

PSYPAG

Psychology Postgraduate Affairs Group

Quarterly

Issue 91 June 2014

**Special Issue on
Developmental Psychology including:**

**Studying cognition and behaviour
in Williams Syndrome**

The ADHD PhD

**Mind the gap! How barriers to
language development
in the early years affect
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About PsyPAG

PsyPAG is a national organisation for all psychology postgraduates based at UK Institutions. Funded by the Research Board of the British Psychological Society, PsyPAG is run on a voluntary basis by postgraduates for postgraduates.

Its aims are to provide support for postgraduate students in the UK, to act as a vehicle for communication between postgraduates, and represent postgraduates within the British Psychological Society. It also fulfills the vital role of bringing together postgraduates from around the country.

- PsyPAG has no official membership scheme; anyone involved in postgraduate study in psychology at a UK Institution is automatically a member.
- PsyPAG runs an annual workshop and conference and also produces a quarterly publication, which is delivered free of charge to all postgraduate psychology departments in the UK.
- PsyPAG is run by an elected committee, which any postgraduate student can be voted on to. Elections are held at the PsyPAG Annual Conference each year.
- The committee includes representatives for each Sub-Division within the British Psychological Society, their role being to represent postgraduate interests and problems within that Division or the British Psychological Society generally. We also liaise with the Student Group of the British Psychological Society to raise awareness of postgraduate issues in the undergraduate community.
- Committee members also include Practitioners-in-Training who are represented by PsyPAG.

Mailing list

PsyPAG maintains a JISCMail list open to ALL psychology postgraduate students. To join, visit www.psypag.co.uk and scroll down on the main page to find the link, or go to <http://tinyurl.com/PsyPAGjiscmail>.

This list is a fantastic resource for support and advice regarding your research, statistical advice or postgraduate issues.

Social networking

You can also follow PsyPAG on Twitter (<http://twitter.com/PsyPAG>) and add us on Facebook: <http://tinyurl.com/PsyPAGfacebook>.

Again, this information is also provided at www.psypag.co.uk.

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Editor's Column

Martin K. Toye

IT GIVES ME great pleasure to introduce this 91st issue of the *PsyPAG Quarterly*, which is our first ever Special Issue on Developmental Psychology! I hope you enjoy reading the various articles we have included which fall under the developmental theme and find the selection of interesting pieces, which cross into other fields, as interesting as I have.

Developmental Psychology has been an area of interest for me since the very beginnings of my career in psychology. My undergraduate dissertation first introduced me to research in the field. The interest this sparked was developed through my foray into the world of primary school teaching and cemented through my PhD in developmental psychology. Throughout all of these stages of my career so far, the ongoing stream of interesting articles which have appeared in the *PsyPAG Quarterly* over the years have provided an ongoing source of encouragement and inspiration. It seemed to me that a Special Issue might help highlight the quality and range of developmental research amongst psychology postgraduates across the UK and help inspire others either engaged in (or thinking about engaging in) developmental research to continue the field's research efforts with renewed vigor.

We are privileged to be able to open this Special Issue with introductory columns by Professor Patrick Leman (Chair of the British Psychological Society's Developmental Section) and Katie Rix (PsyPAG Developmental Section Representative and Treasurer). On behalf of the Editorial Team I wish to thank them both for providing their valued contributions.

I hope the content of this Special Issue provides a snapshot of the variety of research which developmental researchers from across the UK are currently engaged in.

We begin with an exciting overview of the work of the PhD students working in the North East Williams Syndrome Research Group, headed by this year's BPS Developmental Psychology Section Margaret Donaldson Prizewinner, Dr Debbie Riby (congratulations Debbie!). This is followed by a range of exciting articles including pieces exploring the distinction between hot and cool aspects of executive function, the difficulties of recruiting children with ADHD for research as well as an advice piece highlighting ways to overcome the difficulties of recruiting children through their school. Other features include an article exploring the use of computerised assessment for children's social understanding, as well as a piece exploring the challenges of working with infants from the first-hand perspective of a PhD researcher.

I am sure you will agree that the range and variety of articles included in this Special Issue highlight the exciting scope for developmental research and demonstrate the huge variation in developmental projects currently being undertaken across the UK.

PsyPAG Quarterly

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I wish to thank the contributors who have provided the backbone of this Special Issue. Without your submissions, this issue (like every other) would be without purpose. Importantly, I must extend these thanks to the wonderful fellow editors I have worked with during my time with the *PsyPAG Quarterly* so far, Laura Scurlock-Evans, Jumana Ahmad and Emma Norris. Their support and encouragement of my desire to produce a Special Issue on Developmental Psychology has been invaluable. As always, the production of this issue has been entirely a team effort.

I wish to end by thanking my own PhD supervisors, Professor Jimmie Thomson and Dr Sinead Rhodes, without whom my own interest in Developmental Psychology would never have been sparked. I hope this special issue will spark the same interest in its readers.

Now please, read on...

Martin K. Toye

On behalf of the

PsyPAG Quarterly Editorial Team

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Psychology Postgraduate Affairs Group

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Chair's Column

Laura Neale

WELCOME to the summer 2014 edition of the *PsyPAG Quarterly*. I hope you are all looking forward to the summer months and (hopefully) a well-earned break from your studies. The PsyPAG 2014 conference is fast approaching and the conference organising committee have been very busy making the preparations for what I am sure will be a fantastic meeting. The conference is going to be held at Cardiff Metropolitan University from 23–25 July. If you haven't registered yet, there's still time as registration is open until 22 June. Submissions for oral and poster presentations have now closed and I am delighted to report that we have received a great number of high quality submissions from postgraduates studying in all areas of psychology. There's sure to be something of interest for everyone, as well as fantastic networking opportunities including a BBQ on the banks of the River Taff at Llandaff Rowing Club and our conference dinner to be held in the Undercroft at Cardiff Castle, dating back to the 15th century. We also have a number of high profile keynote speakers confirmed including; Professor Patrick Leman, Royal Holloway, University of London and Developmental Section Chair; Dr Paul Hutchings, Swansea Metropolitan University and Dr Almuth McDowall, Surrey University and past Division of Occupational Psychology Chair. Further information about the conference can be found on our website www.psyag.co.uk/conference or via our dedicated conference Twitter feed (@PsyPAG2014) and Facebook ([facebook.com/PsyPAGAnnualConference](https://www.facebook.com/PsyPAGAnnualConference)).

We hosted a stand at the British Psychological Society's Annual Conference in May and were able to meet many psychology postgraduates and share information about the events and support PsyPAG have available.

The deadline for the three awards that PsyPAG offer – Master's, Rising Researcher and new for 2014 Division of Academics, Researchers and Technicians in Psychology (DART-P)/PsyPAG Teaching Award – have now passed. Our winners will be presented with their certificates during our conference and they will also be presenting their award winning research then.

We also continue to offer a number of bursaries for UK psychology postgraduates to help with the costs of conference attendance and travel costs for other training events and workshops. More information about the bursaries that we offer can be found on our website: <http://www.psyag.co.uk/bursaries/>

PsyPAG's Communications Subcommittee have produced and distributed our second newsletter which was distributed to psychology postgraduates across the UK at the end of May. The newsletter is our new resource which intends to keep postgraduates up to date with the work of the PsyPAG Committee as well as our latest news and activities (i.e. free workshops, annual conference) and other support available. We hope you have received our second newsletter. If for some reason you did not and would like to be added to our contact list, please contact me at chair@psyag.co.uk. We are keen to link with all UK psychology postgraduates and we are aware that not everyone is based within a traditional psychology department. The PsyPAG newsletter is also located on our website: <http://www.psyag.co.uk/news/>

As always, we are eager for postgraduates who have suggestions or feedback as to how PsyPAG is able to provide further support for UK psychology postgraduates to get in touch, so please contact me at chair@psyag.co.uk with any ideas.

Thank you to the PsyPAG Committee for their continued dedication and commitment to helping UK psychology postgraduates and to the BPS Research Board for their sustained support.

That's everything from me for this edition as we have a couple of guest introductions for this Special Issue of the *PsyPAG Quarterly* from Professor Patrick Leman, Developmental Psychology Section Chair, and Katie Rix, PsyPAG Developmental Psychology Section Representative and PsyPAG Treasurer. I hope you have a fantastic summer and intend to meet many of you in Cardiff, at our conference in July.

Laura Neale

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Francesca Happé King's College London
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...and the Neil O'Connor and Margaret Donaldson award winners

Invited symposia
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Introduction to the Special Issue

Patrick Leman

I AM DELIGHTED to have the opportunity to write a few words for this issue of the *PsyPAG Quarterly*. I must begin by thanking Martin, his colleagues, and all the contributors for their work in putting this together. Naturally, as a developmental psychologist, I believe deeply that understanding where psychological processes come from, how they change and develop and what influences that process of change, is fundamental to all psychology. Given its importance for the field as a whole, it is, therefore, reassuring to know that British developmental psychology has a strong, international reputation for excellence. British researchers ‘punch above their weight’ in terms of high quality journal outputs, innovation and theoretical development. Members of the BPS Developmental Psychology Section – one of the Society’s largest Sections with a rapidly growing membership – are actively engaged in world-leading research in areas from autism to bullying, infancy to old age, visual cognition to social relationships. I hope that this Special Issue not only highlights the quality and extent of work in the sub-field, but also adds to the longstanding work of the Developmental Psychology Section Committee, to promote opportunities for developmental science and to nurture future generations of research (and researchers).

In this issue, the postgraduate representative on the Section Committee, Katie Rix, has outlined some of the funding initiatives we have in place to support Section members and open up new avenues for work in developmental science. I’d like to take this opportunity to thank Katie for her tremendous contribution to the Society and to the Section’s work. The Section Committee has always taken a view that a substantial proportion of its resources should be directed to give financial support to postgraduate students. As

a result, our conference registration fees for students are heavily subsidised (significantly lower than most other Society network conference fees and other, ‘competitor’ developmental psychology conferences). On top of this, we run a bursary scheme which gives further financial support for student section members to attend the section conference (this year in Amsterdam, in 2015 in Manchester, to be held jointly with the Social Psychology Section).

There is a clear logic to allocating funds to support postgraduates because the future of the field (and of the Society) depends on an active, engaged, and productive research community. So our enduring support for postgraduate students is, in fact, a sound investment for the Section. But in fact, even more than that, there is an important social and moral imperative to do more to grow and extend the influence of developmental science. Policy-makers and the public need to hear more about how scientific methods can inform the ways in which we support young people’s development, learning and well-being, children’s mental health, parenting and education.

British developmental research is in world-leading. And the quality of work I see regularly in peer-reviewed journals, from my visits to colleagues around the country, and most of all at our hugely successful Section annual conferences, demonstrates that this quality is secure for many years to come. The challenge for the next generation of developmental researchers is to start to communicate the science and to translate research findings to make a lasting societal impact.

Professor Patrick Leman

Chair, BPS Developmental Psychology Section, Professor of Psychology, Royal Holloway, University of London.

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Introduction to the Special Issue

Katie Rix

WHEN THE CURRENT Lead Editor of the *PsyPAG Quarterly*, Martin Toye, contacted me and told me he was working on a Special Issue on Developmental Psychology, I was so excited. Developmental psychology is such an important discipline and overlaps with such a broad spectrum of other areas of psychology and I am eager to see the many different articles in this issue.

During my time as PsyPAG Developmental Section Representative, we have organised several opportunities for postgraduates. For example, last year the Developmental Section joined with the Cognitive Section for their annual conference and 'CogDev2013', was an enormously successful conference. The Cognitive Section Representative, Sam Reeves, and I, worked closely with a local postgraduate, Beth Law, to organise a workshop on publications and careers for postgraduate students. This was jointly sponsored by PsyPAG, as well as both Sections, highlighting the collaborative work taking place. The Section also offers a great deal of financial support to postgraduates, with reasonable, subsidised conference costs as well as numerous bursaries for postgraduates to attend.

As the conference moves to Amsterdam for Dev2014, the numerous opportunities for postgraduates have been continued. Building on the success of 'Meet the Experts' at CogDev last year, this event is to be made bigger at Dev2014, with postgraduates being given the opportunity to meet with at least 11 experts in developmental psychology, to discuss their topic areas and career development. In addition, based on the popularity of last year's social events at CogDev, we will be organising a postgraduate dinner on one of the evenings at Dev2014, ensuring networking amongst postgraduates as well.



In addition to the various opportunities for postgraduates at the BPS Developmental Conferences, there has also been a rise in the developmental opportunities for postgraduates at our annual PsyPAG conference. In 2013, we were lucky enough to have a developmental keynote, Professor Charlie Lewis, as well as a developmental symposium, both of which were kindly sponsored by the Section. Already for PsyPAG 2014, the Section has kindly agreed to sponsor several aspects of the conference and our Section Chair, Professor Patrick Leman, has agreed to give one of our keynote addresses, about both developmental psychology and his wider experiences in his roles. I have no doubt that this keynote will be inspiring, informative and enjoyable and am very

much looking forward to it! In addition, hoping to replicate and continue the engaging symposium from last year, we have also organised a developmental symposium, with a range of speakers from different branches of developmental psychology.

The support the Section provides to postgraduates is not unique to conferences. Their International Collaborations Scheme is now being extended to include postgraduates, widening the opportunities for postgraduates to study abroad. Furthermore, postgraduates are given a great deal of thought and consideration in all the Section's initiatives and discussions. Over the years, our PsyPAG reps have built up excellent working relationships with the Developmental Psychology Section of the BPS, and we have been very lucky to receive enormous ongoing support and encouragement from the section for postgraduates. I would encourage everybody to join the section – with a special annual student rate of £5, there are several benefits to becoming a member, including access to the *Developmental Forum* (the Section newsletter/ magazine) as well as access to the other support available for postgraduates. In addition, the *Developmental Forum* is also an excellent writing opportunity for postgraduates (in addition to the *PsyPAG Quarterly*!) – you can contact either Sian Jones (sian-jones@brookes.ac.uk) or Emily Mather (emily.mather@hull.ac.uk) for more information about submitting an article.

Just under three years ago, I attended my first PsyPAG Conference, not knowing anybody. Suffice to say, I was incredibly nervous. I was due to be presenting for the first time since starting my PhD and knew

that I wanted to stand for Developmental Psychology Section Representative at the PsyPAG AGM. Attending that conference was one of the best things I ever did. I met so many amazing postgraduates, many of whom, I have no doubts will be friends for life. I was able to learn about the incredible research being conducted by postgraduates, as well as meet other developmental psychologist postgraduates. Since meeting at this conference, I have built an excellent network of peers studying across a range of topics within developmental psychology and have continued to work with them in a number of ways. This has further inspired my love for this area of study and broadened my knowledge in so many ways. Secondly, I was voted in as Developmental Psychology Section Representative. As I come to the end of this two-year role, it is with genuine sadness that I step down as PsyPAG representative. I have loved every moment of my time on the Section, and have truly been welcomed as a committee member and encouraged to provide a postgraduate voice to the Section's initiatives.

If you have any developmental psychology queries or comments related to postgraduate issues, please do not hesitate to contact me on K.R.Rix@greenwich.ac.uk.

Check out the Section's website at http://dps.bps.org.uk/dps/dps_home.cfm, and on Facebook (<https://www.facebook.com/BPSDevSection?fref=ts>) and follow us on Twitter (<https://twitter.com/BPSDevSection>).

Katie Rix

PsyPAG Developmental Psychology Section Representative.

Studying cognition and behaviour in Williams Syndrome

Emma Lough, Joanna Greer, Mathew Cranwell & Deborah M. Riby

An article from the North East Williams Syndrome Research Group

WILLIAMS SYNDROME (WS) is a neurodevelopmental disorder with an estimated prevalence between 1:7500 and 1:20,000 (Morris & Mervis, 1999). The disorder attracted the attention of cognitive scientists during the 1990s due to interest in the uneven cognitive profile, specifically individuals with WS tend to have better verbal skills than spatial abilities (e.g. Bellugi, Wang & Jernigan, 1994). This uneven cognitive profile occurs against a backdrop of mild-moderate intellectual difficulty (Searcy et al., 2004), though it is crucial to note that there is vast heterogeneity of ability between individuals who have the disorder (e.g. Porter & Coltheart, 2005). However, over the last two decades there has been a significant increase in research evaluating other components of cognition, behaviour and psychopathology associated with WS throughout the developmental spectrum. An example is social functioning, with researchers becoming increasingly interested in the social phenotype of the disorder. Claims of a pro-social drive (Frigerio et al., 2006), increased approach to unfamiliar people (e.g. Jones et al., 2000) and subtle atypicalities of social behaviour once engaged in interactions have attracted research interest (e.g. prolonged gaze to faces, Riby & Hancock, 2008). In this article we will introduce three PhD projects that are using different methodologies to probe very different components of Williams syndrome.

The three projects outlined in this article are being conducted by postgraduate researchers in the North East Williams Syndrome Research Group. This group is

based in the Department of Psychology at Durham University but includes researchers also at Newcastle and Northumbria Universities. The over-arching aim of the research group is to use rigorous experimental methods and approaches to probe components of cognition, behaviour and psychopathology associated with WS and related developmental disorders. We work closely with a large number of families and the Williams Syndrome Foundation – this is crucial to the success of all projects conducted in the group.

1. Social functioning and vulnerability in young people with Williams Syndrome and Autism

Emma Lough

I am in the first year of my PhD at Durham University. The vulnerability and safety of children and young people is a prominent issue for the parents, media and government of today. High profile cases of child victimisation and abuse have nurtured fear within society about the safety and resilience of young people (Mitchell et al., 2011). Associated with WS, we know that many individuals with the disorder show an exaggerated desire to interact with others, both familiar and unfamiliar (Jones et al., 2000), and this hyper-social behaviour can often place them in a socially vulnerable situation (Jawaid et al., 2012). Recent research has emphasised that individuals with WS might not be able to adequately evaluate 'stranger danger' (Riby et al., 2013) but that adults with the disorder may be able to be trained to accurately make this judgement (e.g.

Fisher, 2013). Therefore, identifying aspects of vulnerability in the real worlds of individuals with developmental disorders such as Williams syndrome and indeed those with an Autism Spectrum Disorder (ASD), can provide important routes for intervention and training.

Similarly, this concern regarding vulnerability and risk has recently been extended to internet conduct, with cyber-bullying, trolls and online grooming posing a new type of risk to young people (Livingstone et al., 2011). Indeed individuals with developmental disorders are also using online methods to interact with others – this is especially the case for individuals with an ASD who may find this route for interaction easier than real life due to reduced social immediacy.

The issues outlined above offer three broad avenues for exploration: (i) the precursors, consequences and nature of social vulnerability in individuals with WS and those functioning on the Autism Spectrum in the offline environment; (ii) their level of vulnerability in the online environment; and (iii) the level of transference and/or interaction between these two environments. For the first study of my PhD I am collecting information from parents of young people with WS and parents of young people with ASD through questionnaires and telephone interviews on their perception of their child's vulnerability and resilience levels, both offline and online. The aim of this is to ensure that my subsequent work over the next three years maintains an applied perspective and is grounded in the experiences of the individuals and their families. I am hoping that this first study will help guide me to the key areas of social vulnerability which merit further exploration, and also provide us with some much needed data on the levels of internet (especially social media) use in young people with developmental disorders.

2. Cognitive ageing in adults with Williams Syndrome

Joanna Greer

I am in the fourth year of a part-time PhD at Northumbria University investigating cognitive ageing in adults with WS. The literature provided a clear rationale to investigate memory and attention abilities in WS adults (e.g. +35 years) as the majority of previous studies on these aspects of cognition had focused on younger individuals with the disorder. Increased awareness, diagnosis and better treatment for the main medical complications associated with the disorder (e.g. supra valvular aortic stenosis) have recently emphasised the requirement to consider the needs of older individuals with WS (for example, see issues discussed by Howlin & Udwin, 2006). The preliminary studies of my PhD investigated the suggestion that WS may be accompanied with premature cognitive ageing (Devenny et al., 2004). Study 1 utilised an associative memory paradigm as this skill is known to decline with age in typical adults (Naveh-Benjamin et al., 2003). The preliminary findings did not indicate evidence of premature cognitive ageing in WS, at least in relation to associative memory. Subsequent studies of the PhD have focused on semantic memory, episodic memory and the role of attentional abilities, such as inhibition, in the cognitive profile of older adults (35 to 61 years) with WS. For example, I explored whether relative strengths of semantic memory could support episodic memory difficulties. Using a level of processing paradigm, pictures were encoded using either a deep (decide if a picture belongs to a particular category) or shallow (perceptual based processing) memory strategy. Reaction time and accuracy data indicated an overall difficulty in episodic memory for WS adults (compared to typically developing adults). Interestingly, semantic support was evident with a greater recall of items encoded with deep compared to shallow processing, indicative of an ability to employ semantic encoding strategies (Greer et al., 2014). It is important to

emphasise that research needs to focus on the cognitive capacity of older individuals with WS to consider the everyday challenges faced by these individuals and consider appropriate support for daily living (Greer et al., 2013). I am now collecting data for the final phase of the PhD, using electrophysiological methodologies (EEG) to investigating how executive dysfunction (which I observed in some of my behavioural studies) present at the neural level. EEG methodology enables us to measure cortical electrical activity with millisecond precision. It is exciting to be able to take a multi-methods approach to this research on attention and memory in WS adults.

As well as completing a PhD I am employed as a senior research assistant working on a number of projects in the Psychology Department. I collaborate with researchers both within Northumbria University and externally, in the UK and abroad, enabling me to develop research networks. I am developing skills in a diverse range of research methodologies, and I am beginning to build a portfolio of research publications.

3. Colour perception in Williams Syndrome and Autism

Matthew Cranwell

I am in the second year of my PhD at Newcastle University studying colour perception in typical development and children with WS and ASD. In addition to the social impairments associated with both ASD (e.g. reciprocal communication, social communication skills; *ICD-10*, World Health Organisation, 2008) and WS (e.g. hyper-sociability; Martens et al., 2008), various sensory atypicalities have been reported.

Humans see objects from reflected light-waves which are absorbed by photoreceptors (rods and cones) in the retina. Two distinct anatomical and functional pathways, the dorsal and ventral streams, originate in retinal projections to the Lateral Geniculate Nucleus. This dichotomy continues through later visual cortical processing from the

primary visual cortex (V1; see Nassi & Callaway, 2010 for review). The dorsal stream processes predominantly motion and distance information, while the ventral stream predominately processes information relating to form and colour (Mishkin & Ungerleider, 1982).

A varied visual profile exists in ASD. Dorsal stream function has been found to be dysfunctional in detection of motion direction (Bertone et al., 2003) and biological motion identification (Annaz et al., 2010). Ventral stream function is more variable. Form perception has been shown to be relatively 'intact' when compared to motion processing and with respect to TD individuals (e.g. Milne et al., 2005). Colour perception, by comparison, has received little attention in relation to ASD, although anecdotal evidence of both colour obsessions and colour avoidance exists (Bogdashina, 2003). For example, an insistence on only wearing clothes of a particular colour or only eating foods of a particular colour. The actual prevalence of such exaggerated responses to colour is not unknown, nor whether these may reflect atypical processing of colour in the early visual pathway in ASD, or higher-level behavioural or cognitive atypicalities, such as more generalised ritualistic behaviour. Reduced chromatic discrimination has been found in both young adolescents and adults with ASD (Franklin et al., 2010; Hurlbert et al., 2011).

In WS, impairments have been found for dorsal stream functions which are present in childhood and persist into adulthood (Atkinson et al., 2006). Visuo-spatial functioning, in particular motion perception (e.g. Atkinson et al., 1997) and also planning of motor movements where spatial judgements are required (Cowie et al., 2012), are particularly impaired. In contrast, some evidence suggests that ventral stream function may be a relative strength in WS, compared to other visual and cognitive functions. Both correct form coherence thresholds and facial expression identification have been found to be similar to mental-age

matched typical controls (e.g. Atkinson et al., 1997; Deruelle et al., 1999; Farran, Jarrold & Gathercole, 2003; Gagliardi et al., 2003). Colour perception has not been studied in detail in this disorder. There has been one direct study of colour perception in WS (Farran et al., 2013) finding that adolescents with WS had similar chromatic discrimination to mental-age typical controls, but this skill was poorer than chronological-aged matched typical controls. WS individuals also showed similar categorisation of colours and use of colour in a feature-based visual search task in line with their mental age.

How these atypical visual functions relate to, and impact, downstream with more complex cognitions (e.g. social interactions, planning) is unclear (Dakin & Frith, 2005). By using colour, it is possible to study an aspect within the visual domain which also contains more complicated cognition. This can be achieved through a combination of psychophysical, behavioural and questionnaire methodology. Therefore, it is possible to assess the initial sensory encoding of colour and whether (if at all) this impacts upon later higher order cognitions about colour (e.g. affective judgements). This may shed light on whether there is a sensory relationship between colour obsessive/aversive behaviours seen in ASD and WS and their processing of colour. My PhD fits this niche in the literature.

Conclusions

The PhD projects outlined here, in addition to the range of other projects being conducted in the North East Williams Syndrome Research Group, will advance our understanding (theoretical as well as applied) of aspects of cognition and psychopathology associated with the disorder. As indicated by the projects outlined above, advances in understanding aspects of WS may also come from comparisons to other developmental disorders, such as ASD. There remain a number of key issues to be addressed and methodological challenges that will help shape the future of research in this area (e.g. consideration of sample sizes, within-disorder heterogeneity, developmental changes). Further details of all projects can be found by following the link below.

Further information

Research Group webpage:

<https://www.dur.ac.uk/psychology/research/newilliamssyndrome/>

Research Group Facebook page:

<https://www.facebook.com/#!/>

NWSResearchGroup

Twitter: @Newcastle_WS

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Bringing the measurement and assessment of children's social behaviour into the 21st century

Toni Fallon

WITH THE RAPID ADVANCEMENT of technology, the popularity of computer-based gaming has soared over the past 20 years. Children seem to be captivated by computer role-play games, and this interest tends to continue into adulthood. In role-play games the player is typically involved in the story or narrative of a character and the player must take on the role of this character by navigating them through various challenges or missions in a virtual environment (e.g. *Never Winter Nights*, *Dungeons & Dragons*, *The Sims*, and *World of War Craft*). Despite negative research and press (e.g. Anderson & Bushman 2001) much research demonstrate that both typically and atypically developing children alike are drawn to playing video games for pleasure. They can happily immerse themselves in these games and increasingly, interact with peers for hours through gaming, despite perhaps having cognitive or social issues which cause them difficulties with other everyday 'real world' tasks (see Durkin, 2010, for review).

In middle childhood children's social understanding and atypical behaviour patterns have proved difficult to assess. Traditionally psychological measurement has been conducted in 'paper-pencil' formats, for example, story vignettes, for example, the 'Strange Stories' (Happé, 1994), or non-computer role-play games with dolls, for example, the classic 'Sally-Anne Task' (Baron-Cohen, Leslie & Frith, 1985).

Anecdotally, clinicians and researchers who assess children that are diagnosed with developmental disorders and/or display problem behaviours, report that children

often do not present in the clinic displaying the problem behaviours that they exhibit at home or at school, indeed these children can give socially appropriate answers when questioned, but do not conduct themselves in a 'socially desirable' manner in the real world.

Certainly, some children can be very socially aware, particularly if they have experienced a difficult upbringing (e.g. from being in foster care) and others may not have the verbal sophistication required to describe their experiences in an interview, questionnaire or person-centred role-play task. Therefore, it can often be difficult to accurately assess social behaviours in children. Thus, there is a need for measurement tools that are more representative of real life environments that can be reliably and consistently administered by researchers and clinicians alike, in a manner in which children can engage with them. Computer role-play technologies are a valuable method for measuring social behaviours in clinical settings and controlled research environments and can help provide a more real-life assessment of their abilities.

Indeed, over the last 10 years a number of publications have emerged from a range of disciplines including psychology, psychiatry, education and computer science (e.g. Hall, Woods & Hall, 2009; Minnis et al., 2010; Porayska-Pomsta, 2012; Rajendran, Mitchell & Rickards, 2005) highlighting the potential benefits of utilising technologies in the measurement and intervention of atypical social behaviour in various groups of children, particularly those with Autism Spectrum Disorder (ASD) who seem to display an affinity with these technologies

(see Rajendran 2013, and Wass & Porayska-Pomsta, 2013, for reviews).

This article aims to highlight the potential for computer role-play technologies as psychological measurement tools for assessing children.

From story vignettes to computer-mediated role-play

Those familiar with the literature on children's social cognition will know that the root of a child's social understanding is derived through Theory of Mind (ToM) which is an ability to understand another's mental state. Over the years there have been a number of methods used to assess ToM. One such method being the 'Strange Stories' (Happé, 1994), these story vignettes are simplified narratives of everyday scenarios followed by questions that assess the participants understanding of the short stories (included measures of sarcasm, figures of speech, white lies, and so on). This task can discriminate between those who do and do not have ASD, and even those who passed second order ToM tasks gave incorrect responses to some of the strange stories.

Rajendran, Mitchell and Rickards (2005) argued that despite the importance of Happé's discoveries, the procedure used in the strange stories taps into a level of reflective non-literal communication that is a step removed from the working understanding required to respond appropriately to a person. Therefore, making it entirely possible that individuals with ASD could make appropriate responses to non-literal statements in practice (i.e. taking part in a conversation, rather than reflecting on a conversation between other people). Thus, Rajendran, Mitchell and Rickards (2005) proposed that role-play would be an ideal platform, although a person-centred role-play approach would require a level of make-believe that would be too difficult for people with ASD to take-part in. Therefore, with the use of a program called 'Bubble Dialogue' (Gray et al., 1991), Rajendran, Mitchell and Rickards (2005) investigated non-literal

language and inappropriate request in people with Asperger's syndrome. Using computer role-play versions of Happé (1994) measures of sarcasm and figures of speech. Amongst other things, they discovered that adolescents with Asperger's syndrome took to computer-mediated communication very well, taking on the role of the characters with ease. Contrary to Happé (1994), this study provided evidence to suggest that a lack of ability to understanding non-literal language of figures of speech was not necessarily a social issue specific to those ASD. It is likely that individuals with ASD took to the more practical computer role-play measure better than they would have the 'strange stories' or a person-centred role-play task, due to them feeling more comfortable with using computers as a mode of communication.

More recently large-scale Europe-wide computer science and psychology collaborations have produced some very interesting prototype tasks for measuring children's social understanding, for example, using a virtual role-play program called 'FearNot!' (Hall, Woods & Hall; 2009). Here, ToM methods were used to gain insights into children's ($N=345$) abilities to correctly attribute beliefs, desires, goals and percepts to others, through a virtual role-play task about bullying where the participants were synthetic characters rather than actual children experiencing a real bullying experience. The children who took part role-played a third character that played a 'friend' who gave the victim advice after they had viewed the bullying scenario. This advice was then used to measure the child participant's social understanding. Although this research has a few theoretical shortcomings (presumably due to the challenges with inter-disciplinary collaborations) it is cleared to see that computer role-play could prove fruitful for improving measurement tools for assessing children's social understanding in the near future.

Beyond 'Strange Situations'

As well as computer role-play being a useful tool for assessing children's social under-

standing, it can be utilised to measure other social behaviour in children, for example, attachment issues. In infants, attachment issues are most commonly measured using the ‘Strange Situations’ procedure (see Ainsworth, 1979). However, this method is not appropriate for measuring attachment difficulties in older children, which has proved to be notoriously difficult. One task that does reliably measure attachment issues in middle childhood is the ‘Manchester Child Attachment Story Task’ (MCAST: Green et al., 2000) which is a representational procedure for assessing attachment patterns of young school aged children, the task includes a doll’s house and after hearing a story from the task administrator the child then takes on the role of a doll of their choice (i.e. the child represents themselves through the doll).

Minnis et al. (2010) developed a computerised version of the MCAST (the CMCAST), which can be used on any standard computer. Story stems are represented on the computer by the movement of two-dimensional ‘dolls’ narrated by a generic voice. Children then take control of the task and complete each story by speaking into the computer; the audio-visual data produced by the child can be downloaded for rating. The findings revealed that the CMCAST had similar reliability and validity as the MCAST and yielded further benefits. For example, it is easier to administer in large sample epidemiological studies, reduced reliance on trained researchers in task procedures, less exhaustive involvement of the researcher, has the potential to yield truer more ecologically valid responses, and is slightly cheaper to administer than the MCAST.

Future direction

Although it is early days in the use of computer-role play in the domain of psychological measurement, research in the field of what computer scientists have termed ‘serious gaming’ (e.g. intervention/educational computer games) is currently exploring increasing levels of immersion.

It is thought that the more immersed the child is in the task at hand (forgetting about the researcher or clinician being there), they will likely help with yielding responses from the children which are truer to how they would behave in the ‘real world’, which could, for example, be very useful in the assessment of disinhibited behaviours which can cause children to be at risk of accidental injury or child abduction. On this note, role-play technologies allow researchers to place participants in scenarios that would otherwise be deemed unethical if they were carried out in the real world, with the technology offering a safer more ecologically valid environment. Another current trend is using more technologies such as movement-based tools (e.g. Microsoft’s Kinect). In terms of utilising this type of technology in role-play tasks that measure children’s social understanding or problem behaviours, having gesture controls could, for example, be useful in assessing children who struggle with verbal articulation (e.g. ASD, Specific language impairment, and selective mutism).

Conclusions

Using computer role-play to assess children’s interpretation of social interactions with virtual characters is still in its infancy. The research which has been carried out thus far, however, demonstrates certain promise for virtual role-play being a reliable method for investigating children’s social behaviours. The benefits of these measures certainly outweigh the challenges.

At present the majority of the research on technology-based measurement and intervention tools is largely focused on helping groups of children with ASD, however as discussed above, these technologies are useful for behavioural assessment on a much larger scale; with a wider range of children and for a greater variety of purposes.

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Cool vs. Hot Executive Function: The rise of hot executive function

Sarah Poland

EXECUTIVE FUNCTION (EF) refers to a set of goal-directed, future-orientated cognitive skills that are essential for adaptive behaviour, including the ability to organise oneself, problem solve and social behaviour (Anderson, 1998). Although the organisation of EF is debated, it is generally agreed that EF encompasses skills such as inhibitory control, cognitive flexibility and working memory (Miyake et al., 2000). Traditionally EF has been viewed through a purely cognitive lens, meaning the role of emotion and motivation in EF has largely been neglected. Indeed, perspectives, theories and assessments of EF have historically focussed on purely cognitive skills that are elicited under relatively abstract, decontextualised, non-affective conditions (Peterson & Welsh, 2014). Over the past decade, there has been a rising interest in the role of motivation and affect in EF, leading researchers to pay greater attention to the role of EF in emotionally charged and social situations. This broader conceptualisation of EF has important implications for research into child development because EF has been found to be a strong predictor of school readiness, academic achievement and social behaviour (Brock et al., 2009; Jacobson, Williford & Pianta, 2011).

The emergence of Hot Executive Function

The movement away from a purely cognitive conceptualisation of EF can be largely credited to the work of Zelazo and Müller. In 2002 these authors published a paper which proposed that EF varies according to the motivational significance of a situation. They outlined a distinction between cool EF: evoked under relatively abstract, non-affective

situations, and hot EF: evoked under motivationally significant, affective conditions (Zelazo & Carlson, 2012; Zelazo & Müller, 2002). When confronted with an affective or personally meaningful problem that an individual is motivated to solve, the affective, hot aspects of EF are most likely to be elicited. Thus, hot EF, as opposed to cool EF, is elicited when people care about the problem they are attempting to solve, such as problems in the domain of self and social understanding (Zelazo et al., 2005). Indeed, hot EF has been found to be associated with the orbitofrontal cortex and ventromedial regions, two largely overlapping brain regions that are strongly connected to limbic areas, which are associated with emotional and social processing (Happaney, Zelazo & Stuss, 2004). Whereas research into the organisation and development of cool EF is vast, research into hot EF is only around a decade old and consequently understanding of hot EF lags behind (Peterson & Welsh, 2014).

The organisation of cool EF is better understood than the organisation of hot EF. Cool EF refers to the cognitive skills traditionally perceived to encompass EF, including inhibitory control, working memory and cognitive flexibility when used in affectively neutral situations (Zelazo & Müller, 2002). In contrast, hot EF has been posited to include affective cognitive abilities, such as the ability to delay gratification and affective decision making. However, there is some contradiction in the literature regarding the composition of hot EF. While some researchers have proposed that social-cognitive abilities, such as theory of mind, emotional intelligence and moral judgement, should be included under the

umbrella of hot EF (e.g Anderson et al., 2008), others have suggested that the manifestation of these abilities is closely associated with, but not actually, hot EF (e.g Zelazo, Qu & Müller, 2005). Further research in this area would, therefore, be valuable.

This broader conceptualisation of EF as including cool and hot components has important implications for research into typical and atypical development. The distinction between cool and hot EF has the potential to inform research regarding the role of EF in clinical disorders as EF deficits have been found in a variety of childhood disorders, including autism and ADHD (Hill, 2004; Hughes, Dunn & White, 1998). Zelazo and Müller (2002) suggested that whereas autism may be characterised by primary deficits in hot EF with secondary impairments in cool EF, ADHD may have the opposite profile. In addition, cool and hot EF has been found to be differently implicated in children's academic and social development. Cool EF has been found to be more strongly associated with children's academic achievement, while hot EF has been found to be more strongly implicated in children's disruptive and social behaviour (Brocki et al., 2007; Garner & Waajid, 2012; Willoughby et al., 2011). Further research into the role of cool and hot EF in children's development, therefore, has the potential to shed new light on typical and atypical development. However, it is important to bear in mind that although a distinction has been made between cool and hot EF, they are proposed to be part of a co-ordinated system in which they typically work together (Zelazo & Carlson, 2012). Indeed, a common method of solving hot, motivationally significant problems is to reflect upon the problem, reconceptualise the problem in a more neutral, decontextualised way and try to solve it using cool EF (Zelazo & Cunningham, 2007).

Support for independent cool and hot EF constructs

Emerging research investigating whether there is support for distinct cool and hot EF constructs has found contradictory results. Hongwanishkul et al. (2005) examined the development of cool and hot EF in children 3 to 5 years of age and found that development across the two domains did not substantially differ; with both cool and hot EF exhibiting similar levels or improvements after 3 years of age. This does not support the view of separate constructs, with distinct developmental paths. Furthermore, after controlling for age and intelligence, performance on cool EF tasks was correlated with performance on hot EF tasks. Further research has also found that children's performance on cool and hot tasks was moderately positively correlated (Willoughby et al., 2011). This does not provide strong evidence for distinct cool and hot EF constructs.

More recent research has used factor analysis to explore whether a distinction between cool and hot EF can be identified. While some research has found weak support for a two-factor model including cool and hot dimensions in children (Masten et al., 2012), other research has found that a two-factor model fitted children's EF abilities better than a one-factor model (Willoughby et al., 2011). A recent study which explored whether a one- or two-factor model best accounted for children's (3 to 6 years of age) inhibition under conditions of varying motivational significance found that there was no significant difference between the one-factor and two-factor model (Allan & Lonigan, 2014). Both models provided a good fit to the data. The researchers concluded that a one-factor model was the best fitting model based on parsimony. This study, however, examined only one subcomponent of EF: inhibition. An important focus for future research, therefore, is to explore whether there is evidence to support distinct cool and hot EF subcomponents.

Conclusions and future directions

The emergence of hot EF has, therefore, paved the way for a broader conceptualisation of EF that takes into consideration the motivational and affective elements of EF. The distinction between cool and hot EF encourages researchers to consider the role of EF in everyday decision making and problem solving that rarely occurs in the absence of motivational or emotional consequences. This distinction may also shed new light on child development. However, research into hot EF lags behind that of cool EF; leaving many unanswered questions regarding hot EF. In particular the development and organisation of hot EF is poorly understood in comparison to cool EF. Considering the role of hot as well as cool EF in developmental research has the potential to highlight different EF profiles in typical

and atypically developing children. This will ultimately increase understanding of child development and inform interventions. This is the focus of my own research. I am currently undertaking a research project which explores the role of cool and hot EF in children's (4 to 7 years of age) social behaviour. Specifically, this project investigates the role cool and hot EF plays in children's aggressive and prosocial behaviour. It is hoped that this research will increase understanding of how cognitive development effects social development and inform more targeted interventions.

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The ADHD PhD: Researching 'The most frequently diagnosed disorder of childhood'

Martin K. Toye

ATENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD) is often described as the most frequently diagnosed psychological disorder of childhood (Shue & Douglas, 1992) thought to affect between eight and 10 per cent of all school-aged children (American Academy of Pediatrics, 2000). These diagnostic trends appear to be increasing (NHS Scotland, 2011). ADHD is characterised by pervasive episodes of inattention, hyperactivity and impulsivity (Rhodes, Coghill & Matthews, 2005) resulting from several executive dysfunctions of the prefrontal cortex (Barkley, 1997). Executive Functions (EF) include higher-order frontal lobe abilities such as inhibition, attention switching and working memory amongst others (Miyake, 2000). The symptoms of ADHD carry a wide-range of implications for those diagnosed, which means the scope and potential for research investigating ADHD and other developmental disorders is considerable. Symptoms often result in low self-esteem (Wheeler & Carlson, 1994), problems with social and affective development (Alessandri, 1992), a reduction in academic attainment (Barkley 1998) and have a serious impact on the health and safety of both sufferers and others around them (Stavrinou et al., 2011).

My research explores the relationship between children with ADHD and their involvement in accidents which result in serious injury or death. In Britain, traffic accidents now account for more child deaths in those aged 1 to 18 years than the next 20 causes of death combined and retain a seemingly permanent position in the top 10

causes of death in the World Health Organisation's global burden of disease (WHO, 2008). There have been recent calls by the British government for research to be undertaken to address this issue and provides an evidence base for the best way to improve accident trends for children with behavioural or inattentive disorders (Scottish Government, 2011; Transport Select Committee, 2007). This is just one of countless domains in which the recruitment of children with ADHD and other developmental disorders (DDs) is essential in order to improve life expectancy, the quality of life and other outcomes for vulnerable members of society. Indeed developmental research often necessitates the recruitment of children with psychological disorders. This article aims to demonstrate the difficulties of recruiting children with such disorders to take part in research, through my own experience of recruiting children with ADHD throughout the first two years of my PhD.

Perceptions of ADHD: Public and professional

As a PhD student working between the fields of clinical, cognitive-developmental and educational psychology, I have met and discussed my research with a wide range of colleagues in these fields. Prior to this, I also trained as a primary-school teacher, which provided insights into the conceptualisation of developmental disorders amongst education practitioners. I have always found it alarming how poorly ADHD specifically, is understood amongst the general population and indeed even by psychologists and professionally trained teachers. Despite swathes of

academic research transcending the fields of psychology, medicine and education alike, it seems that misperceptions of the ADHD disorder and its implications remain prevalent. This seems supported by research demonstrating low levels of knowledge of ADHD amongst both professionals and the general public (West et al., 2005). Indeed, it is almost as though the clichés that tarnish the neuropsychological validity of the ADHD disorder with the general public (thanks at least in part to the misreporting of the disorder and misrepresentation of research investigating ADHD by the media) also appear prevalent in the professional and academic worlds amongst a worrying variety and number of professionals.

Admittedly, even after a four-year undergraduate degree in psychology, and a year of teacher training, there were still gaps in my own knowledge relating to the true nature of ADHD, even whilst teaching children diagnosed with the disorder. On reflection, the children I taught during my foray into the world of primary-school education received medication to treat their disorder. In hindsight, I can now appreciate the masking effect this has on symptomology. In the case of the individual children I taught, the effects of their medication clearly hid symptoms to such an extent that they behaved similarly to any other child with challenging behaviour. It was not until my first clinical observation of an un-medicated child who had been diagnosed with ADHD, that I realised the true extent of the difficulties that the disorder causes for children diagnosed with ADHD and the clear impact it has on daily life for them and their families.

I now hold honorary contracts with two NHS Health Boards (Trusts) and have become chief investigator on a National Research Ethics registered project. This has provided ample experience of the true nature of un-medicated ADHD symptoms through research experience as part of my PhD. Teachers, on the other hand, may be forgiven for their lack of awareness of the true nature of the ADHD disorder; thanks at

least in part to the manner in which ADHD is treated and diagnosed, which is usually in medical settings. Moreover, few classroom teachers receive dedicated training for teaching children with developmental disorders: neither in terms of what these disorders are and how they present, nor in terms of how to identify and deal with their symptoms in the classroom. This carries implications for the education of children with the disorder and their typically developing peers as well as for those interested in carrying out school-based research with these populations.

Problems with recruitment

The intrusive and delicate nature of negotiating any school-based research project is perhaps exacerbated when projects target children with any developmental disorder and perhaps more challenging still when attempting to recruit children with ADHD. The limited training education professionals receive about the disorder (which quite understandably limits their awareness of the symptoms) and by the fact that the behavioral symptoms of many children with ADHD are masked by the effects of their medication, both make it difficult to identify participants through school-based approaches. The diagnosis of ADHD is also rooted firmly in clinical settings and is usually carried out by psychiatrists following the medical model rather than by educational psychologists. This means even when schools are able to identify potential participants, many educational psychologists and specialist teachers will have limited knowledge of or access to children's diagnostic history. They may, therefore, be limited in their ability to inform researchers about formal diagnoses and other key facts typically required for research with specialist populations.

On the other hand in order to access accurate clinical diagnostic and treatment information (which is particularly important for studies involving children with ADHD), one must do so via the NHS, which poses a range of additional administrative challenges. The lengthy and complex acqui-

sition of NHS ethical and research and development approvals can be extremely time consuming and are no easy task, often requiring months of work to obtain. In order to even submit these applications for consideration, academics must identify and recruit suitable clinical collaborators, acquire site approvals for the locations in which studies will be conducted and in most cases will need to negotiate NHS clinic and room timetables as well as other NHS resources required for the completion of projects.

Challenges beyond recruitment: DNAs and drop-out

Once a means by which one can access a sample of developmentally disordered participants has been identified, there are no guarantees that those who initially express interest in taking part will either be suitable to participate or eventually form part of a sample for a range of clinical and ethical reasons. For example, those interested in the pure cognitive profile of children with ADHD (or other disorder) may well have to exclude a high number of potential participants due to comorbidities. Admittedly the need to include comorbidities in exclusion criteria will depend on the aims of individual studies, this is a particular problem of significance for ADHD studies given the highly comorbid nature of the disorder (Gillberg et al., 2004). Moreover, anyone working in the NHS will dread the term 'DNA' far more than your average A-level biology student. A 'DNA' (or 'Did Not Attend') can result in both a significant loss of time for researchers and in the wastage of NHS resources through unnecessary room-bookings for example. Unfortunately in my own experience this appears particularly common in children with ADHD.

For those studying the effects of medication on children with ADHD, or for those studying the longitudinal cognitive development of these (or disordered) children, another range of potential problems present in terms of participant dropout. Indeed, most

clinical trials by their very nature are at least to some extent longitudinal (in that they usually require more than one testing session). With many children who start taking medication to treat ADHD discontinuing or changing treatment regime within the first year post-titration (Barner, Khoza & Oladapo, 2010). This causes significant problems for clinical trials and medication studies. Beyond drop-out for medical reasons, participants may simply choose not to participate in follow-up research, which impedes the evidence base for the long-term use of the very medication these children are taking.

For those interested in studying the effects of medication or cognition without its influence, a wide range of additional ethical and experimental difficulties present. For example, identifying a medication naïve sample can be extremely time-sensitive. Alternatively, ensuring children do not take their medication for a designated period (usually 24 hours) prior to participation in research can also be difficult. The ethical implications of asking children to discontinue medication for research are vast and can be difficult to justify. Approaches to recording this in an empirical and impartial way can also be challenging.

Defining samples: Comorbidities and diagnostic information

As has been touched upon above, many children diagnosed with one developmental disorder are also diagnosed with another disorder. Research has shown this appears particularly common with ADHD with common comorbid disorders including Autism Spectrum Disorders and Williams Syndrome (Gillberg et al., 2004). Beyond the potential issues for recruitment, the presence of comorbid diagnoses presents additional implications in terms of recording and reporting these comorbidities in order to accurately define and describe samples.

In my experience, accessing diagnostic information about comorbid diagnoses is as challenging as recording specific data for children with single diagnoses. Recording

information about both of these factors is imperative for research to be meaningful and interpretable. It is essential for research purporting to investigate a single developmental disorder to provide statistical information about both diagnosis of the disorder being studied as well as the broader profile of the sample being reported in terms of comorbidities and medical history. Gaining this information is no easy task as many engaged in clinical developmental research will know all too well. Indeed, locating a child's medical records and extracting the necessary information from notes is a mammoth and time-consuming task (which in my opinion almost warrants recognition as a whole study in itself!).

The difficulty of recruiting control children

My research has highlighted the difficulties of recruiting typically developing children to form part of a control group of children in studies which investigate developmental disorders such as ADHD. Indeed, despite ADHD being one of the most frequently diagnosed and commonly discussed disorders, recruiting control children in mainstream schools for an ADHD study has proved surprisingly difficult. I have conducted a number of developmental studies as part of my PhD. In contrast, I have found it much more difficult to recruit children to become part of a control group for my ADHD studies than was the case for my studies focusing on developmentally typical children. Perhaps negative attitudes about developmental disorders are off-putting for participants or perhaps the lack of direct relevance of an ADHD study for typically developing children means families fail to recognise the value of their child's participation as a control. Either way, recruiting typically developing children to take part in a study on a developmental disorder has proved challenging. Beyond the challenges of recruiting controls, the issue of matching these participants to specialist population participants appropriately neces-

sitates a significant workload to ensure suitable matches are made. This can require additional testing (such as the administration of a full-scale IQ) simply to identify whether or not control participants are suitable for comparison testing.

So... what does it all mean?

In summary, conducting research with children with developmental disorders is no easy task. My experience of recruiting children with ADHD has been difficult not only in terms of accessing a clinical sample and identifying eligible participants, but also in terms of recruiting these participants, accessing diagnostic and clinical information from their medical notes in order to define my sample and also in terms of monitoring and recording their medication use. Recruiting suitable controls has also proved challenging.

One of my supervisors wrote recently in *The Psychologist* (Rhodes, 2010) outlining the two-way nature of the public's perception of ADHD. Indeed while many misperceptions of ADHD and other developmental disorders continue to exist in both the public and professional domains, it is our responsibility as researchers to better inform these. I believe improvement of these perceptions can only be achieved through the conduct of developmental research and the careful dissemination of our findings. Meantime it seems, meaningful and high-impact research in this field requires us to ironically overcome the very problems with perception and recruitment that our research may one day help to overcome. Only if developmental researchers continue to strive to swerve the many hurdles experienced by researchers of ADHD and other disorders might public perceptions, participation rates and our subsequent understanding of these disorders be improved.

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The practicalities of collecting data in primary schools: Ten top tips

Katie Rix

ANYONE WHO STUDIES developmental psychology, will, undoubtedly at some point in their career, collect data in schools. This can be incredibly enjoyable but challenging experience. This article discusses some of my personal

insights, experiences and top tips for researchers new to data collection in schools. I hope that it will also be interesting and entertaining to those familiar with school data collection, through situations that you can very much relate to!



Tip number 1: Be persistent!

The first challenge, as in all areas of psychology research, is finding people willing to participate in your research, especially since schools are such busy places with so many things going on at one time. However, there are plenty of schools out there who are willing to offer support and allow researchers in to work with their pupils and it is worth being very persistent in contacting them in order to do so. Whilst an initial email is always useful, I personally found that follow-up telephone calls and face-to-face meetings were the best way to recruit a school in my research. I was asking schools to allow me to return over a 15-month period, and, therefore, I found that meeting with the Senior Management allowed me to fully explain the research I would be doing and the benefits of it. I also promised them a summary report on my results, which would be available for the school staff and parents/guardians.

Different ethics committees tend to agree to different forms of consent for schools (e.g. opt-in/opt-out), each with unique challenges. A detailed but concise letter to parents/guardians that puts their mind at ease about the research is important for recruitment of child participants. Be persistent with these too – send reminders if necessary and a letter of support from the school head teacher is an invaluable way of encouraging parents/guardians to read the letters and return forms as necessary. Being willing to meet and talk to parents can also help to increase your sample size – during my research, I was contacted by three parents who asked about my research, and one parent wanted to come in and view the materials themselves. This is completely understandable – it is their children that we are asking to work with, and taking the time to make sure they are comfortable with their child taking part is essential.

Tip number 2: Build rapport with the children

Another tip for conducting research in schools is to invest time in building rapport with the children, and helping them to see that you are not a teacher, or authority figure. This is particularly important in areas of social development such as studies of bullying or behaviour as children may feel more able to speak honestly with you. I was lucky enough to have five schools agree to take part in my research. As my research spanned across three different phases, I spent a day at each school, prior to each research phase commencing, in which I interacted with children in their everyday setting. Therefore, I got to spend 15 days in classes, spending time with the children, playing games and spending time with them when they were working and even sometimes help out with the exercises they were engaged in. This helped to build a relationship with the children where they felt safe working with me, and comfortable answering my questions (and was a lot of fun!).

Tip number 3: Be clear from the outset

A top tip is to make it clear to teaching staff from the outset the type of relationship you want to have with the children. On a couple of occasions I was introduced to the class as ‘Mrs Rix’. I had to interject and ask that I was referred to as Katie, in order to ensure that the children did not view me as a figure of authority. Also make this clear to any other adults in the classroom. I remember witnessing two children shouting at each other, and having to then awkwardly explain that I did not want to intervene as I did not want to appear to ‘judge’ either child who I would then be expecting to speak honestly to me about their own aggression.

Tip number 4: Think about the practicalities of the school day

Once you start collecting your data in schools, it is always worth a quick email or telephone call to remind them that you will be visiting. Whilst it is likely in the school diary that you are going in, there is no harm in giving them a gentle reminder that you will be doing so, to ensure that they have made suitable arrangements for you being there. Also ask ahead about things that happen throughout the day which mean it may not be possible for you to collect data – assembly, morning break, lunch times, afternoon break, PE, particular lessons such as Read Write Inc. It is also important to consider which term you are in – if it's the Autumn term, they will have Christmas concerts, Summer term will have sports day and a range of trips. Check what times the school day starts and ends, and what time you can start taking children out of class from. Furthermore, have a copy of your CRB with you at all times and offer to show this on your first day. I found that my schools took a copy of this to keep on record.

Tip number 5: Where to collect your data

Not only is it important to think about the school day but it is also key to think and talk to the schools about where you will collect your data – there is limited space in many schools and, therefore, the practicalities of where you can work and collect your data may be challenging. It is imperative that you are flexible and willing to move around, as expecting to have a permanent space whilst data collecting may be unrealistic. Also think about the impact of location on the children – certain rooms may have particular connotations associated with them such as 'being in trouble' and could influence your data.

Tip number 6: Maintain a good relationship with the school

Over the course of data collection, it is invaluable to maintain a good relationship with the schools taking part in your research and contribute in ways that demonstrates how helpful they have been by allowing you to conduct research there. I was asked by two of my schools whether I would be willing to write a report for Ofsted on their participation in my research which the schools were grateful for. In addition, there is great benefit to maintaining these relationships for future research purposes.

Furthermore, take the time to speak to the Class Teachers and Teaching Assistants about your work. I found that they showed genuine interest and were normally willing to help in whatever way they could – just remember that they are busy and you will need to be flexible and work around them if you require their input in your data collection.

Tip number 7: Find out about the school policies and procedures

Asking about school policies and procedures relating to your research can be helpful. I was given access to all the school's behavioural policies prior to commencing my research and this was essential when interpreting some of the children's responses and their reference to the school's policies and rules given to them from a young age. For instance, the school may use particular catch phrases, or have certain behavioural management systems which make perfect sense to the children but can be a bit confusing for you as a researcher if you are not aware of them! In addition, checking whether children move up between school years as a class or whether these change, can also help inform your methodology design, recruitment and results.

Tip number 8: Be enthusiastic!

Keeping children enthused and engaged during research collection requires a lot of energy! They will pick up on you feeling tired and so keeping a smile on your face and remembering that whilst this may be the 100th time you are asking each question, it is the first time they have heard it and they are normally so excited and keen to be taking part. As with all ethical procedures, remind them that they do not have to take part and can stop at any point, and give them the opportunity to take part another day if they decide to stop because they are tired or have become bored. Remember the practical things – remind them to let you know if they need to go to the toilet, or if there is anything they do not understand!

Tip number 9: Stickers, stickers, stickers!

Stickers are like gold to many children, particularly those of infant school age! Have plenty with you and be prepared for some indecisiveness if you allow children to choose which sticker they would like at the end of your research! They will be so excited at being given a sticker, and it is a wonderful way to say thank you to them for taking part!

Tip number 10: Be prepared that children want to be helpful!

Finally, be prepared to feel like the most popular person in the world and to hear cries of ‘Can I go next?’, ‘Can I go again?’, ‘Is it me now?’ ‘Are you working in my class?’ In my experience, children want to be helpful and take part in your study, embrace this and make sure you are as enthusiastic as they are.

A final note

As I come to the end of my PhD, I feel that I have developed a good understanding of the practicalities of conducting research with children in schools. As I sit writing these tips, I am smiling and laughing as I reflect upon the year I spent data collecting. I learnt to realise that every day was different, and that every child was unique in their own special way and I genuinely enjoyed the time I spent in schools collecting data! Even those moments that seemed somewhat challenging at the time, I now look back at fondly and I am truly grateful to the schools and children, for allowing me to work with them and collect my data.

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Are executive functions embodied?

A brief theoretical and empirical discussion

Peter McKenna

THE THEORY OF EMBODIED COGNITION proposes that early sensorimotor and perceptual experiences lay the foundations for all mental processes (Barsalou, 2008). From this viewpoint, human's earliest physical interactions with the environment play a key role to the development thought and behaviour across the lifespan (Glenberg, 2010). Piaget (1952) emphasised the body's role in cognitive development. He proposed that the body and particularly the senses (e.g. touch and vision) are tools that humans first use to understand the environment, and, therefore, that neonates 'sensorimotor' interaction forms the basis of cognitive abilities. As such, there is a growing interest in the bodily processes relative to the development of cognitive milestones, or in other words, the degree that these abilities are embodied. Research of children's executive functioning (EF) has shed light on the embodied theory of cognition by examining the interaction between physical engagement and performance on executively demanding tasks. This field is of particular interest given the extant literature demonstrating an ameliorative effect of physical activity and EF (Best, 2010), and the positive relationship between EF and scholastic performance (Blair & Razza, 2008). My own research focuses on children's EF, and how these skills can be enhanced via interaction with physically engaging technologies (e.g. Microsoft's Kinect). These systems are highly flexible in their utility, as they can be implemented as a controller for challenging EF computerised tasks. Further, these devices allow the experimenter to investigate the quantitative relationship between physical interaction and EF performance.

This article provides a brief overview of both the concepts of embodied cognition and EF, followed by some of the empirical work in the field that supports the embodied perspective of EF. The implications of an embodied account of EF are then discussed, with possible topics identified for future exploration.

Embodied cognition

Piaget (1952) argued that from birth to age two humans generate an understanding of the world through the senses (e.g. touch and smell) and their physical engagement in their surroundings. Termed the 'sensorimotor' stage of development, Piaget asserted that neonates gradually learn to adapt a set of innate motor reflexes; firstly to cope with the challenges they encounter, and later, to generate intentional action. Interacting with the environment by reaching and grasping an object with the hands helps infants learn that the world does not wait for them, and as a consequence, gradually coordinate their bodies in a more goal-directed manner (Radman, 2013). According to Piaget (1952), these interactions create 'motor schema'; a cognitive reference point matching the physical action and intended goal. In order to determine the significance of these schemas researchers have used eye-tracking to elucidate the visual attentional of infants while observing an action sequence. Falck-Ytter, Gredeback and Von Hofsten (2006) recorded the eye-movements of infants aged 6 months, 12 months, and a group of adult participants while they watched a video of a child placing a toy inside a bucket. In this event, the bucket is the goal of action, so, the length of time participants spent fixated on the bucket was used an indicator of goal-

directed behaviour understanding. Falck-Ytter, Gredeback and Von Hofsten (2006) found that infants aged 6 spent significantly less time looking at the bucket relative to the 12-month-olds and adults, who fixated on the bucket for a similar time length. These results indicate that comprehension of goal-directed behaviour emerges very early in childhood and also, that eye movements can shed light on the infant's action understanding. Hence, during the sensorimotor stage infants garner low-level conceptual information pertaining to movement and outcomes, creating a library of motor schemas for future goal-directed behaviour. The diversification of action and cognition is somewhat mirrored by infant's neurobiological development. Diamond (2000) noted that the increasing ability execute intentional motor actions is reflected in the influx of neural connections in the associated substrates. Imaging studies have shown that during infancy both the cerebellum (motor action) and pre-frontal cortex (goal-directed behaviour) mature rapidly and simultaneously (Diamond, 2000). Hence, cognitive and neurobiological research indicate that cognitive processes underlying goal-directed behaviour can be traced back to physical interaction. If cognition is intrinsically linked to motor action in this way then physical activity engages cognitive processes to a greater extent than passive engagement. Researchers have studied this notion developmentally, by assessing children's performance on EF tasks requiring varying degrees of bodily engagement.

Executive function

Executive function is an umbrella term covering the skills that manage and regulate cognition and behaviour on a day-to-day basis, particularly when a new event is encountered (Banich, 2009). Latent variable analysis conducted by Miyake and colleagues (2000) has become a popular model in EF research and includes three factors: shifting, updating, and inhibition. Shifting refers to the ability to switch between different strate-

gies, or change and adapt your approach to suit the task requirements. Updating is the ability to refresh or add to information that is currently held in working memory. Inhibition is goal-directed suppression of a habitual or overriding response pattern that you would wish to avoid. Studies have shown that each of these EF are mediated by an individual's level of physical engagement.

Embodied switching

O'Neill and Miller (2013) investigated the effect children's hand gestures on their performance on the dimension card change sort (DCCS). The DCCS is an assessment of an individual's ability to switch between different strategies. In the task participants are required to sort cards according to one dimension (e.g. colour) and then another (e.g. shape). Research indicate that typically developing children aged 3 find it difficult to disengage from the first sorting rule and make perseverative errors, whereas 5-year-olds are able to switch between sorting dimensions competently (Zelazo, 2006). O'Neill and Miller (2013) examined the degree that physical engagement interacted with participant performance by focussing on children aged 2 to 6 years tendency to use hand gestures both during and after completing the DCCS. It was found that both the frequency and accuracy (extent which the gesture matched the sorting rule) of hand gestures had a significant positive effect on switching performance. Specifically, children who made more spontaneous hand movements to assist their sorting decision were better sorters than their peers. Further, children who were able to accurately imitate the sorting rule with their hands sorted more cards correctly to those who produced arbitrary hand movements. Although not directly argued in the paper, the research suggests that children's hand gestures assisted their ability to conceptually shift from one sorting dimension to another. Hence, the research implies that flexibility in approach is related to children's early motor representations generated through gesture. From a young age children often play with

objects using their hands, manipulating their form and orientation. Recognition that the state of an object can be altered could highlight the flexible nature of the environment, and consequently, the flexibility of thought. The embodied perspective has also been investigated relative to the ability to update and regulate information processed in working memory.

Embodied updating

Updating or working memory (WM), refers to the short-term memory capacity where information is both stored and manipulated. A classic working memory exercise is to hold a list of numbers in mind and reversing their order (Baddeley & Hitch, 1974). This ability to gather and process information has been linked to a number of academic skills. Children who score highly on WM tasks tend to achieve maths and reading scores above classmates with lower WM (Blair & Razza, 2007; Bull et al., 2008). Hence, the emergence of individual differences in WM suggest the manner information is encoded into WM influences the degree that that information is processed and made meaningful. In light of this question, Yang and colleagues (2014) assessed children's ability to retain information stored in WM when encoded by through physical and verbal rehearsal. In the experiment participants read a series of action commands related to coloured stationary placed on a desk in front of them (e.g. push the black pencil and put it into the blue folder). They were then asked to recall the action phrases either by acting out the phrase to repeat each aloud. Yang et al., (2014) found that participant's recall was better physically engaged (i.e. acting out the phrase), compared to verbal recall. Further, this trend was maintained even after adding visual and verbal distractions. Thus, Yang et al., (2014) demonstrated that physical action at the time of encoding can enrich memory for related action phrases beyond verbal recall. This finding suggests that embodying a present verb can facilitate memory, and perhaps learning

beyond traditional recall methods. From a practical perspective this finding suggests that motor action enhances an individual's ability to retain information related to achieving a specific goal, in a similar to athlete's intensive training routines.

Embodied inhibition

Best (2012) demonstrated that a short bout of physical activity can enhance children's inhibition. In his study 33 children completed four pre-test conditions at different sessions. In the first, participants sat still and watch a video about healthy living. In the second, children sat still and played a cognitively demanding video game. In the third, children ran a virtual marathon on an electronic floor mat. In the fourth, children played a series of mini-games on an electronic floor mat, with each game requiring the player to adapt their physical movements to increasingly challenging tasks (e.g. jump to avoid obstacles). After each pre-test condition children then took part in a modified version of the flanker task (Rueda et al., 2004). The flanker task required participants click the left or right mouse key to match the direction of a fish (front end meaning forward) presented in the central fixation point. Each trial had either a single fish or five. When five fish were presented the 'flanking' fish peripheral to the central fish could either be facing in the same direction (congruent) or in the opposite direction (incongruent). Best (2012) found that physically engaging pre-test conditions using the electronic mat reduced children's response time to incongruent trials relative to sedentary pre-test conditioning. Hence, the findings suggest that physical engagement attenuated attention to the flanking fish, thereby ameliorating children's capacity to inhibit visually distracting stimuli. The findings of Best (2012) suggest that physical activity encourages children to act in a more purposeful goal-directed manner in subsequent tasks. This notion supports embodied cognition theory, as it could be argued that motor action primed motor schemas related to EF.

Conclusion

This article showcased some of the literature demonstrating the body's role in childhood EF. Piaget (1952) argued that cognition is rooted in early sensorimotor experience, and studies investigating the effects of motor action in EF tasks somewhat substantiate this embodied perspective. Children's ability to switch between strategies may well relate to their early experiences tinkering and manipulating with objects in their surroundings. Further, the indication that verbal WM is aided by body movement reflects the acquisition of motor skills prior to language (Glenberg, 2010). Lastly, it appears that inhibitory control can be promoted through bodily engagement, suggesting that inhibition relates to early physical interaction with the environment.

There is still much work to evaluate embodied cognition theory in the context of EF. Here three EF (shifting, updating, and inhibition) have been discussed, whereas some models of EF include more or less facets (Banich, 2009). Also, exactly what process causes physical interaction to

enhance cognitive processes remains unclear. O'Neil and Miller (2013) were primarily concerned with children's hand gestures, a phenomenon that is conceptually disparate from flexible thought. Future work should concentrate on the quality and quantity of movement. For example, if the hand gesture is very similar to the demands of the task – to imitate animal shape silhouettes – the benefits offered by embodied processes may become clearer. The take home message here is that embodied cognition is a theoretical position that should not be undermined, particularly given the abundance of research demonstrating the importance of children's EF. If EF abilities are ameliorated via motor processes then a new, more active form of intervention and educational practice could be the way forward.

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A personal account of infant research: Researching baby brains

Jannath Begum Ali

THERE'S A COMMON SAYING in the world of work, regardless of the profession: 'Never work with animals or children'. While I don't have first-hand experience of the former, some say that animals can make great participants in psychological research. Working with babies on the other hand is much more familiar to me and I have found they are certainly unpredictable should we say in my experience. This article aims to provide an overview of my experience of working with infants and the difficulties research with babies presents through a first-hand account of my experience of recruiting my first infant participant.

I began my PhD in October 2011 and was launched into infant research through an ambitious electroencephalography (EEG) study with 6- and 8-month-olds. I was presented with brand new state of the art EEG equipment that was especially designed for infant research; the EEG nets already had an array of 128 electrodes that were positioned in the right place and all that was required was getting this hat-like net (that goes on like a swimming cap) onto a baby's head. 'Great!' I thought, 'That sounds straightforward enough'. There was no need to fill each electrode with a conductance gel and then clip 64 or 128 electrodes into place (as is required for other EEG systems used with adult participants).

I practised ways of putting the net on over and over in the week running up to my first infant participant. This first participant was a 10-month-old baby that was taking part in another study I was working on – and even though I was armed with considerable knowledge about babies and how to distract them, encourage them and engage them, I don't think I've ever worried about and

dreaded something as much as I dreaded putting this EEG net on this first baby I was to work with. I was so worried that I found myself almost wishing their mum would have to cancel their visit, just so I wouldn't have to do it. On reflection now, this was a completely irrational thought considering that regardless of when infants were scheduled to come in, I would have to do this at some point. But I the nature of a PhD means we don't tend to be the most rational bunch of people – after all, we did agree to do a research doctorate in the first place! I have often found myself wondering *what was I thinking?*

In the end, the mum and baby arrived for their visit and my nerves about trying to put an EEG net on a resisting infant were realised. It was an absolute disaster. The baby hadn't napped as he would have usually done in the morning and, because of this,



was restless and tired. The nets are soaked in a solution of warm water, baby shampoo and potassium chloride, to hydrate the sponges of the electrodes, which acts like a conductance gel before they are placed onto the babies' heads. As soon as the damp net touched the head of this first participant, he started to scream. No amount of distraction or reassurance calmed him and I distinctly remember getting a whack on the face from him when I tried to position the electrodes in the right place! Often babies tend to move their head whilst attaching the net and so electrodes often no longer correspond to the brain region they should and this requires the researcher to gently reposition them into place, which of course, infants tend to object to.

It was soon decided that the testing session would be terminated as it was too upsetting for the baby. As is the case when any participant does not complete a testing session, this leaves you feeling disheartened, not only because of the fact that you think you are the reason this baby is distressed or crying, but also because it was a wasted testing session both in terms of your own and the family's time. This is something developmental researchers have to come to terms with fairly quickly; if you need 12 babies to complete a study, you book in 20 because you know for certain that there will be some babies that don't like the EEG net, or some that are fine with that but hate being still enough to get clean brain recordings required for usable data to be recorded. In some instances even if the infants don't mind the EEG net and are entirely still, they may get bored of the experiment stimuli very quickly and no longer co-operate or concentrate enough to allow for the testing session to be completed.

According to the bible of infant neuroscience (De Haan, 2013), for my experimental design, I needed to get between 10 and 20 movement and blink-free trials in each condition. Thankfully, babies blink significantly less than adults, but asking a

baby to be still is no easy task. Attempting to 'ask' them is one thing, but there is ensuring their understanding or adherence to instructions is another. A total of 20 trials is considerably less than what you would expect for studies involving adults, but if you consider that experiments usually have upwards of four conditions, it soon becomes a large number overall. Realistically, infants are only really capable of being attentive and still enough for about 10 minutes. That means developmental researchers working with babies only have this much time to get through as many trials as possible. Of course, this figure varies between studies and the age group of your participants. Babies aged 6 months tend to be attentive for much longer than 4-month-old babies, for example (you really only have a window of roughly five minutes with this age).

This is one of the most challenging aspects of infancy research: making the experiment as engaging and as 'fun' as possible for your participants, whilst also still retaining the essential elements of the study that are required in order to investigate your research question. This can be achieved in several ways, for example, if you are not concerned with visual information interfering with the brain region you are interested in, it may be a good idea to have the babies watching a short segment of a TV show whilst the experiment runs (in my experience, *In The Night Garden* is has been useful when working with this population). For the majority of the studies I conducted as part of my PhD, this wasn't a viable option, so instead I (as the researcher) had to be entertaining and engaging for the babies while they took part. This involved playing lots of peek-a-boo and the singing of nursery rhymes; essentially you become a children's presenter displaying incessant cheerfulness and exaggerated facial expressions. I found that very quickly I lost my inhibitions and realised that good data is worth so much more than the fleeting moments of embarrassment engaging babies during testing may cause.

In conclusion, whilst there are many challenges to infancy research, there is also the enormous opportunity of empirically recording behaviour that hasn't been studied before through novel research methods such as the EEG. The scope of the research appears limitless and discovering the age of onset of specific behaviours (cognitive and social alike) can be extremely rewarding in, and of, itself. The majority of findings are interesting and interpretable, especially when it comes to infant brain activity. Whilst the adult EEG literature is vast, in comparison psychologists know very little about the infant brain. Additionally, attempting to make predictions about infants using adult EEG data is extremely problematic (due to the fact that brain waveforms differ in morphology and latency which may well be due to the immature regions of the infant brain). This often makes for ground-breaking research and findings.

In summary, conducting infancy research comes with a set of unique challenges that one may not expect when embarking on a PhD. While this may be true of most doctoral research programmes in so far as they all have niche obstacles that we are required to navigate in order to both complete our PhDs, in my experience these have been significantly greater thanks to working with babies. Yet these challenges allow us better ourselves as researchers in each our respective fields. The biggest advantage that I feel infancy research has over adult research, is the fun aspect! Thankfully my first experience of applying the EEG net on a baby which I have outlined in this article, was the exception and not the rule! When else will you be able to spend hours playing with adorable babies and call it research?

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Mind the gap! How barriers to language development in the early years affect academic achievement later on

Michelle Peter

THERE IS CONSIDERABLE VARIATION in the age at which children reach developmental milestones. Just as some children will master before others the gross motor skills that enable them to balance, walk, and run, some children will acquire the processing skills that enable them to achieve language proficiency sooner than others of the same age. In fact, it is well documented that the rate of language development varies substantially across children, such that while some children show rapid vocabulary growth over their preschool years, the gap between the processing skills that are crucial for language development for these children and their peers can be as wide as six months (Fernald, Marchman & Weisleder, 2012).

But does this really matter? Sooner or later, regardless of age, most children do learn to balance, walk, and run. So, doesn't it also stand to reason that 'late talkers' will catch up in the end too? The research suggests that indeed some of these children will eventually reach the level of language proficiency expected by the time that they start school (Bates, Dale & Thal, 1995). Others, however, will begin school at a considerable disadvantage, entering the education system without the language abilities that are expected by this point (Entwisle & Alexander, 1993). These children typically demonstrate slower language growth than their more advantaged counterparts. Most importantly, though, this gap widens with age (Hart & Risley, 1995). It is well known that oral language skills are a pre-cursor to literacy (Dickinson et al., 2003; Muter et al., 2004), so it is unsurprising that children at a

linguistic disadvantage will have immediate problems with reading and writing in the classroom. What is surprising though, is that these problems can be long-lasting – so much so that they negatively affect later educational attainment and future academic success (Duncan & Brooks-Gunn, 2000; Duncan & Raudenbush, 1999; Palardy, 2008). It is this evidence of a growing disparity between certain groups of children that has prompted researchers to identify the factors that both foster and retard language development, and has inspired the design of interventions aimed to close the achievement gap by targeting those children with poor early language skills.

So, what is it about the early language experience that means that some children seemingly breeze through the language-learning process, while others lag behind? Research has indicated that the quantity, quality, and conditions of the early linguistic input play a crucial role in language development. These factors are, clearly, subject to variation: the amount of language a child hears, the type of language to which she is exposed, along with the environment in which this language is experienced will be different for different groups of children. Probably the most consistent finding, however, is that this variation is strongly related to socioeconomic status (SES) and its correlates (i.e. maternal education, family income, and occupational prestige). A number of studies have shown that the linguistic input of children from low-SES families is often impoverished and that this corresponds with a language trajectory that is different from children from more advan-

tagged backgrounds (Hoff, 2003). In fact, in comparison to children from more affluent families, children from low-SES homes have been shown to have lower levels of oral language skills, a slower rate of vocabulary development, and poorer processing skills (Fernald et al., 2012). With this in mind, I'll be exploring some of the barriers to language development. I'll also highlight just how important the early linguistic experience is in determining a child's likelihood of future academic success, before taking a closer look at how effective recent attempts to close the achievement gap have been.

Variation in the amount of language produced by caregivers is associated with variation in children's early language skills and subsequent language development (Huttenlocher et al., 1991). In other words, children who hear more language learn more words more quickly than children who hear fewer words. The question is why are some children exposed to more speech than others?

An important finding has been that caregivers' speech varies as a function of SES; mothers from low-SES homes have been shown to talk less to their children than mothers from high-income families (Hoff-Ginsberg, 1991). One well-known example comes from Hart and Risley (1995) who, over a three-year period, studied the vocabulary size of children from 42 professional, working-class, and low-SES families (in receipt of state welfare). Their findings revealed considerable differences in the amount of caregiver speech across socioeconomic background: on average, children from low-SES households heard 616 words per hour whilst children from professional families heard over three times this amount. Correspondingly, by the age of 36 months, those children who had heard the most speech were reported as having larger vocabularies than those whose input was linguistically deprived. Even more interesting is that follow-up research showed that the amount of speech heard early on was predictive of future language outcomes: children with larger vocabularies at age three, performed

better in areas of vocabulary, syntax, and reading comprehension when aged 9 and 10.

More recent work has suggested that vocabulary growth is linked to early processing speed. A study by Fernald et al. (2012) revealed that 18-month-old children from high-SES families processed spoken language more quickly and had larger vocabularies than similarly-aged children from low-SES homes. Moreover, by the age of 24 months, there was a six month gap between SES groups whereby low-SES children were only just achieving the level of processing efficiency shown by the high-SES children at 18 months. Fernald et al. suggest that faster processing speed facilitates the learning of new words. This, they argue, is because if a child can process a familiar word quickly, then she can free up cognitive resources that allow her to direct her attention towards subsequent new words in a sentence. Through a process of positive feedback, vocabulary growth increases and, at the same time, the ability to process language improves. This can explain why children who hear more speech have larger vocabularies: they have more opportunity to interpret language and to develop the processing skills that are crucial for word learning.

A child's language development, however, does not solely rely on the sheer number of words heard – it also depends on the type of language to which that child is exposed. Findings have revealed that caregiver speech that is diverse, complex, and has limited use of directive utterances is associated with larger vocabulary size in children (Arriaga et al., 1998; Hart & Risley, 1995; Pan et al., 2005), and that children who hear more speech directed towards them specifically (child-directed speech) have a faster rate of vocabulary growth (Huttenlocher et al., 1991; Shneidman et al., 2013). Other work has shown that mothers' use of decontextualised language (i.e. abstract discourse that includes narrative comments about past and future events) during past event conversations with their children predicts print and semantic skills (Reese, 1995).

As with variation in the quantity of the input, the nature of speech that caregivers produce has also been shown to differ across SES. Mothers from low-SES homes use less complex and varied syntactic structures (Hoff, 2003), give fewer explanations to their children (Weizman & Snow, 2001), produce speech that has the aim of directing behaviour rather than to elicit conversation (Hoff, 2006), and produce less child-directed speech than mothers from more affluent backgrounds (Hart & Risley, 1995). In other words, the type of speech to which low-SES children are exposed is often less supportive of language development than children from high-SES homes.

Despite this, we do see large differences even within disadvantaged groups. For example, Weisleder and Fernald (2013) found variability in the amount of child-directed speech produced by low-income Spanish-speaking mothers that corresponds with differences almost as large as those that have been found across SES background in previous studies (c.f. Hart & Risley, 1998).

All in all, the research shows that it's not enough just to bombard children with a barrage of words – the quality of the speech that children hear matters too. But it doesn't stop there: the social conditions of the early linguistic input are also crucial in providing an environment that promotes language development. Studies have found that shared book-reading and a positive literacy environment is important for early lexical development and initial reading competence (Aikens & Barbarin, 2008). Waldfogel and Washbrook (2010) report that children who are read to daily at the age of 3 are predicted to have a vocabulary test score two months better than children who are not read to daily. But, in the UK only 45 per cent of the poorest children are read to daily compared with 65 per cent of middle-income children. One factor that might influence how often children engage in shared reading is parental access to resources; parents from low-SES communities might not be able to afford books,

computers, or tutors to create a positive literacy environment (Orr, 2003). Maternal education is another factor that affects opportunities for shared reading; Farrant and Zubrick (2012) found that having a well-educated mother facilitated vocabulary development because well-educated mothers engage in more shared book reading. Similarly, high-SES mothers have been found to be more knowledgeable about child development and this knowledge is positively related to language growth (Rowe, 2008). Importantly though, having accurate knowledge about child development can mediate the effects of SES (Miller, 1988). This means that designing interventions to educate low-SES mothers about the importance of shared reading for their child's development is a good way of improving language outcomes for these children.

It isn't all bad news though, and I should point out that being born into a low-SES home isn't always a one-way ticket to a poor educational outcome. It's true that language is often less supportive in low-income households and that children from this demographic are more likely to face barriers to language development. But, as we have seen, there are also large differences in the early language environment – even within a disadvantaged group of families (e.g. Hurtado, Marchman & Fernald, 2008; Weisleder & Fernald, 2013), and, importantly, some of the effects of SES can be mediated by education. This means that while there are links between SES, language development, and subsequent educational success, we can mitigate poor outcomes by teaching parents the value of talking to their children during their early years.

With such robust evidence of an achievement gap between the poorest children and their more affluent peers, those at the highest levels in UK government have been forced to respond. With the key objective of narrowing this gap, the former Labour government invested in the Sure Start Local Programmes (now Sure Start Children's Centres) with the aim of increasing school

readiness, and improving academic outcomes for children from the most disadvantaged families. In addition, their investment in free universal half-day nursery places for 3- and 4-year-olds means that all children, regardless of background, now have the opportunity for pre-school education (which has been shown to be important for later educational outcomes [Melhuish et al., 2008b; Sylva et al., 2010]). To add to this, the current government has introduced the Pupil Premium, giving £625m of extra funding to schools with high numbers of disadvantaged pupils. These are, without doubt, steps in the right direction but, as it stands, it's still too early to evaluate the impact of these programmes on educational attainment. Right now, we're best focussing on the evidence that we do have which is that even small-scale interventions can improve the language outcomes for children.

The majority of interventions couple early childhood programmes with parent engagement as this combination is argued to have the most potential (Brooks-Gunn, Berlin & Fuligni, 2000). For example, Taverne and Sheridan (1995) have found that the vocabulary development of children from low-income families improves when parents are informed about increasing the frequency and quality of shared book-reading. Similarly, when parents are trained to adopt dialogic reading techniques, children's expressive vocabulary improves (Mol et al., 2008). Dialogic reading teaches parents to better engage with their children by asking open-ended questions and expanding upon their child's points. But, we should bear in mind the importance of tailoring interventions like these to parents' needs: Huebner and Meltzoff (2005) found that less educated parents learned about dialogic reading better with direct instruction compared to a video. These types of intervention also need to be sensitive to normal parenting practices – particularly those that require large behaviour changes, which can be the case for low-income parents (Manz et al., 2010). For example,

Hammer et al. (2005) argue that the natural reading style among low-income parents (which focuses more on the text) is at odds with the approaches used in dialogic reading where the parents' role is to ask open-ended questions and to elicit descriptive information. It is also important that when designing literacy interventions, researchers consider parents' beliefs about literacy development, as caregivers' routines around literacy (along with their perceived proficiency at carrying out literacy-based activities) have been found to affect their engagement in these tasks (Reese & Gallimore, 2000).

Interventions have also focused on training teachers and staff at preschool centres. This is important as research has shown that the quality of the input in child-care settings predicts language outcomes (NICHD Early Child Care Research Network, 2002), and that children who attend preschool programmes enter school more ready to learn (Magnuson & Waldfogel, 2005). For example, a UK campaign by The Communication Trust, *Universally Speaking*, aims to equip Early Years Practitioners with the information needed to support the development of language skills in children, and to spot those children who are struggling.

All in all, there is overwhelming evidence that children's early language experience is a strong predictor of their future educational attainment and that, for various reasons, language skills and academic outcomes for children from low-income families are worse than for children from more affluent backgrounds. While policies and interventions have aimed to target the most disadvantaged families, we still have some way to go if we want to substantially narrow the achievement gap. For this reason, it's vital that the government continues to fund free nursery places for 3- and 4-year-olds so that the most disadvantaged children have access to pre-school education. It's also important that the efficacy of programmes like the Pupil Premium is reviewed to ensure effective government spending. Last (but by no means least), it is

crucial that interventions are put in place so that all parents (especially those from less affluent households) know the importance of providing a positive and supportive language environment for their children. If we can help to make a difference in the lives of the most disadvantaged children by arming parents with the strategies and techniques that best promote language development, then there'll be no reason for any child to mind the gap!

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Adult cognitive development and deconstructing the issue of healthy cognitive ageing

Mikaela Green

Ageing post-adolescence

DISCUSSION OF COGNITIVE DEVELOPMENT all too frequently focuses on studies of infants and children, but, as psychologists, we know that cognitive development does not stop during adolescence. K. Warner Schaie is but one psychologist who has sought to broaden the study of cognitive development: expanding the field to include early and late adulthood. Such an expansion requires us to open our minds to the somewhat worrying prospect of *negative* development. Even in the absence of pathology in the brain, certain changes occur in late adulthood, particularly in abilities such as memory. While not all of these changes are reactionary, our reaction to this change just might be. With such heavy emphasis on childhood cognitive development, the meaning of healthy cognitive ageing has received much less attention and healthy adult psychological development has been over-shadowed. Too frequently have phrases such as ‘cognitive ageing’, ‘inevitable decline’ and ‘onset of dementia’ been used incorrectly and interchangeably. As the human lifespan increases and as we, along with society as a whole, continues to age, perhaps more attention should be paid to our futures and development in later life rather than developmental trajectory in childhood.

It is a fitting time to readdress the concept of healthy cognitive ageing. Indeed, scientific advancements have contributed to a huge extension of the human lifespan, as well as a more thorough understanding of the neurological basis for cognitive decline; the average lifespan in the UK today is

81 years, 10 years higher than the expected lifespan in the 1960s. Technological progression has prompted new challenges, including a shift to a society in which handling increasing amounts of information has become an everyday necessity in order to be autonomous individuals. However, technology has also provided novel solutions, both theoretically: allowing the human mind to be equated to a cognitive computer, as well as practically: providing promising resolutions to issues such as loss of memory and strategic planning ability (Kim et al., 2000; Pollack, 2005.) Yet beneath this technological evolution, society’s preconceptions persist: preconceptions that cognitive decline is an unavoidable part of ageing and perhaps, therefore, does not warrant further investigation. Although age is certainly the strongest risk factor associated with prominent dementia-exhibiting diseases, the cognitive processes involved in healthy brain ageing are expressed in distinct functional domains and should not radically impact everyday life. Although both diseased and healthy ageing brains will exhibit neurological changes, it seems that memory in the latter can be improved or even bettered in some cases (Ralph et al., 2001.)

Are we losing our minds?

Although human memory is often discussed as an indivisible concept, memory is more accurately represented as a cumulative system of dispersed neural networks (Gabrieli, 1998.) Cross-sectional studies have revealed that older people show few deficits in their ability to *hold* information in short-

term memory (Puckett & Stockburger, 2008), but that the ability to manipulate this information in certain tasks may lessen with age (Salthouse et al. 1989). Many theories have arisen to explain why working memory is altered by healthy cognitive ageing, with three theories dominating the literature. The first of these theories is based on a reduction of attentional resources over time and notes that tasks which are fairly automatic and require less attention remain intact in older adults (Rabinowitz, Craik & Ackerman, 1982). A second theory centres on a reduction of speed in information processing, with prominent researchers suggesting that speed of processing is the true mediator between age and cognitive memory (Balota, Dolan & Duchek, 2000). A third central theory blames lack of specificity, or a failure to manage relevant information, as the basis for change in the working memory of older adults; this implies that 'proactive interference' from irrelevant information decreases the mental span of the working memory (May, Hasher & Kane, 1999). Regardless of which theory is preferred in assessing working memory development, it is likely that attention, processing speed, *and* information specificity are all important in higher-level cognitive tasks. Adjustments in the brain, which account for these changes in memory function, have been assessed using functional neuro-imaging; while initial results suggest that older people employ different prefrontal regions of the brain when utilising working memory, further research is required to assess which short-term memory functions are the most impaired, and thus impacted, by the ageing process (Reuter-Lorenz & Sylvester, 2005).

Long-term memory... in the long term

Memory development of course also encompasses changes to 'long-term' memory: which involves the recovery and retrieval of information no longer actively present in the conscious mind. As has been expressed, memory is not a unitary phenomenon and

therefore, unsurprisingly, different aspects of long-term memory are purportedly subject to differing levels of change in healthy cognitive ageing. Perhaps the most substantial change to long-term memory manifests itself in the reduction of episodic recall: remembering 'personally experienced' place and time-specific events. Craik, Routh and Broadbent (1983) argue that older individuals, even those absent of neuropathology, may input or encode new information less elaborately than their younger counterparts: which contributes to poorer episodic memory with age. However, Craik et al. (1983) do not attribute these deficits to memory alone, but also to the cognitive function of attention: claiming that older adults may fail to comprehend present material due to divided attention. Davidson et al. (2001) argue instead that older people attend to critical information but not to peripheral context. Failure to assimilate information into the correct context is what produces changes in the episodic memory input of older people (often labelled as a 'source problem'). The encoding process in episodic memory is thought to occur in the frontal lobes of the brain and thus deficiency at this stage suggests neurological changes with ageing occur at the front of each cerebral hemisphere (Davidson et al., 2001). However, those who hold that reduced episodic memory can be attributed to 'storage' or 'consolidation' problems in older adults claim that it is changes in medial temporal lobe structures that create these difficulties (Glisky, 2007). Deterioration in the hippocampus, which lies within the limbic system, is central to this theory and may degrade in 'healthy cognitive ageing' but to a much lesser degree than realised in individuals with neuro-pathological diseases such as Alzheimer's (Hampel et al., 2008). Finally, those who believe that the 'retrieval' process is what contributes to changing episodic memory with age cite the prefrontal cortex, as well as the hippocampus, as fundamental to this deterioration. This association is theoretically feasible as retrieval of

personal memories is clearly impacted by how well the memory was encoded in the first instance: therefore, these processes likely activate similar neurological regions. Advocates of the critical role of the retrieval process in episodic memory also point to the importance of available cues and the active 'state' of the individual in impacting the subsequent success of recalling a personal memory (Rugg & Wilding, 2000). En masse, there is a clear consensus that episodic memory degenerates in healthy cognitive ageing, however, *which* functional process is charged for this deterioration is not as discernible (Mark & Rugg, 1998). Additionally, although cross-sectional studies suggest that a decline in episodic memory may start as early as in a person's 20s, Brickman and Stern (2009) note that whether the 'amount of *inter*-individual variability increases systematically as a function of age' is still ambiguous. Thus, although loss of episodic memory may be considered generally 'healthy,' monitoring its declination is still of the utmost importance when assessing the possibility of brain pathology in the individual.

How can he still play the piano?

Conservation of aspects of long-term memory, however, can help to combat the misconceptions that cognitive decline is a natural part of ageing. Furthermore, procedural memory, which relies on multiple neuro-regions including the basal ganglia and the cerebellum, also appears to be retained throughout the lifetime. Knowledge of particular abilities and skills, termed procedural memory, relies on a compensatory psychological process in which the brain seems to counteract certain deficiencies; for example, the motor functions of a typist may slow down but overall production time will remain constant as other aspects of the skill are sharpened: such as more rapid text scanning (Salthouse, 1984). Similarly, prospective memory, (remembering to do things in the future), relies on different regions of the prefrontal cortex to episodic memory and

thus does not seem to be as impacted by gradual deterioration of networks in this region (Glisky, 2007). Modern technologies have been most beneficial in aiding prospective memory as devices, such as electronic calendars and auto-reminders, almost act as environmental mnemonics: decreasing the decline in prospective memory, at least superficially (Einstein & McDaniel, 1990). When assessing the brain with respect to memory, therefore, it becomes apparent that while some neurological networks are subject to deterioration with age even in the absence of neurodegenerative disease, other areas may survive untarnished, and perhaps even show signs of potential improvement over time.

Can we slow decline?

The most publicised 'treatment' in the battle against cognitive ageing is certainly exercise. Early research suggested that exercise could augment physiological functioning by improving self-efficacy and by contributing to a sense of well-being; due to the inherent social support in exercise settings (Veale, 1987). Later research focused on cardio-respiratory exercises, aimed at improving cerebrovascular functioning and thus reducing age-related cognitive decline (Blumenthal & Madden, 1988; Dustman et al., 1994; Neeper et al., 1996). Results, however, must be interpreted cautiously as it is extremely difficult to control for other variables. Similar studies have concentrated on the relationship between cardiovascular functioning and cognitive ability, but with focus on alternate factors such as smoking, high cholesterol, high blood pressure, BMI and the role of stress in inhibiting cognitive functioning.

Beyond the influence of physical health, social and emotional factors have also been put forward as measures to 'better' cognitive ageing and, perhaps, cognitive impairment. Recent studies addressing cognitive development have emphasised 'brain training' games as potential methods in lessening cognitive decline. Yet while some studies

suggest that gains in certain cognitive processes such as those addressed in brain training games might be ‘transferred’ to unrelated tasks, others have claimed that cognitive remediation therapy may sharpen an *identified* function, but cannot be ‘transmitted’ across domains (Jaeggi et al., 2008; Vance, 2012). In summary, these measures change the concept of cognitive ageing by suggesting that typical as well as pathological, changes in human memory and cognition may be governable: thereby challenging the assumption that healthy cognitive ageing is a mono-directional, linear process.

Is it all uphill from here?

Although great advances have been made in recent years, cognitive ageing remains a complex and multifaceted process – both to define and (ironically) to prolong. As research into the neuro-physiological underpinnings of typical ageing continues, so too should the application of knowledge in the

field: enhancing understanding of which measures are the most likely to be effective in combatting cognitive deterioration. Of equal importance is the need to learn more about what healthy cognitive ageing is through a more thorough understanding of what it is *not* (by further investigation into neuro-pathological diseases). This too, however, will become a more pressing area if the human life span continues to grow. Further studies must be conducted in order to assess intrapersonal cognitive change over time. Providing a static and operational definition of healthy cognitive development still proves to be a great challenge; but perhaps this speaks to the progressive nature of this field of cognitive research and to the growing role for developmental researchers.

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Conference Review:

The British Psychological Society Joint Cognitive Psychology Section & Developmental Psychology Section Annual Conference 2013

Rosa Kwok

The University of Reading, 4–6 September 2013

PRESENTING at an international conference can be a stressful experience. One not only needs to overcome the standard presentation nerves, but also to assure that every single person in the audience fully grasps your study and its findings. Yet, the psychological satisfaction and the inspiring conversations that I had in the British Psychological Society Joint Cognitive Psychology Section & Developmental Psychology section Annual Conference made it worth all the effort. The conference's delegates include academics and practitioners who are very active in the field of cognitive and developmental psychology. It ran from 4–6 September 2013 with a busy schedule, combining keynote speakers, five parallel paper symposia, and over 150 poster presentations. I was particularly pleased to have had an abstract accepted to present a talk to the conference as my thesis investigates orthographic and phonological word learning and is very relevant to cognitive psychology.

A number of important themes of the conference included word-learning difficulties in different developmental disorders; how motor ability associated with language skills; the effect of parents' literacy skills in dyslexia; evidence-based intervention to help children-at-risk in reading; executive functioning impairment in adolescents and how sleep consolidates processes in cognition.

I particularly enjoyed the presentation 'Working memory and learning: Disorders and remediation' given by Professor Susan Gathercole, the Director of the Cognition and Brain Sciences Unit at the University of Cambridge. She described her lab's research showing how working memory capability varies between children, and the implications this has for their performance at school. Borrowing from the field of brain injury rehabilitation, Gathercole and her colleagues are now working on new training programmes, including the use of visual school environment, encouraging them to transfer their working memory gains to real-life tasks.

Another presentation that I really enjoyed was the presentation 'Getting answers from babies about Autism' by Dr Mayada Elsabbagh from McGill University. Research from the last decade succeeded in getting answers from very young babies about their development, cognition, and communication. This advances are now being used for the long-term goal of helping clinicians to detect autism much earlier than currently possible. Findings suggest that before the onset of full symptoms around three years, less obvious brain and cognitive differences appear to be present in infants at-risk for autism.

At the end of most sessions, there was an open dialogue between presenters and the

audience which reflected the high quality of the talks and also the keen interest of the attendees in the issues discussed. These topics reflected both recent innovations and challenges that currently face the field. The former guided me by introducing me to a wide range of theories and demonstrated the expansive range of research being undertaken around the world. The latter helped me understand the difference between the issues in developmental research and practical classroom teaching, challenging myself and other researchers to make their work as relevant to practice as possible and enhance the flow of research to practice.

The conference also had lots of smaller sessions that allowed postgraduates to present their latest research, often alongside leaders in the field. There were seven keynote addresses, each given by a very well-known researcher. The conference did not merely point to the future; there were also some very informative reflective presentations, which helped place the current work of development and cognitive psychologists into a wider context. Take the keynote presentation 'The science of reading and its educational implications' by Professor Mark Seidenberg from the University of Wisconsin-Madison as an example. He emphasises that research has made enormous progress toward understanding skilled reading, the acquisition of reading skill, the causes of developmental reading impairments and how such impairments can be treated. Yet, the reading levels of 25 to 30 per cent of the population are low by standard metrics in the US. Professor Mark Seidenberg mentioned three possible contributing factors of this circumstance: (1) the fact that English has an opaque alphabetic orthography; (2) how reading is taught; and (3) the impact of linguistic variability as manifested in the US. He concluded that there are opportunities to increase literacy levels by making better use of what we have learned about reading and language, but also institutional obstacles and understudied issues for which more evidence is badly needed.

I am also thankful that the Experimental Psychology Society generously supported the 'Meet the Experts' lunches for graduate students and junior researchers to meet the senior scientists for an informal discussion. I had a lovely conversation with Professor Padraic Monaghan from the University of Lancaster, Professor Geoff Ward from University of Essex and Dr Mayada Elsabbagh. Our topics ranged from the cognitive models of reading to life as a researcher. We discussed the pros and cons of the Dual Route Cascaded model, Connectionist model and the Connectionist Dual process model of reading and how they complement each other. We also discussed how junior scientists survive in the ever-demanding academic world. It was such a fruitful experience to have a friendly and causal conversation with these eminent figures in the field.

On the last day I gave my presentation in a symposium. This was my second time to give a paper presentation in an international conference. My research is concerned with how people learn new words, and in particular how they learn new written word-forms. I will be studying the changes that occur as letter strings move from being unfamiliar to being familiar and the factors that affect visual word learning. Further details of my work can be found in the following webpage (<http://www.york.ac.uk/psychology/staff/postgrads/k.wankwok/#research>).

Though there was room for improvements, I was more confident compared to four months ago when I gave my first talk in the Society of Scientific Study of Reading Conference. I have received some positive feedback and constructive suggestions.

On the whole the British Psychological Society Joint Cognitive Psychology Section & Developmental Psychology Section Conference was a fulfilling and rewarding experience. Thanks to the quality of the speakers and the wide range of topics covered, I am really grateful to see how scientific research has a real impact on intervention and utilities to help people with different developmental disorders to compensate their

learning difficulties. Given the excellent scope of the speakers, the conference was also sensibly priced in comparison to others. This encouraged postgraduate students and junior researchers to attend and increase the diversity of the conference, making it an encouraging platform to exchange ideas. The friendly and supportive environment enabled me to enjoy my second experience of presenting at an academic conference and build ideas for my upcoming experiment.

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I would like to take this opportunity to thank PsyPAG for helping to fund my trip to Reading, making it possible for me to attend the conference.

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Tutor feedback in higher education: An exploration of the psychological impact

Carmel Bond

HIGHER EDUCATION can be an important and positive life changing experience. There may be many reasons students decide to enter higher education with a range of factors affecting their choice of institution. However, most will have clear expectations regarding their general learning experience (The UK Quality Code for Higher Education, 2011). Recent increases in tuition fees across UK institutions has led to concerns regarding the quality of teaching and value for money with many students asking themselves 'Is it really worth it?' (Kandiko & Mawer, 2013, p.23). Therefore, with this in mind, institutions should be committed to meeting the needs of students and ensuring they receive the best possible experience from higher education (NUS, 2012).

Holistically, the student experience is summed up by a number of important factors including the wider experience of student life, for example, financial, accommodation, gym and union; all of which will impact on academic experience and progression (James, 2002). In an attempt to support and enhance students' academic performance, institutions will provide individual feedback to students aimed at enabling them to reflect upon learning. Regardless of the course they choose, all students will be exposed to feedback from course tutors in some form or another. In order for this to be successful, students need to be able to recognise feedback and understand how to make use of it. Importantly, Carless (2006) infers that students understand written comments to be feedback above all other forms of input from tutors,

for example, verbal comments. Findings in educational discourse stress that tutors should not readily assume students are able to turn their comments into actions (Lea & Street, 2000). The complexity of this process is often misunderstood across higher educational institutions (Higgins et al., 2001). Feedback messages may not be so easy to interpret, particularly for students transitioning from A-level experience or mature students returning to education. Students may not possess the same evaluative skills as tutors, therefore, feedback may not be easily understood (Chanock, 2000) which can lead to feelings of reduced confidence and contribute to a greater chance of students withdrawing from their studies (Boud & Falchikov, 2007; James, 2000). Research generally concurs that correctly designed feedback can positively affect academic achievement (Macfarlane-Dick et al., 2004; Shute, 2008). However, recommendations provided by the Quality Assurance Agency are aimed at providing guidelines for teaching practices and do not necessarily take into account students' perceptions of what constitutes effective feedbacks. Higgins et al. (2001) suggest that a salient feature in the receiving of feedback is how it is processed emotionally. A focus on the negative or weaknesses in students' work can leave them feeling demoralised. Student surveys indicate that feedback is a key concern for students across the UK, showing a pattern of repeated dissatisfaction prevalent across undergraduate and postgraduate courses (Williams & Kane, 2008). In particular, students are demotivated when feedback is overly critical (Irons, 2007, p.37).

Research which focuses upon students' interpretations and perceptions of feedback is extremely limited, with a small number of studies having paid attention to the *psychological* aspects underpinning the receiving of assessment feedback (Carless, 2006; Evans & Waring, 2011). The research under discussion here (Bond, 2013) was conceptualised as part of an MSc Psychology and my own work. The main aim of the research was to explore the emotional impact of tutors' comments and how these were perceived. The rationale for the methodological approach used was to: (a) allow the researcher to tap into the emotional aspects and psychological impact of the feedback process; and (b) validate qualitative accounts, bringing greater credence to the findings.

Method

Two separate strands of data were collected in a convergent parallel mixed-methodological design (Teddie & Tashakkori, 2009, p.70). Firstly, qualitative data was collected using semi-structured interviews with a groups of participant ($N=9$). The analytical technique was carried out using a thematic analysis method inspired by Braun and Clarke (2006). Segments of participants' discourse were coded (and selected for analysis) in an attempt to exemplify the theoretical underpinnings surrounding assessment and learning and the psychology of receiving feedback (Vygotsky, 1978; Wood et al., 1976, p.90).

The second strand involved samples of tutor comments, selected by the participants at strand one, being analysed using online surveys. A separate group of participants ($N=24$) rated each comment on a five-point scale ranging from: definitely negative, moderately negative, neutral, moderately positive, to definitely positive. These results were then compared to perceptions of feedback comments provided at strand one, that is, 'subjectively' originally perceived as positive, negative or neutral. In effect this second

strand served to assess the validity of the original perception of the tutor comment chosen at strand one. Using a separate group of participants, at this point, allowed subjective perceptions to be objectively rated and compared to original perceptions of the comments received. The purpose of cross-checking the data in this way, using overlapping sources, aimed to provide a more balanced perspective (Altrichter et al., 2008, p.147; O'Donoghue & Punch, 2003, p.78).

Findings

Findings of this project suggest three main areas to consider when designing feedback.

1. The *initial* comment from tutors is important in generating further engagement with the reminder of feedback. Students who perceive initial comments from tutors as negative can become reluctant to engage with the reminder of their feedback and feel demoralised. This means that any constructive elements contained within the reminder of the feedback will not be heard. Conversely, where initial comments were perceived positively and immediately acknowledged strengths in students work, this was motivating and boosted self-esteem. Although this also distracted attention away from the rest of the feedback which may have contained constructive information.
2. Comments perceived as directed towards the person also reduced the likelihood of the student engaging with the reminder of feedback and had a profound negative effect on the feelings towards the self, affecting motivation to continue.
3. For feedback to make sense to the student it needs to be *specific* and state explicitly *why* change need to take place. Comments that were vague or not explicit about what was needed to improve work were perceived negatively by students leaving behind feelings of a lack of support from tutors.

Discussion

Findings indicate that the nature of tutor comments are clearly an important factor to consider, demonstrating that positive comments, no matter how small, positively impact students' academic experience. The psychological impact of initial comments and whether comments are relevant to the task or assessment criteria must be considered carefully by tutors. This supports previous research which infers strongly that feedback comments can affect students' motivation and self-esteem (Dweck, 2000; 2002). However, reduced confidence could also be a result of students' inability to interpret comments. Although, how students perceive feedback could simply be the result of having had a bad day. Results of this study may have been confounded by existing levels of self-esteem, depression, anxiety or high levels of stress which could be attributed to other areas of student's lives. Importantly students may have already established 'fixed' belief systems which may regulate and be regulated by the processing of feedback information about the self (Garcia, 1995). Therefore, this study advises tutors consider limiting feedback to a few well considered items focusing on priority areas and attributed to task related improvement. Individual institutions need to consider the impact of tutor comments and the emotional impact on students.

Considerations for Tutors:

- Try to focus the *initial* comment on acknowledging strengths in the student's work. No matter how hard this may seem, a positive start helps students to engage with the reminder of the feedback. If the initial comment is negative, students may fail to hear any constructive messages as they may become disengaged with feedback generally.
- If there is something that you feel could be improved on, be specific about what this is and also *why* this needs to be changed, for example, *how* it will make their work better in the future.

- Always focus your feedback in relation to the assessment criteria and how their work has met or not met this.
- Avoid comments directed towards the person or their level of intelligence. This leaves students feeling demoralised and has a negative emotional impact, leading to a feeling of wanting to withdraw from their studies and a lack of support from tutors. Even if this is meant as a joke, students may not have the same sense of humour as you and see this as a criticism of them personally.

Conclusion

Feedback from tutors is a global issue for universities. It represents an aspect of value-for-money for students paying ever increasing tuition fees (Kandiko & Mawer, 2013). Alongside the wider student experience, feedback plays an important part in the enhancement of academic performance. The challenge for institutions is great in terms of engaging students in the feedback process and may be the key to success for higher education when managed at a local level across courses. The quality and format of feedback remains an important issue for students who value this over the timeliness of feedback received (Kandiko & Mawer, 2013). As an important tool for learning, more research is required regarding students' psychological approach to feedback and how engagement can be improved. What students think and how they approach feedback from tutors may be the key to developing future models of feedback practices.

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Exploring the relationship between extraversion and positive affectivity

Greig Inglis

Individual differences in positive affectivity

POSITIVE AFFECTIVITY is an aspect of temperament which defines the extent to which individuals typically experience pleasant affective states such as happiness, enthusiasm and confidence (Watson, 2002). Positive affectivity is one component of subjective well-being, and is associated with a number of important work, relationship and health outcomes (Lyubomirsky, King & Diener, 2005).

There exist substantial differences in positive affectivity, which are moderately hereditary and stable over time. Reported heritability coefficients for the Well-Being scale of the Multidimensional Personality Questionnaire (MPQ WB; Tellegen & Waller, 2008) have ranged between .40 to .48, for example (Finkel & McGue, 1997; Lykken & Tellegen, 1996; Tellegen et al., 1988), with similar figures reported for the Positive Emotions scale of the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992; Jang & Livesley, 1996; Jang et al., 1998). Lykken and Tellegen (1996) also report a 10-year stability coefficient of .50 of MPQ WB in younger adults, while six- to nine-year stability coefficients of the NEO-PI-R Positive Emotions scale range from .64 to .73 in middle-aged and older adults (Costa et al., 2000; Terracciano, Costa & McCrae, 2006).

Positive affectivity and extraversion

These data suggest that individual differences in positive affectivity are partially determined by some internal factors. Accordingly, extraversion is positively correlated with trait levels of positive affect. Extraversion is a personality trait that reflects the

extent to which individuals are typically assertive, sociable and energetic. The relationship between these constructs is moderate in size and is evident across a wide variety of measures (Steel, Schmidt & Shultz, 2008).

It could be argued that the relationship between extraversion and positive affectivity is tautological, and arises from either shared item content between measures or common method variance in self-reports (Steel et al., 2008). The first concern comes from the fact that many measures of extraversion include items concerning individuals' experiences of positive affect (e.g. the Positive Emotions scale of the NEO-PI-R), which may make some association between extraversion and positive affectivity inevitable. This does not appear to be problematic however, as Steel et al. only found a small difference in the relationship between positive affectivity and NEO-PI-R Extraversion when the Positive Emotions facet is included versus when it is removed ($R^2=.50$ and $.44$, respectively).

The second possible objection is that since the majority of research is based on self-reports of both extraversion and positive affectivity, the relationship between these constructs is by driven by shared method variance (McCrae & Costa, 1991). According to this view, the shared variance between extraversion and positive affectivity is attributable to the common methods used to measure each variable, rather than the true underlying relationship between them. It is possible to test this by comparing individuals' self-reported personality with informants' reports of their positive affectivity, and vice-versa. Extraversion and positive affectivity are still positively correlated under such conditions, however (McCrae & Costa,

1991; Watson, Hubbard & Wiese, 2000), which suggests that this relationship cannot be attributed to shared method variance.

While the relationship between extraversion and positive affectivity appears to be robust, personality traits lack explanatory power and correlational data do not explain why these constructs are related (Diener, 1996). A number of potential explanations have been offered to explain extraverts' greater positive affectivity, which can broadly be categorised as being either instrumental or temperamental.

Instrumental explanations for extraverts' greater positive affectivity

Instrumental explanations suggest that extraversion has an indirect effect on positive affectivity. One such explanation is the dynamic mediation hypothesis. This model holds that extraverts behave in ways that are conducive to positive affect more often than introverts do, and that these behaviours mediate the relationship between extraversion and positive affectivity (Wilt et al., 2012).

In support of this model, extraverted behaviour (e.g. being *bold*, *talkative* and *assertive*) has been found to be associated with positive affect in experience sampling studies (Fleeson, Malanos & Achille, 2002), and experimental data show that behaving in such ways causes increases in positive affect (McNiel, Lowman & Fleeson, 2010). Importantly, in neither the experience sampling nor experimental data does trait extraversion moderate the relationship between extraverted behaviour and positive affect; both extraverts and introverts experience similar levels of positive affect after behaving in these ways (McNiel et al., 2010). Additionally, trait extraversion is positively related to the frequency with which individuals engage in these extraverted behaviours (Fleeson & Gallagher, 2009), which in turn has been found to mediate the relationship between extraversion and positive affect (Wilt et al., 2012).

These data raise an interesting question: if extraverts and introverts enjoy extraverted behaviour equally, why don't introverts engage in these behaviours more often? One potential reason is introverts' biased affective forecasting, as recent evidence suggests that introverts underestimate the affective benefits of behaving like an extravert (Zelenski et al., 2013)

Temperamental explanations for extraverts' greater positive affectivity

Temperamental accounts hold that extraversion has a direct effect on positive affectivity, such that there is some fundamental – likely physiological – differences between extraverts and introverts that cause the former to experience more positive affect than the latter. These models are often based on reinforcement sensitivity theory, whereby extraversion is considered to reflect the sensitivity of a behavioural activation system that regulates approach behaviour and affect. Here, extraverts are thought to be more sensitive to rewards than introverts, such that the former are expected to experience more positive affect in response to rewarding stimuli or events than the latter (Smillie et al., 2012).

This affective reactivity hypothesis (ARH) has received some support in the literature. For example, some investigators have found that extraverts experience greater levels of positive affect in response to a range of rewarding stimuli, including films (Gross, Sutton & Ketelaar, 1998), monetary rewards (Gomez, Cooper & Gomez, 2000) and imagined rewarding scenarios (Rusting & Larsen, 1997). On the other hand, there are some data that are incongruent with the ARH, whereby extraversion is not associated with reports of positive affect following positive emotion inductions (Lucas & Baird, 2004).

The ARH has recently been refined in response to these mixed findings (Smillie et al., 2012). These revisions are based on reinforcement sensitivity theory and recent neurobehavioural data which suggests that approach behaviour can be parsed into at

least two stages of anticipation and consumption. Anticipation is associated with high activation states of positive affect such as excitement and enthusiasm, whilst consumption is associated with lower activation states such as satisfaction and pleasure. Crucially, only the anticipatory phase of reward is regulated by the behavioural approach system, the sensitivity of which is thought to underlie individual differences in extraversion (Depue & Collins, 1999).

In the revised ARH then, extraversion is predicted to moderate affective responses to appetitive scenarios that induce feelings of high-activation positive affect, but not to merely pleasant situations that induce low-activation states of pleasure or satisfaction. Data from recent experiments designed to test the revised ARH have supported these predictions (Smillie et al., 2012, 2013).

Summary and future directions

The relationship between extraversion and positive affectivity is well established. Furthermore, considerable progress has been made in identifying the mechanisms that give rise to this relationship. Instrumental models highlight the role of extraverts' behaviour in explaining their greater levels of positive affect, while temperamental accounts show how extraverts and introverts differ in their responses to rewards.

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Both explanations raise a new series of questions. For example, how does extraverted behaviour cause positive affect (Smillie, 2013)? It is also not yet clear why extraverts experience greater sensitivity to rewards, although progress is being made in identifying the neurobiological mechanisms that underlie these processes (Depue & Collins, 1999).

The research reviewed here highlights the diversity of methods employed by researchers interested in personality and individual differences. The relationship between extraversion and positive affectivity provides an excellent example of how personality psychologists incorporate various methodologies to move beyond description to explanation. It was in part this diversity that attracted me to the study of personality, and in my own research I use a number of experimental, experience sampling and psychophysiological methods to further test temperamental and instrumental accounts of extraversion. Establishing the causal links between extraversion and positive affectivity will greatly advance our understanding of personality traits and will be beneficial to practitioners and policy makers who seek to increase individuals' subjective well-being.

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Conference Review:

The British Psychological Society Division of Clinical Psychology Annual Conference 2013

Hannah Brown

The Royal York Hotel, 4–6 December 2013

IN DECEMBER OF LAST YEAR I attended the three-day BPS Division of Clinical Psychology (DCP) annual conference at the Royal York Hotel in the beautiful city of York. The conference theme was 'Taking care, giving care: Clinical Psychology in 2013' and focussed on topical issues within the NHS and their impact on the role of clinical psychologists and patients using psychological services.

The first day of the conference was a Members' Day and as a trainee member of the DCP I was fortunate enough to attend the series of engaging key note speeches being given in parallel to the various members meetings. Particular highlights of the day were talks given by Professor Peter Kinderman and Dr Claire Maguire. Professor Kinderman presented his rationale for a move away from a disease model of mental illness to a psychological model of mental health (Kinderman et al., 2013). Thought-provoking points included controversial, bold statements such as 'stop diagnosing non-existent mental illnesses and 'stop pushing drugs'. However, during discussion at the end of this talk I gained a sense that Kinderman was saying what a lot of audience members had been thinking for some time; that traditional psychiatric diagnosis fails to meet the needs of individuals in distress. Professor Kinderman's blog describes his ideas in more detail (peterkinderman.blogspot.co.uk).

In the afternoon, Dr Maguire provided a very clear description of the impact of changes in the NHS on commissioning psychological services. Dr Maguire explained what broader organisational changes within the NHS mean in real terms for clinical psychologists and identified ways in which clinical psychologist can become involved in NHS commissioning. For example, by encouraging clinical psychologists to act as clinical senates to commissioning groups, we can ensure that psychological services are prioritised and that the views of service-users are represented within local NHS trusts. Dr Maguire also highlighted the work of the King's Fund in communicating NHS reforms to the public in their engaging, if somewhat confusing, animation (King's Fund, 2013). For anyone interested in finding out more about commissioning, I would strongly recommend reading Dr Maguire's *Introductory Guide to Commissioning* for the BPS (Skinner & Maguire, 2012).

The remaining two days of the conference were jam-packed with symposia and keynote talks organised into two parallel streams from the DCP and one from the Faculty of Clinical Health Psychology. Talks throughout the conference were largely focussed on intellectual disability and children, young people and families. This focus allowed a really good insight into issues affecting these potentially vulnerable groups

and highlighting clinical psychologists' obligations to be aware of vulnerability within their work, particularly in the context of the Francis report. With all the very interesting symposia advertised I found it a little difficult to decide what to attend. I was certainly not alone in my indecision and the transition between the meeting rooms was a little disruptive at times. Nevertheless, the varied programme ensured that there was something for everyone attending.

I was lucky enough to be accepted to give a poster presentation at the conference on my PhD research. My poster focused on work exploring genetic and environmental influences on content-specificity of cognitive biases in anxiety and depression across development (Brown, Waszczuk et al., 2014). The posters were on display for the entirety of the conference but presenters were asked to be with their posters during the lunch breaks to talk to interested delegates. It was great to have the opportunity for our poster to be seen for more than a single slot as is the case with many conferences. However, presenting during the breaks both days was quite draining following the magnitude of information presented in the morning sessions. Additionally, the majority the academic posters were situated on the corridor to the toilets rather than in the central conference spaces. As a result, it seemed that few delegates ventured to engage with our presentations. Perhaps holding the poster presentations at the evening drinks reception in the main hall would be beneficial in future. On the plus side, however, these poster presentation slots were an excellent opportunity to chat with fellow early career clinical psychology trainees and PhD students; providing the chance to discuss topics presented at the conference with peers and share experiences of creating careers in clinical psychology.

A major highlight of the conference and a credit to the DCP, were the two public lectures held as part of the programme. The

communication of clinical psychology to the general public is vital in raising awareness of psychological health issues and reducing stigma around mental health and well-being. Professor Matt Sanders and Professor Tanya Byron gave excellent talks on the impacts of modern society on parenting and children's emotional development and well-being. Professor Sanders' talk: 'What makes children happy and successful?' communicated the five key principles of positive parenting (Sanders, 1999) and explored the pressures of modern society on parents' ability to put them into practice. The five principles are taken from the Triple P parenting programme and include; ensuring a safe, engaging environment, creating a positive learning environment, using assertive discipline, having realistic expectations and taking care of oneself as a parent. His empathic understanding of the challenges faced by many parents created an arena for parents in the audience to voice their concerns and have their queries answered. Professor Byron took a different tact in her talk entitled 'The trouble with kids'; using humour to comfort parent's anxieties whilst maintaining her determined message that we as society are letting our children down. What impressed me most as an early career researcher was both speakers' ability to relay complex scientific information to both scientific and public audiences. It is a shame more conferences do not offer opportunities for public engagement with science in this way.

In summary, the BPS DCP annual conference presented a great arena for stimulating discussion on a range of topical issues affecting clinical practice and the role of clinical psychologists within the NHS. The chances for early career members to network with more experienced and influential clinical psychologists could have been enhanced but the efforts for engagement with the general public should be applauded.

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Dates for your Diary

25–27 June 2014

BPS Division of Forensic Psychology Annual Conference 2014

Glasgow Caledonian University

www.bps.org.uk/events/conferences/division-forensic-psychology-annual-conference-2014

11–12 July 2014

BPS Division of Counselling Psychology Annual Conference 2014

Etc.venues Victoria, London

www.bps.org.uk/events/conferences/division-counselling-psychology-annual-conference-2014

23–25 July 2014

29th PsyPAG Annual Conference

Cardiff Metropolitan University

www.psypag.co.uk/conference

3–5 September 2014

BPS Developmental Psychology Section Annual Conference

Hotel Casa 400, Amsterdam

www.bps.org.uk/dev2014

9–11 September 2014

BPS Social Psychology Annual Conference

Canterbury Christ Church University

www.bps.org.uk/events/conferences/social-psychology-section-sps-annual-conference

10–12 September 2014

BPS Division of Health Psychology Annual Conference

Park Inn, York

www.bps.org.uk/events/conferences/division-health-psychology-annual-conference-2014

The BPS website has a full list of BPS events: www.bps.org.uk/events



DOP Annual Conference 2015

7–9 January – The Hilton, Glasgow



Learning, Sharing, Impacting

CALLING ALL POSTGRADS!

Are you currently studying or just starting out in your career? The DOP conference offers excellent rates for all students and those who have graduated within the last 18 months! Students have the opportunity to network with a diverse range of experts, academics and practitioners alike, specialising in different areas of the field. The careers forum provides the perfect opportunity for students to gain a unique insight into potential career paths and learn about current and forthcoming job opportunities. Here is what some of our 2014 students had to say:

'As the DOP Conference approached, I was a little concerned that it was rather close to the exams, but I'm really glad that I went along. Not only were there some fascinating talks, I met a lot of Organizational Psychologists working in different fields'. MSc Organizational Psychology Student

'As a PhD student, attending the conference for the first time, I could not have been better welcomed into the community. It was great to see so many MSc/PhD students in attendance. Listening to the wide range of presentations has stimulated ideas for both topic links and methodologies within my research! PhD Student

'As a current MSc student, the whole conference was a highlight! The networking session on the first day was great to meet new people that I perhaps wouldn't have spoken to otherwise, and to see what they are doing having completed their MSc. The range of different talks showed me the true breadth of the subject, and showed me how many different directions the subject can take my career, which is very exciting.' MSc Student

Why not present a paper? An excellent opportunity to showcase your own research

The DOP conference provides Postgraduates with a unique opportunity to present their own research to industry colleagues and raise their profile in the profession. You do not have to be a BPS or DOP member to present and we welcome submissions from presenters at any level of experience.

Please note PhD/MSc students do not need to have their research results in order to submit and are welcome to submit to any of the types of submission.

Call for Submissions

DOP 2015 is themed around 'Learning, Sharing, Impacting' – we are looking forward to an exceptionally informative and stimulating forum offering enhanced opportunities for professional development, emphasising the collaboration between science and practice across all areas of our discipline, and focusing on making a real difference. We invite everyone who is involved or interested in the world of occupational psychology.

Submissions should relate to the conference theme and fit into one of our six strands. This year these will follow the new MSc curriculum: ● Learning, Training and Development ● Leadership, Engagement and Motivation ● Well-being and Work ● Work Design, Organisational Change and Development ● Psychological Assessment at Work ● Research Design, Analytical Techniques and Practical Applications

Submissions may take the form of Posters, Papers, Symposia, Discussions and Workshops. In keeping with our theme, we are particularly interested in proposals covering the practical application of psychological research to real-life work situations. All submissions must clearly show originality and relevance to the conference theme and selected strand.

How do I submit?

You need to use the BPS Online Submission System. Full details of how to make a submission may be found on the conference website www.bps.org.uk/dop2015/submissions – **please ensure you read the submission guidelines before preparing your submission.** The closing date for DOP and MSc/PHD students or recent graduates' entries is midnight on **Monday 4 August 2014.**

Ambassadors Programme

Attending the conference for the first time, or wanting to expand your professional network?

As usual we will be running our successful 'Ambassadors Programme'. Through an online questionnaire we match new conference delegates (**Ambassadees**) with seasoned delegates (**Ambassadors**). Ambassadors will introduce you to their network of colleagues, providing an easy and effective way for you to gain access to the networking communities that are such an important part of the conference experience.

'The Ambassador Programme was amazing, 100% the best thing to do if you are attending for the first time! Kudos to the BPS for organising that so well!'

For 2015 we plan to build on our previous successes by introducing an 'Ambassadors Area' at the conference so that you have someone to engage with throughout your time at the conference.

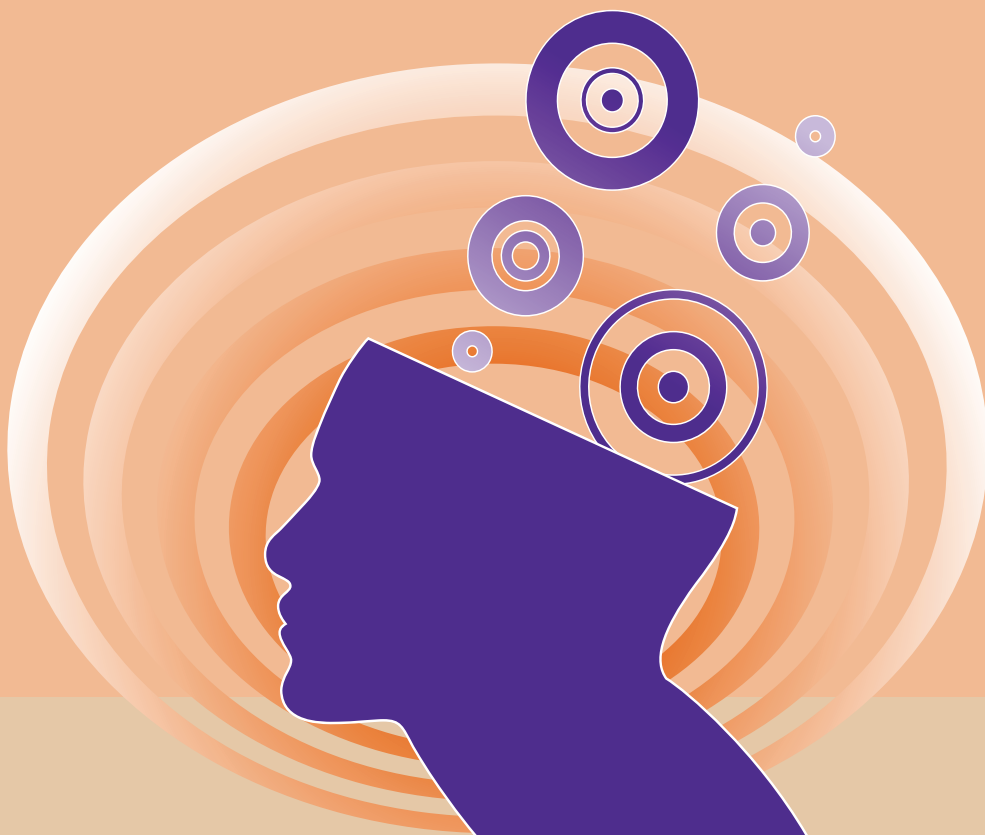
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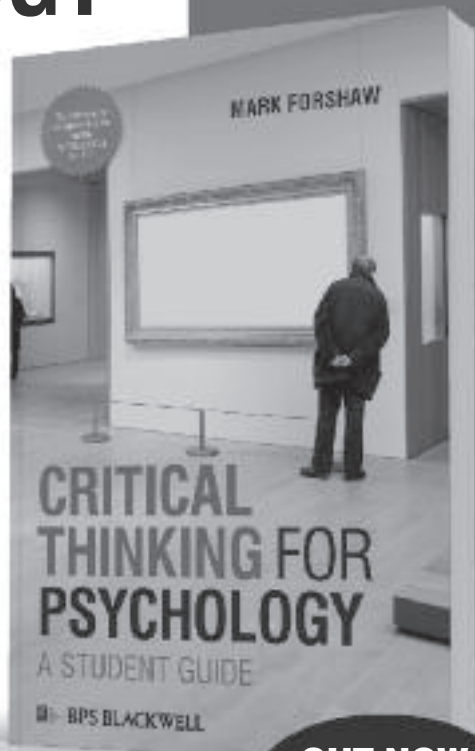
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***PsyPAG Quarterly* submissions guidelines**

The *PsyPAG Quarterly* is a developing publication, which is distributed free of charge to all psychology postgraduates in the UK. It therefore receives wide readership.

The *PsyPAG Quarterly* accepts articles on all areas of psychology.

Types of articles accepted:

Featured Articles and Discussion Papers: Articles can cover a wide range of topics. Articles may describe a piece of original research; provide an overview of a theory, area or issue.

Research in Brief: A short report of original research, often preliminary findings.

Big Interviews: An interview with anyone connected with psychology, usually written in a question-and-answer format.

Conference Reviews: Provide an overview of a conference, outlining the main themes of the conference.

Departmental Reviews: An overview of a department as well as research interests of the postgraduates.

Book and Software Reviews: A review of books or software relevant to psychologists.

Hints and Tips: Hints and tips that will be useful to postgraduates. For example, how to apply for funding.

Postgraduate Research in Brief: This is a reference list of research that has recently been published by postgraduates within a particular area or department.

Word limits:

The journal has a broad word limit of 500 to 2500 words excluding references.

The maximum word limit is flexible for in-depth discussion papers, longer interviews or hints and tips. The word count will differ depending on the type of article, for example, conference and book reviews should be shorter than featured articles.

Formatting:

Please submit all articles in Microsoft Word. The content, including tables, figures, and references, should all comply with the most recent APA guidelines. You should also include your contact details at the end of each article in the format of:

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University of X.

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Submission:

To submit an article, please send as an email attachment to: quarterly@psypag.co.uk.

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