approach (i.e. classifying students according to a visual, auditory, or kinaesthetic learning style) claims to be "brain-based" but the data do not support such an approach either in general education or for children with special educational needs. This neuromyth is based on a valid research finding, namely that visual, auditory, and kinaesthetic information are processed in different regions of the brain. However, these separate structures are highly interconnected; indeed, there is substantial cross-modal activation and transfer of information between sensory modalities. It is incorrect, therefore, to assume that only one sensory modality is involved in information processing. Furthermore, although individuals may have preferences for the modality through which they receive information, research has shown that students do not process information more effectively when they are educated according to their preferred learning style.

Other neuromyths include that (1) we only use 10% of our brain, (2) differences in hemispheric dominance (left brain, right brain) can help explain individual differences amongst learners, (3) short bouts of co-ordination exercises can improve integration of left and right hemispheric brain function, and (4) exercises that rehearse co-ordination of motor-perception skills can improve literacy skills. (Neuromyths taken from Dekker et al, 2012, Frontiers in Psychology, http://www.frontiersin.org/Educational_Psychology/10.3389/fpsyg.2012.00429/full)

Finally, an area where educational neuroscience might have an impact in the future is on the identification of dyslexia in affected individuals. Using behavioural methods, children are currently not identified as dyslexic until they have spent one or more years failing to learn to read. How much better it would be for the children concerned if we were able to identify dyslexia prior to them failing to learn to read! It is well-established that dyslexia runs in families, and an MRI study conducted by Fumiko Hoeft and her colleagues in the USA, published in 2012, found structural differences between children according to whether their mothers had a history of reading difficulty. Specifically, a maternal history of reading difficulty was associated with reduced grey matter in language-related areas of the brain in children who had not yet learnt to read.

However, this work is at the very early stages, and is not yet being used to identify pre-readers who are likely to go on to develop reading difficulties. We do not yet know how reliable MRI scans would be, and how their sensitivity and specificity would compare to behavioural diagnostic assessments. Furthermore, MRI scans are expensive. Nevertheless, given that technology tends to both improve and get cheaper over time, it is not inconceivable that neuroimaging might have a role to play in diagnosis in the future.

The path from laboratory to classroom, and from brain scan to lesson plan, is not straightforward. The Education Endowment Foundation's review rated the educational neuroscience of reading "medium" in terms of strength of evidence and "near" in terms of distance from research to application, meaning that there are effective interventions which could be applied immediately. That verdict makes reading one of the relative success stories with respect to educational neuroscience.

The Wellcome Trust survey found that the majority of teachers get their knowledge of interventions from colleagues rather than from scientific papers or from scientists themselves, but that they do want to use evidence-based approaches. Ultimately, teachers need to be able to evaluate the scientific evidence to decide what is likely to be worth adopting in their own educational setting. This means that neuroscientists are going to have to make their work accessible to teachers. Even more importantly, scientists who do educational neuroscience research are going to have to spend time in schools, in order to understand the environment in which children learn and the constraints under which teachers work.

Further reading

- The Education Endowment Foundation's report Neuroscience and education: A review of educational interventions and approaches informed by neuroscience, can be downloaded from their website, http://educationendowmentfoundation.org.uk/
- The Wellcome Trust's survey of teachers and parents, How neuroscience is affecting education, can be downloaded from their website, http://www.wellcome.ac.uk/
- The OECD's report Understanding the brain: The birth of a learning science can be downloaded here, http://www.oecd.org/site/educeri21st/40554190.pdf
- Wiley Blackwell has just published a new textbook called "Educational Neuroscience": http://eu.wiley.com/WileyCDA/WileyTitle/productCd-1118725891.html
- Dorothy Bishop has tackled neuroscientific interventions and educational neuroscience on her blog, http://deevybee.blogspot.co.uk/
- For information on how children's brains develop, http://changingbrains.org/ has some short and accessible videos, including on reading.

Author biography

Chloë Marshall is a Reader in Psychology and Human Development at the Institute of Education, London, where she leads the Masters in Special and Inclusive Education. She also sits on the management committee of the Centre for Educational Neuroscience, http://www.educationalneuroscience.org.uk/ and teaches on the Masters in Educational Neuroscience offered jointly by the IOE and Birkbeck College London. Her research focuses on language and literacy development in typically-developing children and in children with language impairments, dyslexia and hearing impairment.

Bibliotheca Challenge

Bibliotheca, the world's largest company dedicated to the development, deployment and support of library technology solutions have been a key corporate supporter of Dyslexia Action for many years. In 2013 the team trekked Helvellyn in the Lake District followed by a gruelling cycle route, finishing up with a kayak challenge in Lake Windemere. They completed all this in the space of 12 hours and raised an astonishing £10,000 for Dyslexia Action. If you'd like to support Dyslexia Action either as a corporate organisation, a school or an individual please contact our team at GetInvolved@dyslexiaaction.org.uk

CHC Theory and Cross-Battery Assessment: Implications for Diagnostic Assessment Practices

Assessors in the UK can start to embrace CHC theory and the Cross-Battery Assessment approach by identifying and aligning their current tests according to CHC definitions of abilities, writes Dr. Barry Johnson.

In a review of psychometric interpretative methods and contemporary tests of intelligence, Canivez (2013) concludes that assessment practitioners are now simply unable to apply sophisticated analyses required for the correct interpretation of complex sets of test scores without the application of actuarial methods. 'Actuarial methods' are defined as statistically based decision-making processes of mechanical, algorithmic types. Canivez (2013) warns of assessment practitioners being over-reliant on unsafe clinical judgement practices and calls for the necessary advance in statistical resources to improve diagnostic assessment practices.

The difficulty of the assessor's task is due, in part, to the complex nature of our current understanding of cognitive abilities. The Cattell-Horn-Carroll (CHC) theory of cognitive abilities now serves as the preferred theoretical foundation for a number of modern psychometric test batteries (McGrew & Wendling, 2010). CHC theory argues that there is a wide range of distinct individual differences in cognitive ability, and that the relationships among them can be derived by classifying them into three different strata: stratum I, "narrow" abilities; stratum II, "broad abilities"; and stratum III, consisting of a single "general" ability. CHC theory's main strength is that it is empirically grounded in educational research on learning and there continues to be a growing body of research on the relationships between CHC cognitive abilities, processes and academic outcomes. The traditional conceptual separation of 'cognitive abilities' and 'learned attainments' is merged within CHC theory as a result of a better understanding of the links between narrow abilities and so-called attainments. Many commercial psychometric test batteries are based on CHC theory and attempt to provide the necessary actuarial resources that Canivez (2013) argues to be essential. The trend is one of attempting to provide the assessor with wide ranging batteries of co-normed tests. However, no one individual test battery can cover comprehensively the vast number of narrow and broad abilities within CHC theory and therefore the assessor is still left with difficulties relating to choice of tests and statistical methods of interrogation of scores.

The assessor also has to choose a particular model of how to define the concept of specific learning disability. The traditional and simple ability attainment discrepancy model has now fallen out of favour as a result of the need to apply the more sophisticated CHC theory of intelligence and employ the proven links between broad and narrow abilities and types of academic progress.

"The traditional and simple ability attainment discrepancy model has now fallen out of favour as a result of the need to apply the more sophisticated CHC theory of intelligence and employ the proven links between broad and narrow abilities and types of academic progress."

Three main, similar models have evolved in recent years to aid the diagnosis of specific learning disabilities. They are the Discrepancy/Consistency (Naglieri, 2001), Aptitude-Achievement Consistency (Flanagan et al, 2002) and Concordance-Discordance (Hale and Fiorello, 2004) models. Naglieri's model evolved out of the Planning, Attention-Arousal, Simultaneous and Successive (PASS) (Das, Kirby, & Jarman, 1975), theory of intelligence, not CHC. These have been merged into a common approach (Flanagan et al, 2010) which have the essential characteristics that for a specific learning difficulty to be confirmed, specific academic and cognitive deficits, as well as average (or better) general ability or intelligence (i.e., cognitive *and* academic strengths) need to be identified. One important essential characteristic is the operational definition of a deficit being aligned with a standard score of less than 85. Such an approach discards evidence of any significant, but *relative*, discrepancy between ability and attainment scores: only an *absolute* discrepancy is valid within this model, but some operational flexibility is allowed. Figure 1 gives a visual summary of the approach:

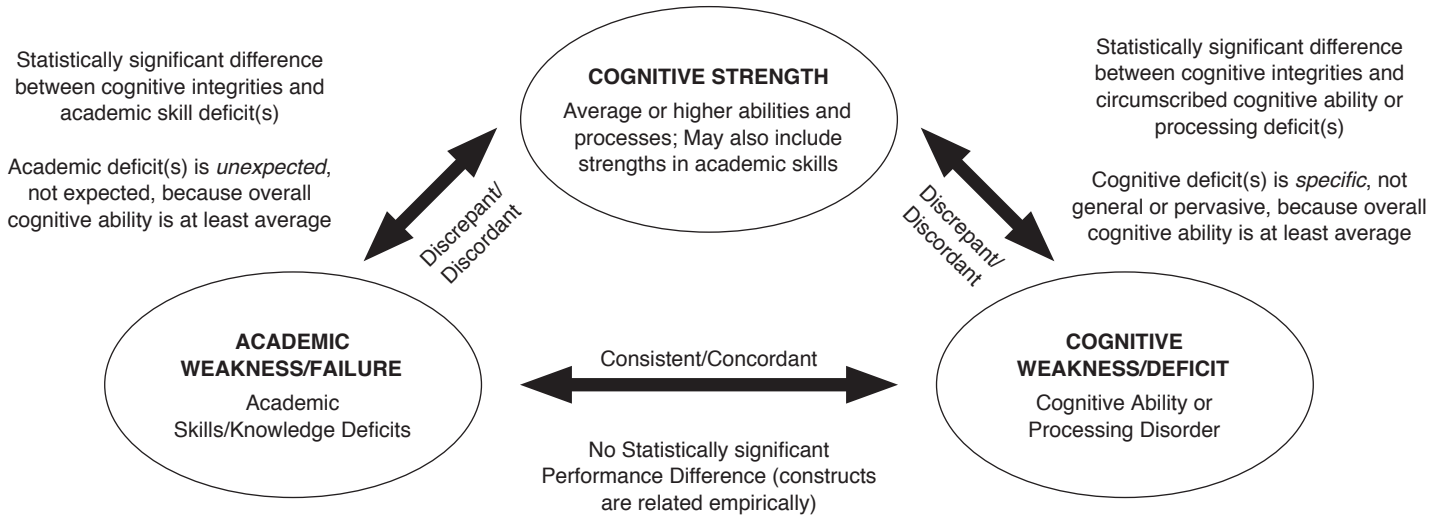

Figure 1 (From Sotelo-Dynega et al., 2011) (with permission from Wiley & Sons, UK).

The pragmatics of how to implement this approach to the identification of specific learning disabilities is best described and in detail in Flanagan et al. (2013) book, *Essentials of Cross-Battery Assessment: Third Edition*. An accompanying CD provides the actuarial support for test scores' interrogation. The book offers definitions of CHC abilities, tables of major tests' subtests and their alignment with CHC abilities, and equivalent tables of areas of attainment such as literacy and mathematics and proven links with particular CHC abilities.

There are significant implications for UK diagnostic assessors as well as opportunities to advance safe platforms of assessment strategies. CHC theory is now sufficiently advanced for assessors to share a common language and framework of discrete abilities and have a greater understanding of which tests measure which abilities. The availability of the evidence to confirm the status of core ability weaknesses that cause particular specific learning difficulties leads to efficient use of test selection within a hypothesis testing sequence. Unsafe and old tests need to be discarded in favour of test batteries, when available, that have co-normed statistical information. Simple ability-attainment discrepancy models need to be discouraged. Adoption of CHC theory and cross battery assessment strategies will lead to closer links with implications for teaching. Borderline cases of specific learning difficulty will be easier to resolve as a result of adoption of CHC and cross-battery assessment, mainly because of the required criterion of 'absolute discrepancy'.

Test publishers in the UK need to be aware of the need for specialist teachers to have access to psychometric test batteries that reflect the contemporary developments described above and which are now in practice in the USA. The importing of USA standardised tests can be problematic because of cultural unsuitability of test items and picture materials. Also, many tests remain 'closed' because of training and professional qualification requirements. Training courses need to have modules available to advance contemporary models of assessment in line with CHC theory and cross battery assessment approaches. The concept of a 'learning disability' will be more rigorously and validly aligned with society's understanding of 'disability' and it is likely that fewer clients will be diagnosed as having a specific learning disability.

"Unsafe and old tests need to be discarded in favour of test batteries, when available, that have co-normed statistical information. Simple ability-attainment discrepancy models need to be discouraged.."

Assessors in the UK can start to embrace CHC theory and the Cross-Battery Assessment approach by identifying and aligning their current tests according to CHC definitions of abilities. Assessment reports could describe measured abilities using CHC terminology. Appendices A-D, but especially Appendix B, in Flanagan et al. (2013) are useful for these purposes. This activity will identify gaps in assessors' test repertoires as well as confirm the validity and ongoing usefulness of certain current tests. Assessors can check their assumptions about how attainments are influenced by underlying abilities by appraising the grounded research evidence available on CHC theory (McGrew and Wendling, 2010). This will lead to established assessment strategies and hypothesis-testing processes to be modified and become more efficient. The identification of shared, narrow abilities that span different attainment areas will promote efficient and sensitive appraisal of co-occurring learning disabilities, for example, across maths and literacy. Assessors may wish to assimilate and apply the concept of a deficit being defined in absolute rather than relative terms, particular in borderline cases. Lastly, sharing case examples with colleagues will promote professional shared standards and a model of assessment that is fit for purpose for the future.

Dr Barry Johnson is Head of Assessment Services and Principal Educational Psychologist for Dyslexia Action. The views expressed in this article are personal and do not reflect operational procedures within Dyslexia Action's Assessment Services.

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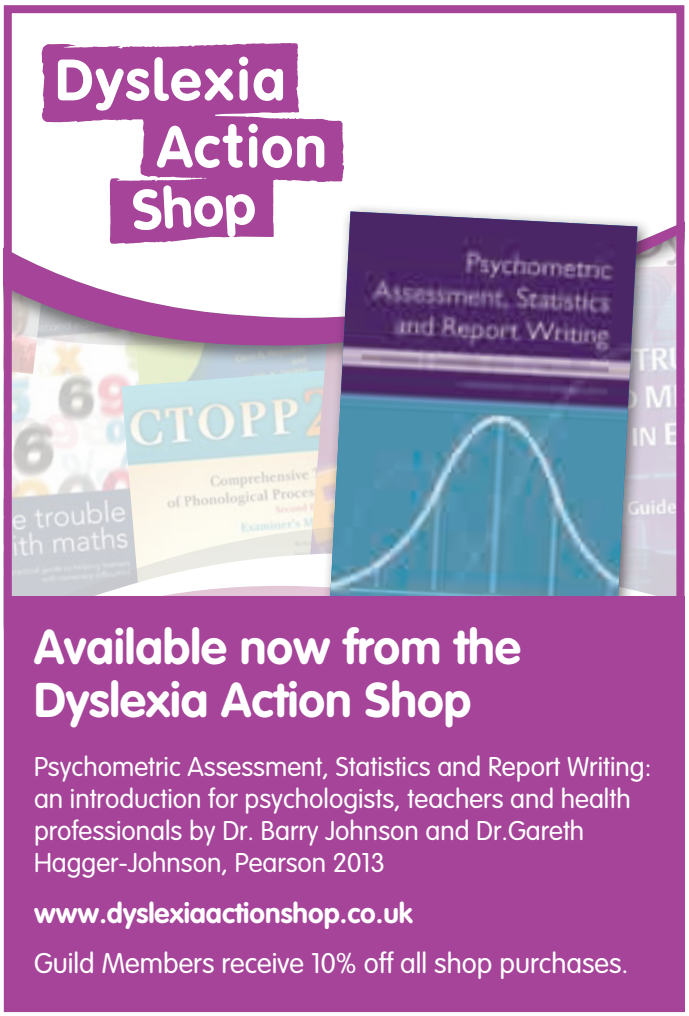

Dyslexia in a Bilingual Context: Identifying and sharing best practice for teaching and learning.

Gill Cochrane, Senior Tutor from the Dyslexia Action Postgraduate Programme reports on a European Union Lifelong Learning Programme (Grundtvig) Workshop, held recently in Odense, Denmark.

In late March 2014 a group of twenty delegates from across Europe met at this European Union (EU) workshop held in the Tietgen Competence Centre, near Odense in Denmark. I was fortunate to be invited to attend this event to contribute recent research and best practice and with a view to future collaborative exchange.

A primary objective of this EU backed programme was to support the development of innovative International Classification of Functioning, Disability and Health-based (ICF[1]) content, pedagogies and practice for lifelong learning. An ICF model of disability is one that acknowledges both the environmental and the personal aspects of disability; it synthesizes aspects of the medical and social models of disability stating that 'disability is always an interaction between features of the person and features of the overall context in which the person lives' (WHO, 2002, p.9).

Danish pub sign

When we think about dyslexia in particular, an important aspect of this 'overall context' is the language or languages in which the learner is engaging and/or learning. Delegates met to examine the complexities of assessing and teaching adolescent and adult learners, in a bilingual context, who might additionally have dyslexia. The opening session of the workshop explored the different conceptualisations of dyslexia across Europe.

Understanding the European Context

One of the UK delegates spoke of the Rose Review's working definition of dyslexia and the importance of its acknowledgment that "dyslexia occurs across the range of intellectual abilities" (Rose, 2009, p.10). This conception contrasts starkly with the general understanding of dyslexia in many other European countries where it is inextricably linked with general or global learning difficulties.

For example in Croatia there is no recognition of dyslexia in adults and much of the therapeutic work is done by speech and language therapists. A Latvian delegate explained that in their country dyslexia was stigmatised and learners with dyslexia were considered of 'below normal' IQ. She stated that a learner could be kept at the same grade for up to four years if phonemic knowledge did not progress. The delegate spoke of her 'deep despair of the system': a system that sees spell-checkers and extra-time in examinations as cheating.

The Romanian delegate also raised the issue that practitioners within Romania needed access to research literature so that they could work to dispel this sort of myth about dyslexia. From the Republic of Ireland it was reported that only Educational Psychologists could confirm the presence of dyslexia, this reduced the likelihood that individuals of lower socio-economic status could gain access to the support they needed and meant that dyslexia had come to be seen as a 'designer label' by many.

Within Slovenia, experts were reportedly still convinced that dyslexia does not have a genetic component. Whilst in France, dyslexia was currently viewed as a political issue and interest groups spent a lot of time lobbying to raise awareness of dyslexia. In Bulgaria and Greece the Davis approach to dyslexia was reported to be prevalent. This approach claims to correct "… the learning disability using the natural strengths and talents of the individual's personal thinking and learning style" (Davis, 2001). The vocational sector in Holland was said to be making progress in its provision, but interdisciplinary communication was hampering the speed of change.

The Tietgen Centre

It quickly became clear from the opening discussions that the term 'bilingual context' meant different things to different delegates. There were delegates from Belgium, for example, where there is more than one official language (French and Flemish-Dutch are both spoken); however, a key focus of the workshop was a consideration of the impact immigration brings in terms of languages and included the following situational examples:

- Scenario 1: a person has recently arrived or is living in a country who cannot speak the official language/s of the country but is literate (at varying levels) in his or her mother tongue.
- Scenario 2: a person has recently arrived or is living in a country who cannot speak the official language/s of the country and is not literate in his or her mother tongue.

Scrutiny of these potential bilingual contexts highlights the many different types of literacy and language support learners might need, as even within these contexts learners may vary tremendously in their native speaker language (or languages) competence as well as the new language that they are learning.

Support in Denmark for Danish-Language Learners

Throughout the workshop best practice in Denmark was used to instigate discussion about how that practice compared to provision across Europe. In Denmark's total population of just over five and half million, some 626,000 are 'new-comers' (immigrants) or the descendants of immigrants (http://www.dst.dk/en/Statistik/emner/indvandrere-og-efterkommere.aspx). The support for 'new-comers' in learning the Danish language is well-developed and is usually fully funded by the state for up to three years.

The Danish language support team conducting the presentation worked within a day centre for 16 – 25 year olds. The central aim was to support the attendees to progress as far as they were able through the set, structured and certificated Danish Language Programme which comprised three modules: DU1, DU2 and DU3. See the Danish Language Programme website for more details (http://www.iasprog.dk/en/).

The team advocated the embedding of language learning within meaningful contexts (Cummins, 2000; Peets, 2009; Lindeman, 1926) echoing the statement of a US born Danish-German immigrant almost a hundred years earlier:

"Too much of learning consists of vicarious substitution of someone else's experience and knowledge. Psychology is teaching us, however, that we learn what we do, and that therefore all genuine education will keep doing and thinking together" (Lindeman, 1926, p.9-10).

The team emphasised using 'the teachable moment': unplanned opportunities that arise in the classroom that provide an ideal platform from which to offer insight to those within the learning context: fleeting moments that must be seized by the teacher and capitalised upon (Lewis, 2014). The previous life-experiences of learners were also carefully considered by the Danish team, so that in addition to this regular language development approach a high level of pastoral care was needed as some young people had escaped from war-zones and arrived in Denmark as orphans.

Recent Developments in Screening for Dyslexia amongst Danish-language Learners

There is currently a major research programme within Denmark, led by the Ministry of Education to develop a language-free screening test for dyslexia (Dynamisk Ordblinde Test: DOT). This is being developed because dyslexia is known to be hard to diagnose in a second language and poor performance on standardised reading tests could be caused either by poor language proficiency in the second language or by disrupted schooling rather than by an intrinsic difficulty with reading as is often found in learners with dyslexia (Elbro, Daugaard & Gellert, 2012).

The Common European Framework of Reference for Languages: Learning, Teaching, Assessment

The methods described by the Danish practitioners, encapsulated best practice as set out by (for example) Dutro and Moran (2002), in that the notions of functions (tasks), forms (tools) and fluency (derived from opportunities to practice) were clearly demarcated. The focus

on 'functions' acknowledges the 'action-oriented' nature of language acquisition described in the *Common European Framework of Reference for Languages: Learning, Teaching, Assessment* (CEFR, p.9): that is that we use language to accomplish tasks in formal or informal settings and for social or for academic purposes.

The focus on 'forms' highlights why it is so important for language teachers to have structural knowledge of phonology (the sound system), morphology (the origins of words and the rules of word formation) and syntax (knowledge of how sentences are built). It also highlights the role that words play a propos specialist or context specific vocabulary (job-related, academic register and so on) and in relation to the role words play within sentences.

Finally the focus on fluency highlights the need to provide learning situations that provide meaningful practice in the wide range of skills that jointly build towards automaticity of language use: language proficiency (Gombert, 2003; Dutro Moran, 2002). This includes nurturing the development of receptive and expressive vocabulary, comprehension of spoken and written language, production of spoken and written forms of language and the ability to flexibly use language for a range of purposes and in a range of contexts.

Mural of Hans Christian Andersen, Denmark

It was surprising that the CEFR was not well-known to most of the workshop delegates. It was suggested that it should be used to give a common self-assessment framework using the DIALANG Scales (CEFR, Appendix C, p.231). The DIALANG Scales deconstruct key areas of listening, reading and writing competence. Using them would provide an analysis of general language competence both in the learner's mother tongue and the new language being learnt.

A useful distinction for language teachers to consider is 'brick' as opposed to 'mortar' words (Dutro and Moran, 2002):

- Bricks are content specific words that relate to a task, a job or a curricular area, for example, 'democracy', 'crank-shaft', 'bain-marie'
- Mortar words and phrases are the basic and general utility vocabulary used in sentence construction. They determine the relationships between words and hold utterances and sentences together as meaningful wholes.

This distinction should make us ponder how important meta-linguistic awareness of word function is to comprehension.

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With special thanks to Marta Badowska for the images used in this article.

[1] See the World Health Organisation's work on classifying/conceptualising disability within a biopsychosocial framework: http://www.who.int/classifications/icf/en/

Mindfulness for Study

Dr Karisa Krcmar and **Tina Horsman** from Loughborough University describe the successful development of a *Mindfulness for Study Programme* for students with ADHD and dyslexia/SpLD.

Introduction

At Loughborough University, we are in the process of rediscovering how useful Mindfulness techniques can be and in doing so, are developing awareness of how these techniques can be adapted for aiding our lives in specific ways. This article looks at the background to the Mindfulness to Study Programme that we have developed and how this has been effectively used with students diagnosed with ADHD or with assessments of dyslexia.

The Background to the Mindfulness to Study Programme

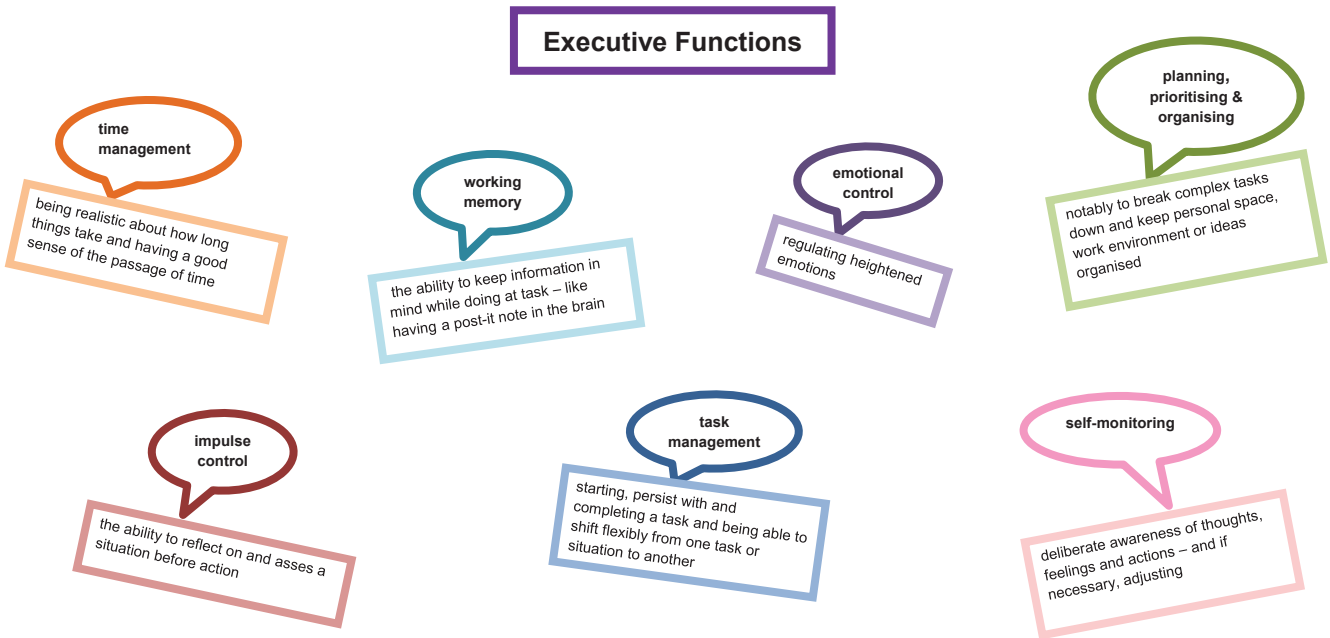
Tang et al. (2010) found that merely eleven hours of meditation induced changes in the brain which could help with better self-regulation. Lidia Zylowska, a psychiatrist in Los Angles who has specialised in Mindfulness approaches to mental health, developed an eight-step programme of Mindfulness for adults with ADHD. When considering the difficulties experienced by higher education students with specific learning differences (SpLDs), it became apparent that there is considerable overlap between students with ADHD and students with other SpLDs and so we followed the basic outline of Zylowska's programme but adapted it for developing effective study skills and presented it in a multisensory way.

Executive Functions

Thomas Brown (2005) discusses how the executive functions of the brain affect cognitive functioning. The executive function can be described as the orchestral conductor of the brain. It is involved in managing the co-ordination of thinking and activity. It influences when and how an individual can manage activities. Kirby (2014) also discusses how executive functioning skills are weak in people with ADHD and anybody who has, or lives and works with people who have, dyslexia and or dyspraxia, can recognise very similar patterns of difficulty.

Both Zylowska's eight step programme for adults with ADHD and our own **Mindfulness for Study programme** for students with SpLDs have been designed to address these issues; Zylowksa's in terms of managing emotions and achieving goals in life and ours in terms of avoiding procrastination and developing effective study skills. Both programmes aim to develop self-awareness within individuals in terms of their executive functioning ability but ours also encourages development in the understanding of **how** an individual student processes information and encourages the development of using cognitive strengths to enhance study. This is supported by Hyland's (2010) discussion of the importance of

Figure 1: Executive function skills and related difficulties.



Source: adapted from: Brown (2005) and Zylowska (2010)

incorporating Mindfulness training to enhance and develop confidence and self-esteem in learners in order to synthesise cognitive and affective domains of learning.

Our Students

The students who came to the Mindfulness for Study sessions were all full-time students and ranged from first year undergraduates to PhD students; some had formal diagnosis of ADHD but most had assessments of dyslexia. The disciplines from which they came ranged from engineering to geography, fine art to IT, sports science to drama; they were evenly split between men and women and their ages ranged from 18 years to 50+ years, with the majority being under 21 years old. Many of them also attended 1:1 specialist study support sessions. Undergraduate students were also eligible to sign up for the University's Employability Certificate which profiles a range of activities and skills acquired outside of their specific learning environment.

The Mindfulness for Study Programme

The Mindfulness for Study programme encompassed the eight-step sessions outlined by Zylowska, but these were necessarily split between terms and there was a period of examination time when they were not held; although in retrospect students said they would have liked to have continued to meet over exam time to practise what they had learned so far and to share the experience of using these skills together. In fact, several students commented on the benefits of meeting in a "safe environment" where they felt secure in discussing their difficulties knowing that others experienced (if not exactly the same) some similar issues.

We started each of the eight sessions with a few minutes spent on Mindfulness of the five senses and focussed on the importance of setting a specific intention when beginning a Mindfulness practice. This served both as a way to settle people down and enter into the session but also helped students to develop awareness of their strengths as they regularly explored each of their senses. One student commented that "I'd never really thought about it before, but know now that I'm really a visual thinker and with these Mindfulness sessions and my one to one study support, I have really been able to develop and work to that strength".

Figure 2: Tactile Resource

The first three sessions focussed exclusively on learning and practising Mindfulness techniques. A multisensory approach was deliberately used. For example, **Figure 2** shows an anchor with knotted string given to each participant as the three anchors of Mindfulness (breath, sound and body) were discussed. Students were able to handle the cardboard anchor and feel the knotted string.

The programme then progressed to exploring how these basic Mindfulness techniques could be used to help with thinking, prioritising, sustaining and completing necessary study tasks, with a session focussed particularly on revision and exam skills.

Some sessions focussed on the body and movement; here we considered Mindfulness of specific areas of the body, from small movements to mindful walking. Those students who found it difficult to keep still or control fine motor movements, found these exercises particularly useful to help become aware of their own body movements. Others have told us that they use them as part of their preparation for study.

> **"I always take the long route to the library now and do some mindful walking on the way – I don't come up with any earth-shattering thoughts, but I do feel more focussed and ready to work when I get there."**

Later sessions went on to develop mindful thinking and controlling difficult emotions which led to mindful awareness of successful communication skills. This proved to be a hot topic as students, particularly those with SpLDs, regularly find group work difficult to manage. We developed what we called the 'ski lift' approach to successful communication which encouraged students to observe feelings and express them in a clear and unemotional way. One of the students was experiencing difficulties within her group because she needed more time than the others to read and process information. She practised her communication skills and used them at the next group meeting to express her needs. She was pleasantly surprised at the positive response from other group members, who listened and were interested; she was then able to negotiate successfully to manage the group task.

The programme worked towards finding mindful ways to take control of the procrastination that inhabits us all. It encouraged students to find mindful routines to help recognise what was stopping them from getting down to work and change these behaviours into successful mindful action and study. A simple table, see **Figure 3**, has proved useful for students to think about, and identify, just what it is that is stopping them from doing what they want to do: procrastination activities ranged from Facebook to searching the Internet for recipes; from self-doubt to panic.

Figure 3: From Distraction to Action

Distraction	How distracting is it? 1 2 3	What is my intention?	Why is this more important than the distraction?	What are my values?	Action
Mobile phone	3 = totally distracting	Start reading for my essay	My essay is due in 2 weeks and I haven't started	Giving immediate response to my friends OR getting good marks towards my degree	Switch off phone until I have finished
It worries me – I don't think I can do it – I keep thinking I need to do more	2 = quite distracting	Complete this essay	If I don't get it finished in time – I'll get no marks		Work with my specialist tutor on matching and ticking off marking criteria against what I've done. Decide to end and move on to another task

A mindful routine can then be established to take a student successfully through the individual stages necessary to complete their study task. As with any task, it is useful, indeed frequently necessary, to chunk into smaller, more manageable tasks, while keeping the holistic view in mind. We developed a routine which we called **SIT-On-ME**[1] which helps students to identify and prioritise actions needed; they then use Mindfulness techniques to take control of themselves and settle down to starting and maintaining focus on the task. Completing a task can be difficult and this is included in the Mindfulness for Study techniques. It encourages students to think about all the little tasks necessary for successful completion (e.g. proofreading, ensuring referencing is correct, etc.); it also helps students to draw a line under their work and recognise that they have done enough and that is what they can do, or to quote: 'Done is better than perfect[2]'.

What was really interesting was that individuals within the group responded to different ideas and activities – what some people felt indifferent to, others really found helpful and insightful. One of the student's found Zylowska's STOP technique of particular use. She downloaded a STOP picture onto her phone and Tablet which encouraged her to take the mindful action of stopping what she was about to do, taking a few mindful breaths and observing whether what she was doing, really was what she wanted to do. She was then able to readjust her thinking, reset her intention of action and proceed with the activity that she really wanted to do – i.e. get down to her work rather than look at her emails or Facebook posts.

Conclusion

The Mindfulness for Study programme was a place where everybody came together (including us) in a mutual exploration of how to practise Mindfulness and apply it to study. What pleased us most was the eagerness of the participants to continue over the exam period and post-programme as a practice community. The students themselves felt they benefitted from a safe environment to explore their specific learning differences and to acquire practice techniques to improve their own metacognition and study skills. One of the benefits most frequently cited by our students was that they were able to approach their work in a calmer, less stressed and more productive way.

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The authors are currently developing a Mindfulness for Study book and one-day CPD events to train you to put on your own Mindfulness for Study course in your institution. For further information about either of these, contact Karisa Krcmar and Tina Horsman at: dyslexiaeducation@gmail.com

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*[1] **Spotlight** –identify what they need to do; **Imagine** – its completion; **Think** – about how they will do it; **Operate** – do it; **Maintain** – keep on doing it without being distracted; **End** – know when enough is enough and successfully end – making sure they tie up all the little loose ends.*
[2] Sheryl Sandberg: CEO at Facebook.

Spotlight on the Irlen Method

James Billett from Irlen Central England explains the history, background and technology of the Irlen Method.

The Irlen Method

The Irlen Method is non-invasive technology that uses colored overlays and filters to improve the brain's ability to process visual information. The Irlen Method uses precision-tinted colored overlays and filters and colour spectrometer technology to produce its color-correction tool. This article summarises the history and development of the Irlen Method.

History and Background

Scientists and educators first became aware of "word blindness" during the1880's when people reported that, in spite of having 20/20 vision, black print appeared to swirl, move sideways, up and down, or fall off the page. [1] Olive Meares, a teacher in a New Zealand clinic, was the first person to outline difficulties generated by black on white text and to note some of the attempted solutions. Meares described "*A child who uses a piece of dirty Perspex over reading material, a teacher who uses chalk on grey slate in lessons, a girl who enjoys a book with brown print on a pink background because words 'don't wobble' … one child uses sunglasses to read.*" Meares concluded that for her students, print distortions were a visual reality and were due to 'perceptual instablility' stemming from black print on white pages. She gave her students Perspex sheets to clip to their books, specifically rejecting coloured glasses as a potential embarrassment for the wearer. [2]

Independently of Meares, Helen Irlen, then Director of a Learning Disability Program at California State University, undertook a research project in 1983 by interviewing 1700 adults and asking each of them: "*What happens when you look at a book?*" Irlen created pictorial representations of the respondents' descriptions which include the following effects: washout, blurry, shaky, swirl, see saw, float and halo. She developed a screening protocol and treatment method to overcome text distortions using coloured overlays and lenses, concluding that visual perceptual dysfunctions occur once the brain has received an image of words. Irlen presented her evidence of 'Scotopic Sensitivity Syndrome' [SSS] to the American Psychological Association, APA, 1983. [3 and 4].

Irlen brought the Irlen technique to Britain in 1987 and then recodified the condition as 'Irlen syndrome. Symptoms may or may not include: inefficient reading, strain and fatigue when reading, print distortions, restricted visual span, light sensitivity and poor depth perception. The condition exists on a continuum from slight to severe, is both varied and intermittent, and although genetic is in part dependent on environmental stressors such as artificial lighting, print contrast size, style and format.

Arnold Wilkins, a lecturer at Cambridge University, undertook a research project in 1990 for the Medical Research Council in collaboration with Norfolk County Council. In conjunction with Cerium Visual Technology Wilkins developed the 'Intuitive Colorimeter' so that opticians could treat symptoms of 'visual stress'. [5]

The Irlen Treatment Method

The Irlen Reading Perceptual Schedule [IRPS] is an Overlay Assessment and takes an hour. It is a process based assessment, without a defined outcome and contains:

- A self-report questionnaire rating the degree of reading inefficiency, strain and discomfort.
- A range of visual tasks which replicate reading experience.
- A comparative method to choose the correct overlay [or combination of overlays] to minimize distortions from a page of dense text.
- The client rating of the degree of improvement provided by overlay/s, which includes 1] an assessment of the reduction of text movement and blur, the brightness, discomfort, and background disturbance from the printed page. 2] Reading activities to note changes in accuracy, fluency, and comprehension.
- An overlay grading, which predicts the future effectiveness of Irlen filter lenses.
- The opportunity for self-comparison to the Irlen distortions which may be unknowingly experienced.
- A review of educational progress.
- A full report

Clients are generally advised to use an overlay for up to three months to assess ongoing benefits before considering Irlen filter lenses. The validity of the Irlen Screening Test has been independently established, Robinson 1995. [6]

The Irlen Differential Perceptual Interview Schedule [IPDS] is a Coloured Lens Assessment and takes two hours. Irlen uses the conventional optical method - the comparison of matched pairs. Symptom identification includes environmental response to lighting, subjective response to words, letters and numbers with varying spacing, font size and contrast on both a wall chart and the printed page. Filters are chosen from 75 sets graded across the spectrum of visible and invisible light being added and rejected in turn, being incorporated into a series of layers until the identified

distortions, strain and discomfort are eliminated or significantly reduced. The correctness of the tint is then verified by improvements to reading fluency accuracy, comprehension, and reaction to VDU, natural and artificial light. The Evaluation is adaptable to age and learning/behavioural condition, parents of children are encouraged to be part of the process. A copy of the most recent optical prescription is available at the time of the Evaluation so as to ensure that perceptual distortions occur in addition to, and separate from, the need for corrective optical lenses. Since a refraction transmits light, whereas a reflection absorbs light, colours chosen by the Irlen method can be up to one third of the density to that chosen by a reflection; Barbolini [7].

Wearing Irlen filters does not affect colour sense; the page remains a shade of white, there are no limitations to usage. Irlen filter colours can be incorporated into Plano or Prescription lenses or contact lenses. The latter option provides greater protection from incoming light, allows eye contact, and avoids any sense of embarrassment; the tint covers the pupil only. [9]

Explanations of the difficulties identified

MRI/ Spect Scans and VER have confirmed the assertion made by both Olive Meares and Helen Irlen that the way in which the brain processes incoming visual information can cause difficulty experiencing and interpreting text. In 1991, Margaret Livingstone established that subjects with dyslexia showed diminished visually evoked potentials to rapid, low-contrast stimuli. The Magno pathway did not operate at normal speed. Abnormalities in their evoked potentials were consistent with a defect in the magnocellular pathway at the level of visual area 1 or earlier. Livingstone speculated that the use of colour by Irlen "may be useful because they heighten the contrast between the letters and the background and thus alter the timing differences." [9]

In 1997, Jeff Lewine used magneto encephalography (MEG) to record visual responses for eight subjects with Irlen Syndrome and eight without. Subjects were asked to fixate on the centre of a four square checkerboard, contrast was reversed every 200 msec, Subjects were asked to count the number of times a central black circle briefly flashed white, [every 1-2 seconds.] For the Irlen syndrome group, each subject was evaluated with and without custom made Irlen lenses. Control subjects were tested without lenses and with a lens pair that caused the maximum change in luminance. A complex field pattern was seen without lenses, whereas an organized dipolar pattern was seen with lenses. The data suggested that coloured Irlen lenses provide for normalization and crystallization of visual information processing in most members of the Irlen Syndrome population. [10]

James Irvine, (1997), illustrates that when reading, the brain with Irlen Syndrome is in overdrive, using different parts and a larger portion of the brain when compared to a normal subject. [11]. By using Visual Evoked Responses (VER), Andrew Yellen [12] identified the 'flash bulb effect'. An individual without Irlen Syndrome normally processes visual stimuli between 130-150 milliseconds, the brain returning to a state of readiness by approximately 200 milliseconds. Irlen Syndrome causes hyper-reactivity to visual stimuli after 30-60 milliseconds, which is followed by a latency period, reprocessing information again in the 400-500 millisecond range. Irlen filter lenses bring a degree of normalization to the processing speed and surface brain activity.

Further information on the Irlen Method can be found at: www.irlenuk.com

About the Author: James Billett became an Irlen Diagnostician in 1995 and holds an advanced qualification from the Irlen Institute for working within the autistic spectrum.

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Dyslexia-friendly Passwords

Do you have trouble remembering your IT passwords? Dominik Lukês, Education and Technology Specialist at Dyslexia Action, provides some memorable tips to assist.

What is this about?

Almost all advice on how to choose a good password is bad for somebody with dyslexia. People with dyslexia tend to be very bad at remembering, reading and writing nonsense words. But that's what you're told you have to use for a safe password. Luckily, that's not exactly true. This article will give you some tips on a secure, easy-to-remember and easy-to-type password.

We will start with the tips and leave the explanation for the end.

Two key things about passwords

- Go long! A longer password is better than a short random password
- Use a password manager

Long passwords

Any secure password has to be at least 12 characters long! Anything shorter will not stand up to a serious attack.

The good news is that the longer the password, the less random it has to be. The more types of characters you use, the better, so you should include at least one number and one capital letter. We'll give you some examples below. Get a good password in 2 steps:

1. Pick 3 or 4 words you know how to type reliably
2. Add some numbers in between or at the end

Examples of dyslexia friendly passwords:

MyDogJohnBarksNightly12

45SeemPruneShone

This37IsFranksName89

barcelonaberlinholidaY2012

Password Manager

You should never reuse your password! Even very respectable websites (like LinkedIn) often get hacked and thieves than try to match your password and your email on other sites. But this would be impossible if you had to remember them all. Luckily, there are some free password managers. Let's have a look at 2 that are recommended by security experts:

LastPass (https://lastpass.com/)

LastPass is an online service that gives you plugins for all popular browsers that:

- Generates a secure password when registering
- Remembers your user name and password for each site
- Fills in the login form automatically when you visit a site
- You can even use it to securely store your contact details and your credit cards to save you time with online shopping.

LastPass is essential when you have multiple computers.

LastPass is recommended and trusted by many security experts so it is as safe as anything can be. It also has mobile apps but you have to pay an annual fee of $12 to use it. I have been using LastPass for the last three years.

KeePass (http://keepass.info/)

If you don't want to store absolutely anything online, you have to install an application on your computer. A popular and absolutely free choice is KeePass.

KeePass will:

- Store all your passwords and other sensitive information
- Generate secure passwords
- Carry passwords securely on a memory stick to use on other computers

- Fill in forms on the web through plugins: http://keepass.info/plugins.html
- Export data to third-party mobile apps

The explanation

Why should you trust this advice as opposed to all the other advice you've been given?

If you're asking yourself this question, you are on the way to becoming a more secure computer user. It's always important to seek confirmation and look at other opinions.

This advice is based on the theory of a computer security expert Steve Gibson called Password Haystacks, https://www.grc.com/haystack.htm. He described all the details and the theory and even included a little password testing tool. You can read the page or listen to a 37-minute podcast where he explains it all at: http://media.grc.com/Padded-Passwords.mp3.

Gibson does not deny that random passwords are better than non-random ones. All he says that because of the way passwords are actually hacked, longer passwords don't have to be as random.

All I've done in this article is summarise his thesis. I've included even more points in the following mindmap: http://www.xmind.net/m/wxqp/

Book Reviews

McAteer M (2013). Action Research in Education, Thousand Oaks, California: Sage publications Ltd. ISBN-10: 144624105X (hbk) ISBN-10: 1446241068 (pbk) ASIN: B00GLS718Y (Kindle) RRP: £19.99

Reviewed by Natasha Mercer Bell, Postgraduate Diploma student and Dyslexia Support Tutor.

Mary McAteer has worked for over thirty years as a teacher, local authority consultant and educator, in a range of senior pastoral and curriculum roles. In addition, she has worked as a Senior Lecturer, Principal Lecturer and program lead for Master's Level Professional Development Programmes at two universities. McAteer's knowledge of action research stems from her own postgraduate study, at Masters and Doctoral level, and through supporting students in a range of action research studies.

This book is predominately aimed at those undertaking postgraduate study, although the case studies in each chapter provides clear insight into the actual practice of action research and, therefore, anyone interested in action research as a means to professional learning and the improvement of professional practice will find this book useful. Likewise, course tutors and project leaders would be able to draw on the theoretical and practical materials in this book.

The structure of the book is split into three main sections. The first section 'Getting to Know Action Research' provides more theoretical discussions and debates around contemporary action research and education, allowing the reader to understand what action research is and, importantly, is not. This section carefully introduces the reader to a synoptic overview of a range of models of perspectives on action research, which allows the reader to consider a suitable action research model for their own studies. Section Two: 'Doing Action Research' examines particular aspects of the action research process and tests out both a practical and theoretical issues involved. This structure supports the reader as they formulate their question, collecting, collating and conversing with their data, the role of literature and action research, how to use data effectively and efficiently and the crucially important writing up process. The final section 'Sharing Action Research' focuses on sharing and disseminating action research reports and the action research process. McAteer highlights the importance of this professional learning being shared with others.

The key strength of this book is the layout. Each section is separated into chapters and subheadings are used to further segment each chapter, which makes identifying the relevant information for your personal action research effortless and prevents you from becoming overwhelmed in any particular process. Additionally, the chapters comprise an introductory overview, case studies with narrative and theoretical commentary, prompts for personal reflection, and a concluding summary section. The case studies are valuable because they allow the reader to consider their personal response and approach. Similarly, the personal reflection enables you to respond to direct questions and further reflect on your knowledge of the issues raised in that chapter.

For anyone completing or interested in action research, this book would provide you with a clear and comprehensive guide to approaching your project and would serve as a useful reference tool.

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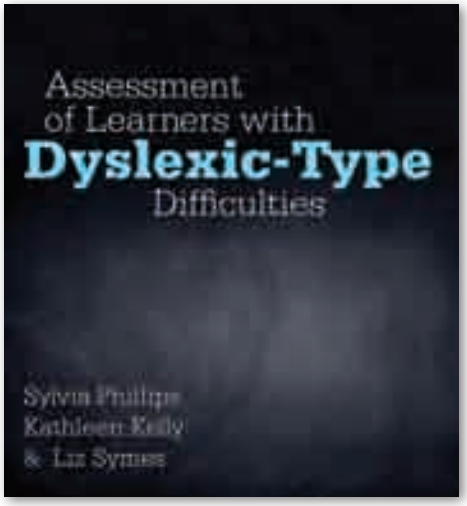
Phillips, S., K.S. Kelly and L.Symes, (2013) Assessment of Learners with Dyslexic-Type Difficulties Sage Publications Ltd. ISBN-10: 1446260224 (hbk) ISBN-10: 1446260232 (pbk) ASIN: B00GXCVWD8 (kindle) RRP: £29.99 pbk



Reviewed by: Lois Hood, Freelance Dyslexia Specialist.

The authors of this book have a great range of experience in the field of dyslexia including primary and secondary schools as well as universities. Their knowledge of the field is evident throughout the book which has been written for teachers who wish to improve their skills in terms of both identifying pupils with dyslexia and assessing for dyslexic type difficulties.

Formal assessments are described with examples of standardised assessments. Informal approaches to assessment are also covered as, for example, using miscue analysis or examining handwriting. Classroom observation schedules are also provided. The language is accessible and technical vocabulary is explained so a wide readership is possible. All aspects of assessment are covered from screening through standardised assessments to assessment by other professionals.

Issues of cultural and linguistic diversity are tackled with especially good points made regarding early years and children with English as an Additional Language.

The contents are clearly laid out with main headings, sub-headings, index and glossary as well as a section which covers the principles and concepts of psychometrics. Each chapter has a summary at the end with points for discussion and follow up activities, further reading and a bibliography.

Additional material is also available on the publishers website and includes an outline for an assessment report as well as the first chapter of the book.

This text would be useful in all schools as a reference book as well as a training manual. It would be equally useful for specialist teachers and psychologists and for those who are preparing to apply for the renewal of their Assessment Practising Certificate.

For further information see: http://www.uk.sagepub.com/books/Book239650#tabview=samples)

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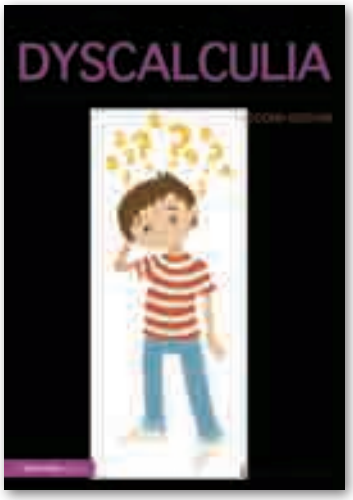
Hannell, G. 2nd Ed., (2013). Dyscalculia: Action Plans for Successful Learning in Mathematics. David Fulton, Routledge Oxford. ISBN-10: 0415660130, eBook ISBN13: 978-0-203-07435-0, RRP: £23.99



Reviewed by Pat Dixon Specialist Maths Teacher, Dyslexia Action, Egham Centre.

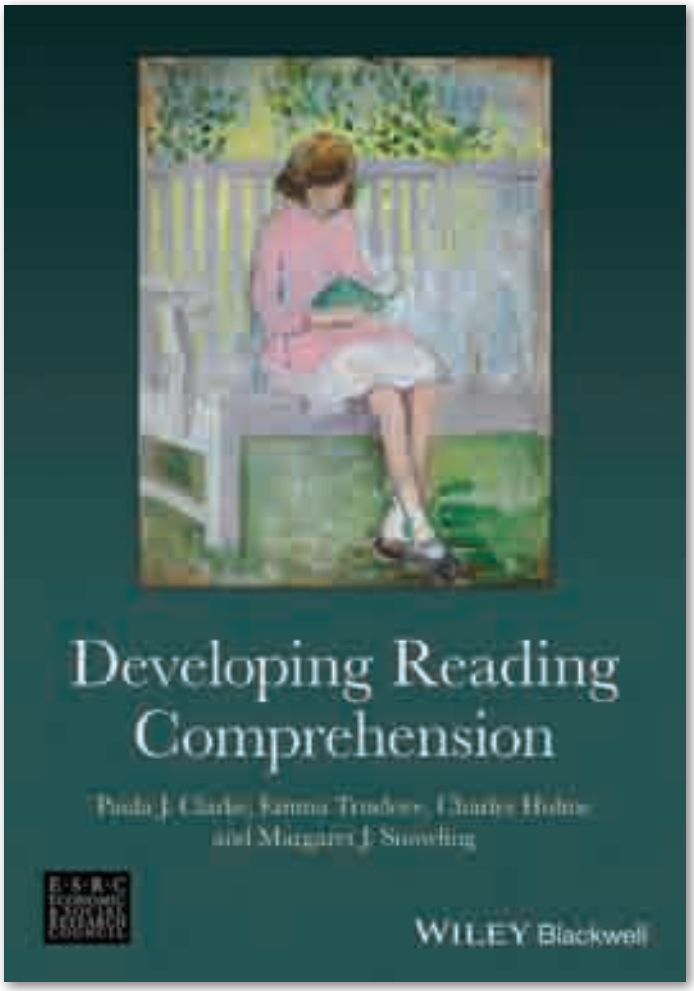
This is the second edition of a very readable book by Glynis Hannell. She has used the most recent research to update the book in line with current thinking on dyscalculia, which includes increased emphasis on understanding about the number system or 'number sense' before learning more formal mathematics. The different parts of the book are easily accessed and bullet pointed action plans make this a practical guide that is easy to follow.

In the first section this book clearly states what it means by the term dyscalculia and supports its definition by referencing research. It then goes on to consider various elements of mathematics and gives examples of how learners with dyscalculia can be supported in the classroom. Research details how different parts of the brain work and is explained in simple terms without being patronising. The book explains how to assess for dyscalculia and indicates how children need to explain their working to help a teacher understand their mathematical understanding. The number system is explained and Hannell suggests different activities to ensure good number sense. Each numerical operation, fractions of a number and measurement, are given their own explanation. There are many examples to illustrate each point which make it very easy to translate into practice.

There is a set of parent's information sheets that can be photocopied by a teacher so parents can help their own children. I would recommend this book to any classroom teacher or support assistant working with a pupil who has a mathematical difficulty. It is full of important information, examples of good practice, and great practical ideas for support.

Clark, P.J., Truelove, E., Hulme, C. and Snowling, M. (2014) Developing Reading Comprehension. Chichester: Wiley-Blackwell. ISBN-10: 118606760ISBN (hbk) ISBN-10: 1118606752 (pbk) ASIN: B00FFYMKW2 Kindle Edition £20.39 RPR: £29.99 pbk

Reviewed by Katy Parnell, Postgraduate Education Tutor, Dyslexia Action and Lecturer Additional Learning Support, Richmond upon Thames College.



Professors Charles Hume and Maggie Snowling and their team have produced a detailed and illuminating account of the York Reading for Meaning Project. Using the Simple View of Reading framework, the project targeted the group of readers characterised as 'poor comprehenders'. This group risk being overlooked in the crucial early years of education as their decoding skills are sound and they may not be identified as struggling until the impact of a secondary school curriculum reveals the extent of their disadvantage.

The Reading for Meaning Project was an evidence-based intervention involving 20 primary schools in the north of England in 2007. The intervention was planned to stretch over 20 weeks, with each pupil receiving three 30 minute sessions per week, two in a pair and one individually. Improvements were assessed not after the usual short time lag but after 11 months to assess if improvements were sustained. A 'waiting-list' group served as a control. Clearly the results can be seen as robust.

The research team approached the project with the hypothesis in mind that poor reading comprehension can be remediated through both training in metacognitive strategies in the approach to texts and through oral language training. The authors note their surprise that, despite the fact that oral language weakness in poor comprehenders is well documented, little attention has previously been paid to the field. The oral language strand of this intervention in particular seemed to produce significant and lasting benefits. Vocabulary and figurative language were explicitly taught and children were encouraged to explore the meaning of jokes and riddles. As an older secondary classroom practitioner myself, this gave me pause for thought - the demands of the old O level English Language syllabus meant teachers used to address the use of figures of speech and idioms in a way which no longer feature in the curriculum.

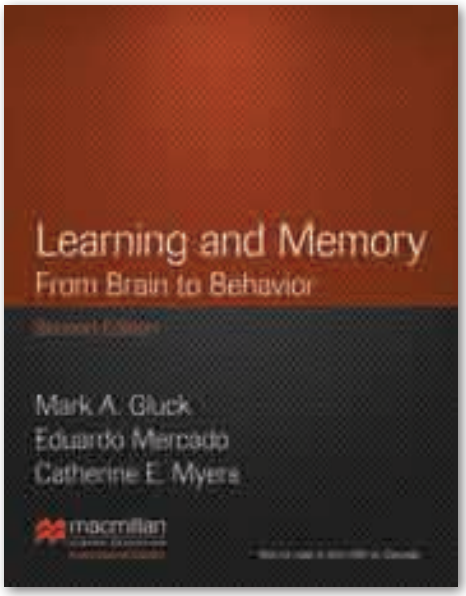
Each chapter has a clear, useful summary section making the book easy to navigate and re-visit. The glossary explains key terms, making the text accessible to all. The bibliography provides an extensive list of further academic reading. The 31 boxes with Teaching Assistants' (TAs) comments bring the intervention to life as well as underlining how invaluable their input is in implementing improvements in the classroom - the training and empowering of TAs was a key practical aim of the project. The appendices give examples of the actual feedback and record sheets used. The idea is that, laid out in this degree of detail, the strategies used in the project will be adaptable by others as a classroom literacy toolkit. The book is therefore relevant to all teachers concerned with literacy development and also relevant to TAs and Special Education Needs Co-ordinators as well as educational psychologists and speech and language therapists. The project's identification of the powerful impact of targeted work to improve oral language skills also means that parents may wish to consider ways in which language awareness in the home can support reading comprehension.

Membership Benefit

This book is available from the NDRC library, part of your membership benefits.

Gluck, M.A., E. Mercado, and C.E Myers, 2nd Ed. (2013). Learning and Memory: From Brain to Behavior. (International Edition). Worth Publishers, New York. ISBN-10: 1429240148 (hbk) ISBN-101429298588 (pbk) RRP: £46.99

Reviewed by Catherine Marshall, Postgraduate Psychology Tutor, Dyslexia Action.



The first edition of Gluck, Mercado and Myers' textbook was published in 2008. It blazed a trail in considering learning and memory from a neuroscience perspective, and made useful links between cognitive models and brain studies.

The second edition incorporates up-to-date research from the last five years, which is vital in the context of rapidly advancing methodologies and understanding in this area. It has been reorganized into a modular format: the modules are designed to be used independently in courses, or in conjunction with each other. This makes the textbook useful and adaptable for psychology courses, particularly those with a cognitive neuroscience component.

Chapter one provides an excellent historical overview of the study of learning and memory, a perspective that is often absent from textbooks on this subject. It encompasses the roots of psychology in philosophy, the influence of Darwin's theory of natural selection, the beginnings of experimental psychology, the influence of Behaviourism, and Cognitive approaches to learning and memory. It provides a very useful context in which to consider more recent advances in brain study and neuroscience, which Chapter 2 goes on to discuss. This chapter gives an accessible *Quick Tour of the Brain*, before describing ways in which brain activity can be measured.

Chapters 3 to 5 comprise the Learning module. This provides a comprehensive review of Behaviourism, focusing on animal models. Concepts including habituation, sensitization and familiarization are discussed in the context of how these models can be used to approach issues such as racial bias and drug addiction. This section describes Classical Conditioning and Operant Conditioning, with examples including "Bomb-Detecting Dogs" used to illustrate their relevance.

Chapters 7 to 9 make up the Memory module. Attention is given to episodic and semantic memory (remembering events and factual information), as well as to "skill memory", distinguishing perceptual-motor skills (e.g. driving a car, dancing) and cognitive skills (i.e. tasks which require reasoning or strategy). Chapter 9 is devoted to Working Memory, and provides an interesting outline of this from a neuroscience perspective. Detailed evidence for the involvement of specific parts of the brain to these different kinds of memory processes is set out clearly, and there is also attention given to disordered and dysfunctional memory.

Chapters 10 to 12 are termed the "Integrative Topics Module", and discuss emotional, social and developmental influences on learning and memory. This module provides a fascinating overview of research in these areas, discussing topics including the effect of stress on memory and social processes involved in learning. Chapter 12 provides a welcome developmental perspective to learning and memory.

Each chapter is organized into sections on Behavioural Processes, Brain Substrates and Clinical Perspectives. While this book in not aimed primarily at practitioners, the Clinical Perspectives sections emphasise how understanding of the brain is crucial for informing diagnosis and intervention in clinical practice. A wide range of clinical issues are referred to, including Downs Syndrome, Parkinson's Disease and Schizophrenia.

The book is well-organised into manageable chunks. It is very easy to navigate and has an excellent glossary. Lots of diagrams and examples are used to illustrate concepts and theories, e.g. the sections in each chapter entitled *Learning and Memory in Everyday life*, which include *Top Ten Tips for a Better Memory, Remembering Computer Passwords*, and *How Does Amazon.com Know What You Want to Buy Next?*

Disappointingly, the role of learning and memory in reading development and reading disorders receives little attention in this book. However the key concepts which are discussed in this engaging text provide a very useful background from which a reader would feel equipped to delve into the neuroscience of reading further.

McLoughlin, David & Leather, Carol (2013). The Dyslexic Adult 2nd ed. Chichester: Wiley Blackwell. ISBN-10: 1119973945 (hbk), ISBN-10: 1119973937, ASIN: B00BHC9JDE (Kindle) RRP: £29.99 pbk

Reviewed by Dr. Leesa Clarke, Postgraduate Psychology Tutor, Dyslexia Action and Lecturer in Linguistics, York St. John University.

There is a lamentable shortage of books about dyslexia that focus on the adult years. This book is therefore a very welcome addition to the resources available to professionals working with adults with dyslexia.

Accessibly written, this book first outlines the authors' theoretical perspectives, supporting the notion of dyslexia as inefficiency in working memory. They provide some useful background information on dyslexia and co-occurring conditions and concentrate on the major issues of diagnosis and intervention, before going on to discuss ways that dyslexic difficulties manifest through the adult years and how they can be supported.

To some extent it is hoped that the paucity of published research specifically looking at adults affected by dyslexia reflects a focus on early intervention and work to remediate or compensate for dyslexic difficulties. Occasionally, in the absence of specific research, the authors have needed to rely on anecdotal accounts of difficulties experienced in adulthood, and make recommendations for remediation that draw on research that is not specific to the adult population. However, given the lack of published work out there, this is understandable, and perhaps should lead readers to realise just how much more work needs to be done to fully understand the effects of dyslexia through the entire lifespan.

The authors devote a considerable chunk of the book to issues of dyslexia in the workplace, and supporting dyslexic learners in higher education and beyond, as well as supporting career development. Of particular merit was the focus not only on the dyslexic employee, but also the issues facing employers. Overall, this is a useful addition to the literature on dyslexia through the lifespan.

Membership Benefit

This title is available in both book and e-book format from the NDRC library, part of your membership benefits.

Dyslexia Action Centre Directory

Dyslexia Action: http://www.dyslexiaaction.org.uk/find-us

Head Office:	Egham 01784 222300
Dyslexia Action Shop:	Egham 01784 222339
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Darlington	01325 283580
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Leicester	0300 303 8350
Lincoln	01522 539267
Liverpool	0151 228 8056
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Specialist courses are also available for those working in International settings.

We recommend that practitioners begin with our most popular CPD Award that is suitable for both experienced specialist teachers and for those newer to the subject.

Level 4 CPD Award in Perspectives on Dyslexia

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- Dyslexia: Supporting Individuals with Memory Weaknesses
- Structured, Cumulative Multisensory Tuition for Learners with Dyslexia

Other Awards include:

Level 4 CPD Award in Developing Literacy Skills in Learners with Dyslexia

Level 4 CPD Award in Understanding and Supporting the Needs of Adults with Dyslexia and Co-occurring Difficulties

Book Now for May 2014 and July Summer School 2014

Short CPD Courses - book now at:
www.dyslexiaaction.org.uk/short-courses-cpd

Summer School – book now at:
www.dyslexiaaction.org.uk/summer-school

POSTGRADUATE PROGRAMME

Postgraduate Certificate and Diploma Programmes in Dyslexia and Literacy

The Dyslexia Action Level 7 Postgraduate programme is delivered as online modular courses with personalised tutor support. This well-respected programme is designed for specialist classroom teachers and support tutors in further and higher education. The course aims to develop skilled practitioners who understand both the theory and practice of teaching and assessment of dyslexic learners, of all ages. The course is flexible and is undertaken part-time. The Postgraduate Certificate offers teaching and assessment theory pathways over 3 terms. The Postgraduate Diploma course builds on and develops specialist assessor skills and knowledge and leads to an assessment practising certificate also over 3 terms. All modules are accredited by Middlesex University London and provide a progression pathway to a Master's in Professional Practice. Our next course begins: 8th September 2014.

Join the Dyslexia Guild

The Dyslexia Guild is our professional association of specialist teachers and assessors and other professionals who are interested in the field of Dyslexia and Co-occurring difficulties. Membership is open to all. Benefits include access to an online library, Dyslexia Review a specialist journal, e-newsletter and discounted attendance at our Annual Conference.

Email: guild@dyslexiaaction.org.uk Tel: +44 (0)1784 222342
Visit: www.dyslexiaaction.org.uk/dyslexia-guild

2014 Annual Summer Conference

The Dyslexia Guild Annual Summer Conference will be held on Wednesday 18th June (CPD Events and Conference Dinner) and Thursday 19th June 2014 (Main Conference Event) in a lovely conference setting in Lincoln. This event is open to both Guild and Non Guild members. Find out more by visiting our website.

http://www.dyslexiaaction.org.uk/dyslexia-guild-annual-conference-2014

OTHER COURSES

Diagnostic Report Writing

18th June - Bishop Grosseteste University, Lincoln, LN1 3DY
A one day attendance refresher course for practitioners seeking to gain or to renew an Assessment Practising Certificate.

Exam Access Arrangements: Courses normally run in October, February and May

This is an updating course to enable teachers qualified in dyslexia and SpLD to comply with JCQ regulations and undertake Examination Access Arrangements. The course is delivered online and runs throughout the year.

FURTHER INFORMATION

Dyslexia Action Training and Professional Development
Dyslexia House, 10 High Street, Egham, Surrey, TW20 9EA
Visit: www.dyslexiaaction.org.uk/training-courses
Email: trainingcourses@dyslexiaaction.org.uk Tel: +44 (0)1784 222304
Please note our new address (from 27.05.14)

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E-mail **dasl@dyslexiaaction.org.uk**

Dyslexia Action
Taking Action • Changing Lives

Dyslexia Action

Taking Action • Changing Lives

1 in 10 children start their education at a disadvantage because of dyslexia.

Write your will today so they can write theirs tomorrow.

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Email legacy@dyslexiaaction.org.uk | **Tel** 01784 222324

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