The psycholinguistics of synaesthesia: What can we learn from studying synaesthetes?

Individual differences in the impact of environmental influences: Vulnerability to risk or general sensitivity to context? And what have genes got to do with it?

Digit ratio (2D:4D) and beliefs in superstitions, conspiracy theories, and the paranormal

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HELLO AND WELCOME to the 103rd issue of the PsyPAG Quarterly! It is my pleasure to introduce to you a diverse edition packed with a wide range of topics from across disciplines. I hope you will enjoy reading the articles and will find them as interesting as I have!

We open with a discussion on how synaesthesia – a condition characterised by the ‘joining’ of senses – can provide insight into the general functioning of language by Jennifer Mankin. Continuing our exploration into the senses, Dawn Rose introduces us to the psychology of music, how we perceive and respond to music, and the complex range of skills we utilise to produce it. A discussion of the senses would not be complete without mentioning attentional processes. Silviya Doneva describes the load theory of selective attention and cognitive control and, importantly, highlights cross-cultural variations in how humans filter incoming stimuli.

We now turn to the exciting research conducted by UK psychology postgraduates. Gareth Richards describes his research on how index and ring finger digit ratio, an indicator of prenatal sex hormone exposure, relates to paranormal and superstitious beliefs. This is followed by Emmanuel Nii-Boye Quarshie’s report of a unique research study into the contents of the acknowledgements sections of Ghanaian and British psychology dissertations. Emmanuel reports differences in who is acknowledged in psychology dissertations at two academic institutions, one in the UK and the other Ghana, and explores the cross-cultural explanations for this finding.

Meanwhile, our reflective papers section delivers several fascinating pieces. Two such pieces include reflections on the challenges of interdisciplinary research. As psychology researchers, we often see intersections between multiple disciplines but none as divergent as psychology and geology! Hazel Gibson who researches geo-cognition – how people think about geology – describes her experience of how she bridged the gap between psychology and geology in her research. Similarly, Raluca Briazu reflects on her own experiences of crossing disciplinary boundaries between psychology and the arts, and gives us some insight into the challenges and benefits of interdisciplinary collaborations. Other reflective articles to look forward to include Priya Silverstein’s article which discusses the challenges of being a woman in science. Debates about gender equality have been prevalent in academia and with more organisations speaking out about the need to encourage girls to study science at university, this is a timely piece. We then move on to my article on an overseas research visit to Utrecht University in which I reflect on my experiences learning at another institution, and discuss why students should consider a study visit to another institution during their PhD. In our final reflective piece, Ilham Khan’s describes her eight-year journey to becoming a health psychologist offering insight into the challenges in undertaking a professional doctorate.

As a postgraduate publication, we always strive to include research hints and tips that may help other postgraduates in their research endeavours. This issue we have two fantastic hints and tips articles. The use of questionnaires is common practice in psychological research. Often, we may find ourselves adapting previously validated questionnaires to provide a better fit for our sample. Zoe Moon describes the process of modifying a questionnaire, and the subsequent and necessary step of validating the modified questionnaire. More generally,
undertaking a PhD is a monumental task and Sarah Jenkins offers some tips on making the most your first year to ensure a successful start to your PhD.

We close this issue with three conferences reviews. Karim Mitha reviews the 2016 BPS Annual Conference which took place in Nottingham, while Becky L. Scott describes the BPS Social Psychology Section’s 2016 Annual Conference in Cardiff. Further afield, Eglantine Julle-Daniere reviews the 2016 Consortium of European Research on Emotion in The Netherlands.

This is also the perfect time to remind our readers that the PsyPAG annual conference is approaching fast. This year the conference will be held at Northumbria University from 26–28 July 2017. The conference committee have arranged for an exciting array of keynote talks as well as a range of social events, including an exciting conference dinner at the beautiful Assembly Rooms in the heart of Newcastle city centre. The conference provides excellent opportunities for networking and disseminating research among UK psychology postgraduates and academics. Find out more by visiting the conference website: psypag2017.com. We hope to see you there!

We would also like to take this opportunity to congratulate the winners of the PsyPAG awards. Congratulations, Jenna Gillett (Undergraduate Award), Jessica Barber (Masters Award), Brian O’Shea (Rising Researcher Award), and Sophie Homer (Teaching Award)!

As always, we hope that you will think about contributing to PsyPAG Quarterly. We particularly love receiving ideas for articles showcasing the research that you, as UK postgraduates, are conducting! PsyPAG Quarterly is distributed to postgraduate institutions across the UK and is an excellent way to communicate your research to a wide audience. If you are thinking of submitting, I encourage you to read our document of ‘writing top tips’ available on our website: www.psypag.co.uk/the-quarterly. We hope these tips will provide some extra guidance to anyone submitting an article.

Happy reading!

Celine Chhoa
On behalf of the PsyPAG Quarterly Editorial Team

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HELLO AND WELCOME to the June 2017 issue of PsyPAG Quarterly. It has been a busy time preparing for our 32nd Annual Conference at Northumbria University, running from Wednesday 26 July to Friday 28 July. The PsyPAG Annual Conference is designed to be the ideal opportunity to present postgraduate research in a supportive, friendly environment. The 2017 Conference Team led by PsyPAG reps Kerry McKellar and Sarah Allen have been working really hard to arrange a packed programme enabling postgraduate psychology students from around the UK to present their work from many different areas of psychology. A range of social events are being organised, including a conference BBQ, alumni event and the conference dinner at The Assembly Rooms, Newcastle.

Our keynotes this year represent a range of international experts from diverse psychological backgrounds. These include Dr Vincent Deary (Senior Lecturer in Health Psychology, Northumbria University) whose work draws upon his clinical experience as a practitioner health psychologist and Dr Kate Milnes (Senior Lecturer in Psychology, Leeds Beckett University) who researches young people’s sexual relationships and sexual bullying in young people. We are also welcoming Merim Bilalic (Professor of Cognitive Psychology, Northumbria University) who researches cognitive and neural mechanisms behind experts’ outstanding performance and Dr Lynda Boothroyd (Senior Lecturer in Psychology, Durham University) whose work involves the study of evolution and development of social behaviours. Additionally, following a successful trial last year, we are excited to be re-joined by the Trainee Conference on Thursday 27 July: Bringing together postgraduates and psychology trainees. The theme of the Trainee Conference this year is ‘Creating your qualification journey’. Delegates from these events are encouraged to attend sessions across the respective programmes.

Although abstract submission has now closed, conference registration is open at our conference website until Friday 7 July: psypag2017.com. We have received a fantastic number and range of high-quality submissions from postgraduates studying in all areas of psychology. To stay up to date with conference news and events throughout the event, please follow our dedicated conference Twitter feed (@PsyPAG2017) and Facebook (facebook.com/PsyPAGAnnualConference).

We will also present the winners of the PsyPAG awards at the conference: The Masters, Rising Researcher, Division of Academics, Researchers and Technicians in Psychology (DART-P)/PsyPAG Teaching Awards and new for 2017, our Undergraduate Award. The deadline for these awards has now passed and we look forward to awarding the winners with prizes at the event, alongside presentations from some of our winners. We will also be awarding best oral and poster presentations during the conference itself. Last year, we welcomed around 150 delegates to this event, as our flagship conference. We look forward to seeing you in July!

PsyPAG supports psychology postgraduates in a range of ways. Our bursaries provide a great way to supplement conference attendance etc. (www.psypag.co.uk/bursaries). For example, our Research Grant bursary of up to £300 can assist you in conducting research as part of your studies e.g. paying participants or helping with travel costs. Also, our workshop fund is available for applicants to run workshops to benefit postgraduates: www.psypag.co.uk/workshops. A recent
example of a successful workshop funded under this scheme was our ‘Peer Review and Publishing: Navigating the publishing process’ session led by Dr Gillian Shorter, Victoria Whitelock and I ran on Friday 17 March at the University of Liverpool.

Since the last issue, we are very happy to announce the election of new key PsyPAG Core Committee roles. Holly Walton (UCL) is our new Chair-Elect taking over from myself, Jemaine Stacey (Nottingham Trent University) is our new Treasurer-Elect taking over from Kate Williams and Becky Scott (University of Huddersfield) is our new Information Officer taking over from Dr Claire Wilson. Handovers are well underway and these new Core Committee reps will take over these roles formally at our AGM during our Annual Conference on Thursday 27 July. I’d like to extend huge congratulations to them all. I look forward to seeing PsyPAG continue to grow under their leadership.

As ever, thank you to the BPS Research Board for their continued support and the PsyPAG committee for their hard work and commitment to supporting UK psychology postgraduates. I look forward to meeting many of you at our Annual Conference in July!

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Discussion paper:
The psycholinguistics of synaesthesia: What can we learn from studying synaesthetes?
Jennifer L. Mankin

In recent decades, synaesthesia – a condition characterised by a ‘joining of the senses’ – has grown in popularity as a subject of research. As the field expands from describing the condition to applying it to other areas of human cognition, a fundamental assumption must be addressed: Are the experiences of synaesthetes generalisable to non-synaesthetes as well? This article argues that not only can synaesthesia provide useful insights into the general functioning of language, but it is a useful and promising tool to investigate a variety of outstanding scientific questions.

In the past three decades, the study of synaesthesia – an unusual condition where two or more senses are mixed (Ward & Mattingley, 2006) – has blossomed from an obscure curiosity into a rapidly expanding field touching on everything from individual differences to imagery, attention, genetics, and neurobiology. Simner (2007) suggested that, because linguistic items such as words and letters are the most common triggers for synaesthesia, the condition could be used to study how language is learned, processed, and stored. My research explores this in depth, using the colours that synaesthetes experience for written words – one of the most common variants known as grapheme-colour synaesthesia – to investigate the structure and storage of those words. As I seek to apply my results to long-standing questions in psycholinguistics for non-synaesthetes as well, it is critical to address the fundamental question of whether synaesthetes do in fact use, store, and process language the same way as non-synaesthetes. In other words, are the language processes of synaesthetes ‘normal’, and can the findings be extrapolated to the wider non-synaesthete population? In this article, I propose that while synaesthesia may facilitate or draw attention to certain aspects of language processing, it is an addition to or enrichment of normal processing rather than manifesting as an alternative system. I will argue that while synaesthetes display some minor systematic differences from the general population, on the whole, the evidence points to synaesthesia being an additional perceptual experience well suited for the investigation of both synaesthetic and general cognitive processes.

To begin, it is well-known that synaesthetes, on average, tend to show advantages in the particular domains for which they have synaesthesia. Compared to non-synaesthete controls, grapheme-colour synaesthetes do indeed show a tendency toward verbal and visual cognitive styles (Meier & Rothen, 2013) and some general memory and creativity advantages, although not outside the ordinary range (Rothen & Meier, 2010; Ward, Thompson-Lake, Ely, & Kaminski, 2008). However, it has not been established which way the causality may run – do synaesthetes, in fact, have a systematically different cognitive style that manifests as synaesthesia, or does the presence of synaesthesia draw their attention to details of language? An answer to this question may come from an extreme type of ability, namely savant syndrome. Baron-Cohen et al. (2007) suggest that the co-occurrence of
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Synaesthesia and autism spectrum disorder (ASD) may increase the likelihood of developing savant abilities, as synaesthesia may provide a focus for the obsessive repetition of ASD, leading to heightened abilities in the domain of the synaesthetic associations. The observed tendencies and advantages in otherwise cognitively typical synaesthetes may be a less extreme version of the same phenomenon. According to this view, grapheme-colour synaesthetes are accustomed to automatically experiencing synaesthetic colours in response to linguistic input, which makes language more salient, easier to remember, and easier to use. This essentially leads, through lifelong practice, to a preference for visual and verbal styles and better memory for related stimuli. Furthermore, twin studies have shown that not all individuals genetically predisposed to synaesthesia develop it (Smilek, Dixon, & Merikle, 2005), which indicates that underlying neurobiological structures are not the sole source of developing synaesthesia. It therefore seems unlikely that synaesthesia is a symptom of a totally abnormal cognitive structure, but rather an additional experience on top of essentially normal cognition.

If indeed synaesthesia develops alongside normal processing, it is worth examining briefly how that development occurs. Although the factors that shape the emergence and development of synaesthetic experiences are the subject of much current study and debate, two influences show promise in explaining the characteristics of synaesthesia: associative learning and implicit biases. Both of these factors have been brought to bear to explain the curious finding of widespread trends in crossmodal associations. That is, not only do synaesthetes show a significant tendency for certain letters (like A) and colours (like red) to be paired together, but non-synaesthetes — for whom such associations are supposedly nonsensical — also show similar trends and in some cases even agree with the associations reported by synaesthetes (Rich, Bradshaw, & Mattingley, 2005; Simner et al., 2005). Regarding associative learning, researchers have recently suggested that letter-colour combinations learned from childhood alphabet toys persist into adulthood and influence synaesthetic associations (Witthoft, Winawer, & Eagleman, 2015). However, only 6 per cent (400 out of 6588) of the tested synaesthetes had letter-colour pairings matching the toys, so there must be another source of these pairings and the commonalities between synaesthetes and non-synaesthetes. A related possibility, currently under study by our lab, proposes that these consistent associations are semantic artefacts of the literacy acquisition process, encapsulated by the following logic: ‘A is for apple and apples are red, therefore A is red.’ If this is the case, the prototypical colour is transferred from the object associated with each letter back to the letter, and would be extremely variable based on cultural and linguistic background. As this suggestion is currently under investigation, the evidence for external associative influence on synaesthetic pairings is still incomplete. However, it may be that these learned associations, dependent on the life experience and early environment of the individual synaesthete, contribute to the idiosyncratic variability of synaesthetic associations.

On the other hand, the second factor at work are the implicit biases, known as crossmodal correspondences, present in everyone. A clear example comes from Ward, Huckstep, and Tsakanikos (2006), who show that while synaesthetes with colour for musical notes are more precise and consistent in their associations than non-synaesthetes, both groups choose lighter colours as note pitch increases. Furthermore, Spector and Maurer (2011) found that even preliterate children evince preferences for certain grapheme-colour pairings, which the authors attribute to innate colour-shape biases. Most relevant for the specific case of psycholinguistics in synaesthesia, the synaesthetic colours experienced for graphemes have been shown to be influenced by implicit linguistic factors such as grapheme frequency and syllable stress,
indicating that synaesthesia is a rule-based system influenced by underlying linguistic factors (see Simner, 2013, for a review). Mankin, Thompson, Branigan, and Simner (2014) also showed that synaesthetic colours are sensitive to English word structure and frequency, with higher-frequency compound words like rainbow more likely to have one synaesthetic colour while lower-frequency words like seahorse were more likely to have two. Altogether, the evidence from synaesthesia at each level of linguistic complexity – basic shapes, letters, and words – points to a system of associations overlaying an otherwise typical cognitive and linguistic system, with the synaesthetic pairings reflecting known and well-documented cognitive biases present in the general population.

Let us now return to the question of whether evidence from synaesthesia about language, in particular, can be applied to investigation of language processes. Thus far, there is no evidence that the language processing system of synaesthetes is fundamentally or crucially different from non-synaesthetes, especially as the explicit colour-letter associations characteristic of synaesthesia are presumably formed during the period of grapheme acquisition (Simner, Harrold, Creed, Monro, & Foulkes, 2009). Necessarily, these written language abilities are built on the pre-existing scaffolding of spoken (or signed) language acquired throughout childhood.Positing that the language of synaesthetes is fundamentally different from non-synaesthetes is to suggest that, given typical environmental, social, and linguistic input, synaesthetes develop an entirely differently structured language system that nevertheless produces exactly the same observable output, with otherwise the same implicit biases and sensitivities – and this even before the relevant stimuli are learned. Such a discovery would be revolutionary for the study of first language acquisition and childhood development; but as the study of linguistics centres around parsimonious explanations for complex systems, it would be needlessly multiplying entities to posit such a synaesthete-specific language system in the absence of evidence that synaesthetes are fundamentally different. It is more practical to assume that synaesthetes and non-synaesthetes both acquire language in the same way, with synaesthetes predisposed to develop additional associations on top of otherwise typical processing.

Psychology has a long history of using unusual conditions to discover not only how those particular conditions work but also how, by comparison, those processes may function in unaffected people. In studies using disorders such as dyslexia or aphasia, researchers attempt to establish which functions are disrupted in carefully controlled tasks. The resulting patterns of impairment can then illuminate how these processes function in the neurotypical population by revealing the components of a complicated process both individually and as they influence each other (see, for example, Semenza & Mondini, 2006, for a review of evidence for compound word processing from aphasia). However, the study of synaesthesia differs from this model in a critical way: as described above, synaesthesia appears to be additional information accompanying, rather than replacing or impairing, normal processing. In the case of grapheme-colour synaesthesia, the synaesthetic colour of a particular word can be compared to a tracking band placed on a migratory bird. The ornithologist reasons that if the tracker transmits from Greenland, the bird carrying it has been there. Likewise, if one of the colours that the synaesthete chooses for a word like rainbow is the same as their colour for bow, the psycholinguist can conclude that bow has been activated during word processing. When many tracked birds follow the same migratory path across the world, the ornithologist can be confident that this is the path untracked birds will follow as well. So also the patterns in synaesthetic colouring across participants allow the psycholinguist to draw conclusions about word processing and storage for everyone.

In conclusion, this article has argued that
The psycholinguistics of synaesthesia: What can we learn from studying synaesthetes?

Synaesthesia presents a useful tool for investigating many areas of psychology, and in particular psycholinguistics. Its advantages are twofold. First, synaesthesia provides a way to directly measure otherwise implicit processes, such as language, by using the conscious concurrent synaesthetic experiences as indicators of underlying systems. Second, even given some differences between synaesthetes and non-synaesthetes in various psychometric tests, the weight of evidence and logic points to synaesthesia being an integrated but additional experience intertwined with, rather than replacing, typical cognitive structure. These two features together make synaesthesia a promising avenue of research for exploring and testing both new ground and enduring questions in the study of human cognition.

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References
Music in our minds and bodies matters
Dawn Rose, Alice Jones Bartoli, & Pamela Heaton

This paper aims to convey an introduction to the psychology of music. At a very basic level, sound informs our model of the world, aiding survival. Musical sound and practice further offers a merging of exogenous and endogenous temporal states and templates, employing multiple complex neural mechanisms. Here we provide an overview of the literature exploring why music matters to our minds and bodies.

Music appears to serve a broad range of linked functions for human beings. Not only can our brains process the sonic information via spectral-temporal analysis (a sense-datum), we further apprehend this experience as having consciously accessible autotelic (an end to itself) value. We listen and make music in a variety of ways, individually and together in a range of group sizes creating connections through shared and often nonverbal experience.

Sound (and therefore music) is perceived in the superior temporal cortex, or Brodmann’s Area 41 and 42 – the primary auditory cortex (PAC). Multiple sources of information such as direction of projection, frequency, timbre and duration are integrated early en route to the medial geniculate nucleus in the thalamus, which also receives input from the PAC in a pathway known as the efferent corticofugal pathway. The PAC projects into the secondary auditory cortex where sounds are tonotopically organised (mapped from the hair cells innervated from the basilar membrane in the cochlear) in the lateral aspects of Heschl’s Gyrus (HG). This hierarchical activation continues into the anterior and posterior superior temporal gyrus (STG; Plack, 2013).

German surgeon Sigmund Auerbach (1890–1923) first observed a noticeable bulge in the STG of five musicians on whom he conducted post-mortems (Williamson, 2014). In recent years, in vivo brain scanning techniques have provided unequivocal evidence of neural change occurring as a result of occupational specialisation. Early studies showed significantly larger anterior corpus callosum (CC) in musicians compared to ‘non-musicians’. The CC maintains a balance between the facilitation and inhibition of information transfer between hemispheres. The enhanced motor skills in the non-dominant hand, for example playing the violin or piano, are thought to be the reason for these observable differences. Further structural differences between musicians and ‘non-musicians’ have been observed in motor areas of the brain, such as increased grey matter volume in left inferior frontal gyrus, and increased length in the precentral gyrus (PCG) and depth of the central sulcus correlated with age and onset of training (Schlaug, 2001).

Being a musician has been described as a ‘superskill’ due to the complexities involved in planning and executing complex motor sequences, simultaneously coordinating and controlling independent movements with multiple body parts, and integrating auditory, visual, tactile and proprioceptive information in a constant dynamic monitoring mode. The notion of ‘metaplasticity’ has also been supported by evidence emerging from diffuser tension imaging (DTI) methods that study and model white matter connective tracts, essential infrastructure enabling functional connectivity in the brain. Although evidence is currently mixed regarding the internal capsule, there seems to be agreement regarding higher levels of fractional
anisotropy in the CC and superior longitudinal fasciculus correlating positively with the number of practice hours recorded in childhood. Overall, the higher density observed in white matter has led to a proposed specialised hearing-doing, seeing-doing network identified in the fronto-temporoparietal regions, which also contains the mirror neuron system (Wan & Schlaug, 2010).

The acquisition of skills specifically associated with music has been shown in studies in which musicians not only show increased auditory evoked potentials for complex musical tones, but are also able to ‘tune in’ to the timbre of their own instruments (Pantev et al., 2001). Studies have also demonstrated that musicians listening to their own instrument are primed to a specific motor response (Haueisen & Knösche, 2001). Rhythm is known to have a powerful entraining effect, which also appears to engage the mirror neuron system and cerebellum. The coupling between musical perception and action has been argued to be a function of rhythm, associated with the evolutionary embedding of motor actions mirrored in others. This key neural phenomenon, known as audio-motor coupling, has been utilised therapeutically to help people with Parkinson’s and Huntingdon’s diseases manage their symptoms (Herholz & Zatorre, 2012).

One reason for the surge of interest in music psychology is due to the belief that ‘music makes you smarter’. However, this is only partially supported empirically (e.g. The ‘Mozart’ effect, c.f., Hetland 2004). Where benefits of musical learning have been observed, they have typically been described as either ‘near’ or ‘far’ transfer effects. Near transfer effects are where learning a musical skill also improves a closely related non-musical ability, such as playing the piano aiding fine motor ability. In contrast, ‘far transfer’ effects for musical learning have been reported for general IQ, spatial skills, language, literacy and mathematical skills. Schellenberg (2004) reported a significant increase (7 points) in full-scale IQ for a musical training group in comparison to control groups. Musically trained children have also been shown to possess superior pitch and rhythm discriminatory acuity as well as enhanced fine motor sequencing (c.f., Hyde et al., 2009). We have recently provided evidence supporting Schellenberg’s findings and extending the near transfer connection to an effect on hand/eye coordination as seen in the aiming and catching component of the Movement ABC-2 (Rose, Jones Bartoli, & Heaton, 2015).

One aspect of learning is working memory (WM), an umbrella term for several separate systems including echoic memory trace, a visuospatial sketchpad, a phonological loop, a central executive and an ‘episodic buffer’. Cross-modal binding involves executive functions, attention and inhibition (Baddeley, Allen, & Hitch, 2010). There appears to be some overlap between WM, music and language skills, perhaps explaining why children learning musical instruments possess superior verbal memory skills. The richness of musical learning, experienced as cross-modal multi-sensory incoming information is thought to re-calibrate templates already held and it is these associations which may strengthen early anticipatory mechanisms, potentially linking memory to intelligence (Turner & Ionnides, 2009).

In the separate yet connected domain of reward, musically evoked emotion has been used to study experiences such as hedonic response, joy and fear, tension and violations of expectancy, consonance and dissonance and levels of conscious awareness. Psychologically emotions are understood to be percepts (or pre-verbal subjective feelings; Koeslch, 2014, p.171) of affect-generating systems in the brain regulating and modulating emotional effector systems (i.e. interoceptive, proprioceptive and cutaneous exteroceptive information). Three limbic areas are particularly important with regard to music and emotion. The amygdala respond to emotional valence stimuli and activating appropriate approach-withdrawal mechanisms. The nucleus accumbens appears to regulate intensity between anticipation and
experience with regard to primary rewards and dopamine availability. The hippocampus extends emotional capacity beyond reward into learning, memory and spatial orientation and is also implicated in stress response due to its role in regulating the hypothalamic-pituitary-adrenal (HPA) axis. The social aspects of music and emotion can be demonstrated by different, yet related mechanisms. For example, soothing a crying baby with the musical contours of Motherese (the sing-song voice carers use with infants) is a potent combination of vocal communications. Emotions have also been found to transfer from performers to the audience, perhaps illustrating how we (or rather great composers!) can later manipulate this for effect. As Huron (2006) posits, there are intrinsic reward systems for correct predictions, returns us to the brain and its function as an anticipation machine.

There are substantial overlaps in the psychoacoustic cues that convey emotions in music and human vocalisations. For example, musical and vocal expressions of fear are characterised by similarities in speed (tempo and speech rate), in fundamental frequency patterns and pitch contour, in micro-structural irregularity, and in low intensity and little high-frequency energy. Patel (2007, p.267) refers to the distinct and domain-specific, yet integrated system as the 'syntactic architecture' of musical and linguistic sequencing.

Explicating the potency of music-evoked emotions with regard to evolutionary survival mechanisms, Koelsch (2014) recently presented his seven social Cs as: social Contact (a basic human need), social Cognition (attempting to understand the intentions of others use of music), Co-pathy (a function of social empathy, reducing conflicts and enabling group cohesion), Communication (a primary, sometimes non-verbal, skill enhancing other aspects of social bonding), Coordination (not just of one’s own body but also with each other, synchronising movements to form a sense of group identity), Cooperation (implying shared goals and intentions inspiring trust and fostering future good relations) and finally social Cohesion (encapsulating the human need to belong, a strong motivation for personal attachments and increasing life expectancy). For each, Koelsch provides evidence of the neural correlates, finally presenting a physiological example in that music perceived as ‘pleasant’ music triggers zygomatic (cheek bone) muscle response whilst ‘unpleasant’ music activates the corrugator muscle (brow bone).

In fact, motor response to rhythmical sound is posited to also have strong survival coupling, gating between behaviourally antagonistic approach and withdrawal systems, with cerebral asymmetry diverging to the left for positive emotional responses, eliciting an approach reaction, and a right hemisphere negative response for withdrawal. Asymmetry in these areas in the left premotor and inferior parietal cerebrum and right anterior cerebellum developed over time is thought to be a function of goal-orientated action dynamics associated with emotional and musical communication (Novembre & Keller, 2014).

However, not everyone feels or enjoys music; a condition known as amusia (commonly referred to as being ‘tone-deaf’) is known to affect approximately 4 per cent of the population. It can be either congenital or acquired. Defined by the co-occurrence of normal audiology and a lack of coherence when processing musical information, cases demonstrating dissociations have shed light on differences and similarities between speech and music perception and production, as the core deficit appears to be with the representation of melodic contour, one of the building blocks of which is being able to discriminate pitch direction. However, researchers have yet to identify networks associated with expressive (e.g. musical apraxia, agraphia or alessia) and/or receptive (such as amnesic or sensorial amusia) classifications (Stewart, 2008). With regard to developmental disorders, it is important to note that contrary to early theorising, there is robust
evidence that individuals with autism spectrum disorder (ASD) do not typically have music perception impairments (e.g. pitch, melody processing) and are sensitive to the emotional and social aspects of music (Allen & Heaton, 2010). In contrast, individuals with William’s Syndrome manifest difficulties with global processing, specifically impairment in recognising changes in pitch direction but also with pragmatics (linguistically – how the context contributes to meaning), resulting in problems representing melody (musical contour), although much research remains to be done in this area. Interestingly, a specific rhythmic rapid processing (not metre which is spared) deficit is apparent in children with dyslexia, for which short-term (15 week) remediation has been shown to be effective in improving phonological and spelling skills. Research further clarifying specific developmental difficulties in motor, sensory, perceptual and memory disorders has enabled the development of interventions for use in brain injuries, such as stroke (such as Auditory-Motor Tapping Training and Melodic Intonation Therapy). Music and musical learning at any age can also help trigger autobiographical memories, providing enhanced quality of life for individuals with memory damage resulting from strokes or different types of dementia.

Re-activated memories of earlier positive life events may serve to reduce agitation, depression and/or anxiety. Furthermore, music therapy has proved invaluable in providing differential diagnosis between vegetative state and minimally conscious state and has been highly effective in managing expectations (of family of friends) with regard to projected outcomes (Schlaug, 2015).

We have aimed to present an overview of how humans perceive, embody and generate music, and have considered the ways in which our brains adapt and specialise to acquired musical skills. It seems the more we understand about music; what it has done, does and is capable of doing, and how musical experience stimulates different aspects of the brain, through cognition and communication, in our memories, our motions and emotions, we will be able to see why music in our minds and bodies matters.

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References


Discussion paper:

An overview of the load theory of selective attention and cognitive control: How well does the model account for cross-cultural differences?

Silviya P. Doneva

The present discussion focusses on the strengths and limitations of one of the leading theories in the attentional literature – Lavie’s (2004) theory of selective attention and cognitive control. It has gained particular popularity as it solved the ‘early’ versus ‘late’ debate on when attentional selection takes place. However, despite being influential, some findings in the selective attention literature conflict with what the model proposes. This is particularly true when the theory attempts to explain cross-cultural variations in selective attention. The present discussion outlines several reasons to account for the latter, and introduces an alternative model to Lavie’s (2004) theory.

Selective attention and the load theory

Attention optimises the processing resources of the individual by enhancing the information of interest at a given moment and inhibiting the stimuli, identified as task-irrelevant at that time. Moreover, based on this idea, the load theory of selective attention and cognitive control (Lavie, 1995; Lavie, Hirst, de Fockert & Viding, 2004) recognises two dissociable mechanisms through which selective attention operates. First, distracting information is either excluded from perception due to a lack of spare capacity, or in case that the irrelevant stimuli have already reached conscious processing, information is prioritised and selected through higher-order cognitive functions whilst ignoring any distractors. However, despite being influential, the load theory seems to oversimplify attention and is unable to account for cross-cultural differences (e.g. Caparos et al., 2011; Kitayama, et al., 2003; McKone et al., 2010). Therefore, the present discussion begins with outlining the strengths of the load theory and continues by focussing on a more contemporary account of selective attention, which refutes the idea that perceptual and post-perceptual selection are two independent processes and argues that these are instead, interrelated.

Strengths of the load theory

Lavie (1995) proposed a resolution to the persisting controversy about whether attentional selection occurred early or late. Her so-called load theory of selective attention and cognitive control combined two conflicting views. First, Treisman’s idea (1969) that irrelevant information was attenuated by the attentional filter prior to awareness and second, Deutsch’s theory (1963) which held that both relevant and irrelevant information received full processing. Based on these, Lavie’s load theory ascribed a central role to the notion of cognitive capacity, which explained the failures of selective attention well, seeming to arise either as a consequence of insufficient attentional capacity or contrastingly, due to too many spare cognitive resources (Fitousi &
Moreover, the load theory of selective attention drew a distinction between perceptual and cognitive load, so that perceptual load was modulated by the perceptual characteristics of the stimuli (e.g. set size), whereas cognitive load varied in accordance to higher-order processes (e.g. working memory). These two were believed to be independent of each other because they led to opposite effects on distractor interference. For instance, high perceptual load reduced the processing of irrelevant information, since the exhaustion of cognitive resources prevented the processing of additional distractors (a passive process); however, in case that distractors were less perceptually demanding, they received processing and thus higher-order cognitive functioning was required to separate the relevant from the irrelevant information (an active process; Lavie et al., 2004).

Research has provided evidence for the idea that perceptual and cognitive load are additive processes. For example, in their classical experiment, Lavie et al. (2004) manipulated perceptual load in a flanker task where a target letter was either presented alone with a compatible or an incompatible distractor (low perceptual load) or displayed along with five other non-targets and a distractor (high perceptual load). In addition, low and high cognitive load conditions were created by imposing different demands on working memory, such as having to remember either one or six numbers at a time. Consistent with the prediction of the load theory, Lavie et al. (2004) found significant main effects of both types of cognitive load but no interaction between them. In addition, when young (19–30 years) and old (65–79 years) individuals were confronted with distractor processing, older participants started to outperform younger participants at relatively low levels of perceptual load (Maylor & Lavie, 1998). This finding suggested that ageing led to a reduction in the individual’s perceptual capacity, so that an intermediate level of set size was sufficient to exhaust the perceptual resources of the old, whereas the young still had spare capacity and thus experienced more interference. However, when the perceptual load was very low, the young showed less distractor interference, presumably due to their superior cognitive control. Moreover, the load theory of selective attention was applied to the research of special populations, such as individuals with Autism Spectrum Disorder (ASD). Remington (2009), for example, found that ASD individuals had more enhanced perceptual capacity than non-ASD individuals. Thus, there is extensive evidence supporting Lavie et al.’s theory, which resolved the early versus late selection debate and emphasised the role of cognitive control in selective attention as an active mechanism of distractor inhibition.

Limitations of the load theory
Research data on attention indicated major weaknesses in the model (Eltiti et al., 2005; Khetrapal, 2010; Linnell & Caparos, 2011). For instance, contrary to the load theory’s main prediction, interference was found to sometimes occur under high perceptual load, whereas attention was discovered to be more focussed under low perceptual load (Eltiti et al., 2005). Additionally, selective attention was also claimed to be more complex than described by Lavie et al. (2004) and thus not solely dependent on perceptual capacity but also on other factors such as spatial proximity, attentional focus, etc. (Khetrapal, 2010). Furthermore, Linnell and Caparos (2011) added target-distractor separation as an additional variable to perceptual and cognitive load in their flanker task. By manipulating the distance between the target and the distractors, they isolated the effects of perceptual and post-perceptual selection (unlike cognitive load, perceptual load is spatial in nature). Eventually, an interaction between the two types of load was discovered, whereby two conditions were needed for focussed attention to occur: high perceptual load (as predicted by Lavie et al., 2004) as well as low cognitive load. Findings from
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this study argued against perceptual selection being a purely automatic process, and suggested that perceptual and cognitive load were interdependent variables.

**Load theory and cross-cultural differences**

Another limitation of the load theory is that it cannot provide an adequate explanation of the cross-cultural variations in selective attention. According to Lavie et al.’s (2004) logic, such variation could only arise from differences between the perceptual capacities of the groups. Therefore, the theory is able to account for performance differences between the normally-developing population and some special population groups (e.g. the elderly or ASD individuals). However, the theory cannot account for differences in selective attentional processing between normally-developing individuals who come from different cultures. For instance, East Asians have been found to possess a holistic perceptual style and thus they do better at tasks requiring context integration and global judgement (e.g. Kitayama et al., 2003; McKone et al., 2010). Meanwhile, Westerners are known to focus more on the local level and to outperform East Asians when the target is of primary importance and the context is to be ignored (e.g. absolute tasks, Kitayama et al., 2003; McKone et al., 2010). Moreover, when attentional data from remote cultures is added, the picture becomes more complicated. For example, a recent study comparing the performance of British, Japanese and Himba (a semi-nomadic population) participants found that Himba people could better ignore the size of the inducers in the Ebbinghaus illusion and thus have a greater number of correct responses as compared to British and Japanese participants (see Figure 1 & 2; Caparos et al., 2011).

Furthermore, Himba people demonstrated their local bias in several different paradigms. For example, when presented with two figures, one matching the target at a global level and the other at a local level (Navon paradigm), Himba participants chose the local match more often (Caparos et al., 2011). In addition, they were found to show remarkably reduced distractibility on the flanker task, as compared to Westerners (de Fockert, et al., 2011). If one applies Lavie’s load theory to explain these results, then it would be concluded that Himba have less perceptual resources than Westerners. However, such analogy with

**Figure 1. An example of the Ebbinghaus illusion, Caparos et al. (2011).**
Maylor and Lavie’s (1998) study would be inappropriate because if the Himba indeed had a reduced pool of perceptual resources, then a gradual decline in interference, as a function of perceptual load, should be expected. However, de Fockert et al. (2011) demonstrated that Himba exhibited no such gradual reduction neither when the task stimuli were shown briefly nor when these were presented for longer. Further, Himba have been found to experience significantly less distractor interference at all types of perceptual load, including when perceptual load was negligible. On the contrary, if they indeed suffered from a reduced perceptual capacity as the load theory would predict, Himba should have experienced the same amount of distraction as Westerners when the perceptual load of the task was low. Moreover, Himba have also been found to be as focussed with arrows and cows as with any other stimuli, presumably are more familiar to them than to Westerners (de Fockert et al., 2011).

An alternative model
One possible explanation for the reported cross-cultural variations in selective attention has been provided by Linnell and colleagues (2013). According to their approach, the reported differences between Himba and other populations arise because the urban environment is acting as a type of cognitive load. Thus, traditional Himba are naturally under low cognitive load, while Westerners and urbanised Himba (those who have moved to the local town) are under high cognitive load. Accordingly, traditional Himba have been found to become as defocussed as other groups when placed under high cognitive load (Linnell et al., 2013). Furthermore, the finding that traditional Himba are more susceptible to differences in cognitive load and flanker performance deterioration suggests that there are no capacity differences between Himba and Westerners in terms of cognitive resources. Therefore, the notion that selective atten-
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Conclusion
Taken together, the load theory of selective attention and cognitive control combined both the early and the late selection views into a hybrid model of attention which dissociated between two types of load. According to Lavie et al. (2004), perceptual and cognitive load are independent and while perceptual processing is effortless and automatic, post-perceptual selection is an active mechanism, activated in case irrelevant information has been perceived. However, recent research has indicated that the load theory is potentially oversimplified, and cannot account for cross-cultural variation in selective attention. Evidence coming from a remote population suggests that such differences could be better accounted for by variations in cognitive style, rather than perceptual capacity, as claimed by Lavie et al. (2004).

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References


The 2D:4D ratio is calculated by dividing the length of the second finger by that of the fourth, and is sometimes employed as a proxy indication of prenatal sex hormone exposure. The current study investigated associations between 2D:4D and beliefs in superstitions, conspiracies, and the paranormal, in a sample of 211 university students. Although no significant relationships emerged, positive correlations between 2D:4D and paranormal and superstitious beliefs have previously been reported in the literature, implying that high levels of prenatal oestrogen and/or low levels of prenatal testosterone may be implicated in their development.

Introduction

THE RELATIVE LENGTHS of the second and fourth fingers (2D:4D) have been proposed to indicate prenatal sex hormone exposure (Manning, Scutt, Wilson, & Lewis-Jones, 1998). The ratio is sexually dimorphic (males typically display relatively longer ring fingers; Manning et al., 1998), and might be explainable by finger and genital development both being controlled by HoxA and HoxD genes (Dickman, 1997).

Evidence for the efficacy of digit ratio as a proxy indication of the prenatal environment comes from Lutchmaya et al. (2004), who reported that the ratio of testosterone to estradiol observed through amniocentesis was associated with subsequent 2D:4D. More recently, Zheng and Cohn (2011) demonstrated that directly manipulating testosterone and oestrogen levels during gestation could alter the digit ratios of mice in a predictable manner.

The 2D:4D ratio has been shown to correlate with a considerable number of variables, ranging from athletic performance to musical ability and susceptibility to disease (see Manning, 2008 for an overview). Although discrepancies are common within the literature, Austin, Manning, McInroy, and Mathews (2002) identified a tendency by which within-sex correlations between 2D:4D and ‘male typical traits’ (i.e. those in which males usually exceed females in scores, propensity, and risk) are negative in males, and less pronounced or absent in females, whereas the opposite pattern is common for female typical traits.

Of interest is that 2D:4D is related to certain aspects of personality. For instance, when investigating associations with the Big Five, Lippa (2006) found that 2D:4D correlated positively with extraversion, and negatively with openness to experience. Voracek (2009) observed that 2D:4D in males was positively associated with beliefs in superstitions and the paranormal, and suggested that the findings may relate to schizotypy. Though Voracek’s results are contrary to the previously discussed observation of Austin et al. (2002), a replication study by Rogers, Caswell, and Brewer (2017) reported positive associations between 2D:4D and certain types of paranormal belief in females, but not in males. The findings from these studies are relevant in light of a theory put forward by Crespi and Badcock (2008). Their idea is that autism spectrum and psychotic spectrum
disorders exhibit diametrically opposing phenotypes, which are potentially explain-
able, at least in part, by the action of prenatal sex hormones. Evidence for this comes from the finding that those diagnosed with Asperger’s syndrome exhibit lower 2D:4D than controls, but higher 2D:4D than those diagnosed with autism (Manning et al., 2001). Further to this, Voracek (2008) reported that the literature, although not without inconsistencies and replications failures, generally suggests autism spectrum disorders to be related to low 2D:4D, and schizophrenic spectrum disorders to be related to high 2D:4D.

Based on the available evidence, the current study proceeded with the idea that high 2D:4D is related to personality characteristics associated with schizotypy. More specifically, the study aimed to replicate the findings of Voracek (2009) by examining 2D:4D in relation to paranormal and superstitious beliefs. In addition, conspiracy beliefs were also investigated, both due to their theoretical similarity and because of their associations with schizotypy. It was therefore hypothesised that any significant correlations would be in the positive direction.

Method

Participants

Two hundred and eleven (106 male, 105 female) university students with an age range of 18–35 ($M = 20.73, SD = 2.16$) were enrolled in the current study via opportunity sampling. The research was granted ethical approval by Swansea University’s Department of Psychology Ethics Committee, and all procedures were conducted in accordance with their guidelines.

Apparatus/Materials

The Revised Paranormal Belief Scale (Tobacyk, 2004) was utilised to assess participants’ beliefs in paranormal phenomena. The 26–item measure contains subscales relating to seven dimensions of paranormal belief (traditional religious belief, psi, witchcraft, superstition, spiritualism, extraordinary life forms, and precognition), and participants marked how strongly they endorsed each statement on a seven-point scale (1 = Strongly disagree, 7 = Strongly agree). However, the individual subscales were not investigated in the current study; instead, an overall indication of paranormal belief was calculated by summing the responses for all items included in the questionnaire.

Positive and Negative Superstitious Beliefs Questionnaire was administered to investigate beliefs in positive and negative superstitions. This measure was used because, although positive and negative superstitious beliefs appear to serve different psychological functions (Wiseman & Watt, 2004), the Revised Paranormal Belief Scale only includes questions to assess the latter type. Three items relating to positive superstitions and three items relating to negative superstitions were marked on a five-point scale (1 = Definitely Yes, 5 = Definitely No). In addition, a measure of total superstitious belief was calculated from the sum of these two scales.

The Belief in Conspiracy Theories Inventory (Swami, Chamorro-Premuzic, & Furnham, 2010) includes 14 items and was used to measure beliefs in well-known conspiracy theories. Participants rated how strongly they agreed with each statement on a nine-point scale (1 = False, 9 = True).

The Generic Conspiracist Beliefs Scale (Brotherton, French, & Pickering, 2013) includes 15 items and was used to evaluate general susceptibility to belief in conspiracy theories. Participants rated how likely they believed each statement to be true on a five-point scale (1 = Definitely not true, 5 = Definitely true).

Design & Procedure

Participants were presented with an information sheet, and provided informed consent prior to taking part in the study. Pen and paper questionnaires were then administered, and the second and fourth digits on
each hand were measured directly using Vernier callipers (measuring to 0.1mm). All finger measurements were taken twice, to increase accuracy. Mean values for digit ratio on the right hand (R2D:4D) and left hand (L2D:4D) were calculated from the two sets of measurements, which were then used in subsequent analyses. As the difference between these values is sometimes used as an additional measure of prenatal androgen action, directional asymmetry was then calculated as D(R-L).

The current study utilised a correlational design. Due to the sexually dimorphic nature of the 2D:4D ratio, separate analyses were conducted for males and females. Sex differences were assessed using between-subjects t-tests, and associations between 2D:4D and the questionnaire measures were investigated using Pearson’s correlations.

Results
R2D:4D was lower in males ($M = .97, SD = .033$) than in females ($M = .98, SD = .032$), $t(206) = -2.084, p = .038$, although a similar effect in L2D:4D was only marginally significant (males $M = .975, SD = .33$; females $M = .983, SD = .031$), $t(207) = -1.869, p = .063$. No sex difference was detected for D(R-L), $t(205) = -.886, p = .377$.

Considerable variance was observed in response to the questionnaire measures of paranormal, superstitious, and conspiracy beliefs (for descriptive statistics, see Table 1). Significant sex differences were detected for each measure of paranormal and superstitious belief, with females reporting higher scores than males in each case. However, no such effects were observed for either questionnaire measure of conspiracy beliefs (for all t and p values, see Table 1).

Pearson’s correlations were conducted to determine whether associations existed between digit ratio and the questionnaire measures of belief in the paranormal, superstitions, and conspiracy theories. No statistically significant relationships were observed (for r and p values, see Table 2).

Discussion
Voracek (2009) found that 2D:4D was positively associated with paranormal and superstitious beliefs in Austrian males, and Rogers et al. (2017) reported positive correlations between 2D:4D and paranormal beliefs in female undergraduate students from the UK.

Table 1. Descriptive statistics and sex differences for questionnaire measures of belief in the paranormal, superstitions, and conspiracy theories.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Males</th>
<th>Females</th>
<th>Sex difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revised paranormal belief scale</td>
<td>104 55.09 22.25</td>
<td>102 63.77 22.32</td>
<td>2.798 .006</td>
</tr>
<tr>
<td>Positive superstitious belief</td>
<td>106 9.61 3.44</td>
<td>104 11.61 2.92</td>
<td>4.529 &lt;.001</td>
</tr>
<tr>
<td>Negative superstitious belief</td>
<td>105 6.55 3.74</td>
<td>105 8.71 3.8</td>
<td>4.156 &lt;.001</td>
</tr>
<tr>
<td>Total superstitious belief</td>
<td>105 16.13 6.16</td>
<td>104 20.29 5.84</td>
<td>5.004 &lt;.001</td>
</tr>
<tr>
<td>Belief in conspiracy theories inventory</td>
<td>99 47.72 19.98</td>
<td>101 47.7 19.14</td>
<td>.005 .996</td>
</tr>
<tr>
<td>Generic conspiracist beliefs scale</td>
<td>103 35.72 10.85</td>
<td>104 37.96 10.63</td>
<td>1.503 .134</td>
</tr>
</tbody>
</table>
Table 2. Correlations between 2D:4D variables and questionnaire measures of belief in the paranormal, superstitions, and conspiracy theories.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Males</th>
<th>Females</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>r</td>
<td>p</td>
</tr>
<tr>
<td>Revised paranormal belief scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2D:4D</td>
<td>-.023</td>
<td>.821</td>
</tr>
<tr>
<td>L2D:4D</td>
<td>-.07</td>
<td>.482</td>
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<tr>
<td>D (R-L)</td>
<td>.059</td>
<td>.558</td>
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<tr>
<td>Positive superstitious belief</td>
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<td></td>
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<tr>
<td>R2D:4D</td>
<td>-.155</td>
<td>.114</td>
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<tr>
<td>L2D:4D</td>
<td>-.07</td>
<td>.482</td>
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<tr>
<td>D (R-L)</td>
<td>-.118</td>
<td>.234</td>
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<tr>
<td>Negative superstitious belief</td>
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<td></td>
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<tr>
<td>R2D:4D</td>
<td>-.118</td>
<td>.231</td>
</tr>
<tr>
<td>L2D:4D</td>
<td>-.119</td>
<td>.231</td>
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<tr>
<td>D (R-L)</td>
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<td>.862</td>
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<td>Total superstitious belief</td>
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<td>R2D:4D</td>
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<td>D (R-L)</td>
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<td>Belief in conspiracy theories inventory</td>
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<td>R2D:4D</td>
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<td>D (R-L)</td>
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<td>Generic conspiracist beliefs scale</td>
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<tr>
<td>L2D:4D</td>
<td>.105</td>
<td>.298</td>
</tr>
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Note. All correlations are Pearson’s (two-tailed).

The current study attempted to replicate these findings, and also to investigate whether 2D:4D is associated with belief in conspiracy theories. It was hypothesised that correlations would be in the positive direction.

No significant relationships were observed between digit ratio and belief in superstitions or the paranormal, casting doubt on the premise that development of such beliefs might be related to differential exposure to prenatal sex hormones. Although this was a clear failure to replicate the findings of Voracek (2009), it should be noted that there were some important differences between the two studies. Firstly, although the measures of superstitious belief used were the same (albeit those administered by Voracek were in German), Voracek utilised the Sheep-Goat Scale to measure paranormal beliefs, whereas the current study used the Revised Paranormal Belief Scale. However, as these essentially aim to assess the same construct, it is unlikely that this difference fully explains the discrepant findings. Another difference is that participants in Voracek’s study came from the general population, whereas those who took part in the current research were university students (however, it is noted that Rogers et al., 2017 partially replicated Voracek’s findings using a student sample). Of further relevance is that Voracek’s sample (n = 1118) was considerably larger than that of the current study (n = 211), and the associations observed were weak (1–3 per cent attributable variance). This may, therefore, imply that the current study lacked the level of statistical power required to reliably detect such effects. However, it should also be
considered that the sample utilised by Rogers et al. \((n = 275)\) was comparable to that of the current study, albeit still somewhat larger.

No significant associations were observed between 2D:4D and conspiracy beliefs. This was the case for beliefs in well-known conspiracy theories, as well as for the general tendency to believe in such phenomena. A potential reason for the null findings is that belief in conspiracy theories is not necessarily inconsistent with a naturalistic worldview (exemplified by the fact that high profile conspiracy theories have occasionally been proven to be correct, e.g. Watergate). This makes them subtly different from the other types of belief examined here. A further observation of interest is that, unlike for each questionnaire relating to superstitions or the paranormal, no significant sex differences were observed for either measure of conspiracy belief. Given the idea that 2D:4D relates to traits that are sexually dimorphic, this may be relevant in explaining why no significant correlations were observed.

**Conclusion**

The current study aimed to investigate whether the 2D:4D ratio, a putative indicator of prenatal sex hormone exposure, is associated with belief in the paranormal, superstitions, or conspiracy theories. No evidence of such relationships was observed, which may cast doubt on the idea that the development of these personality constructs is influenced by differential exposure to foetal testosterone and/or oestrogen. However, as the study utilised a relatively small and homogeneous sample of university students, the null findings may be explainable in terms of insufficient statistical power. Further research is therefore required for firm conclusions to be drawn.

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References


Introduction

Within the field of psychology, students’ dissertations (i.e., written academic discourses produced by bachelor, master and doctoral students at the end of their studies or research projects) follow similar presentation formats. Popular among the formatting styles is the American Psychological Association’s style of manuscript structure (APA, 2010). As part of the elements of a manuscript, authors are required to provide ‘acknowledgments’ (APA, 2010, p.25). The acknowledgements element identifies individuals, groups or institutions who made contributions towards the research but do not constitute authorship of the manuscript. For example, the provision of supportive functions such as designing the apparatus for a study, assisting with data collection, providing suggestions regarding statistical analyses, and provision of financial support for the study, *inter alia* (APA, 2010). Thus, acknowledgements in dissertations are considered a socially anticipated illocutionary response and act which afford students the opportunity to show their recognition of certain core academic values (including gratitude and credibility); and to attain a psychological sense of closure at the end of a research activity (Hyland, 2004; Salager-Meyer et al., 2010). Acknowledgements, therefore, provide students with a special writing space to express their gratitude for help and to foster positive scholarly and social attribute (Hyland & Tse, 2004).

Between 2013 and 2015, I worked as an Assistant Lecturer in the Department of Psychology, University of Ghana (DoP-UoG) in West Africa. As part of my academic duties, I supervised undergraduate dissertations and assisted in mentoring postgraduate dissertations. I read, critiqued and made comments on students’ draft dissertations. I also contributed to the assessment of the final versions of dissertations submitted to the department. The ‘norm’ (which was
neither stipulated in the department’s scholarly writing rules nor in the APA style) was that, the first line of the acknowledgements section was always an ascription of gratitude and appreciation to God/Allah. Subsequent lines of the text acknowledged others (e.g., academic supervisors, lecturers, participants, family, friends etc.).

Presently, I am enrolled as a PhD student in the School of Psychology, University of Leeds (SoP-UoL) in the UK. So far, I have read (as well as taken a cursory look at) several of the collection of previous dissertations submitted to the school. However, seemingly ‘absent’ in the acknowledgements sections is any allocation of credit to God/Allah or any transcendental entity. Predominantly, academic supervisors/mentors; participants; friends; family; and organisations are acknowledged. This pattern of acknowledgement in the dissertations submitted at the SoP-UoL appears consistent with findings of key previous studies conducted in other disciplines (e.g., Hyland, 2003, 2004; Hyland & Tse, 2004; Salager-Meyer, et al., 2010). Searches of the literature show that the key studies published in the area of acknowledgements in dissertations have been conducted mainly in Western and non-African contexts (e.g., Al-Ali, 2006; Cheng, 2012; Hyland, 2003, 2004; Hyland & Tse, 2004). Thus, I am not aware of any published study on the subject with respect to Ghana.

To provide an empirical basis for a cross-cultural reflection on the contents of the acknowledgements in psychology dissertations, this article aims to analyse the acknowledgements sections in psychology dissertations submitted to two academic institutions (i.e., the DoP-UoG and the SoP-UoL). Specifically, this article seeks to address the question, who is acknowledged in Psychology dissertations presented at the two academic institutions? It aims to contribute to our knowledge about graduates’ gratitude expression in psychology dissertations and to explore the cross-cultural differences between Ghana and the UK.

**Method**

Sixty dissertations were randomly selected – 30 from the Department of Psychology, University of Ghana and 30 from the School of Psychology, University of Leeds (10 undergraduate, 10 master’s, and 10 PhD dissertations each). These dissertations were submitted to the two academic institutions between the 2010/2011 and 2014/2015 academic years. The acknowledgements sections of the selected dissertations were photocopied and anonymised: direct identity information about the students were deleted or replaced with pseudonyms. Dissertations without acknowledgements sections were excluded. Content analysis technique (Bos & Tarnai, 1999) was used to analyse the 60 anonymised acknowledgments selected.

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<th>UGD (n = 10)</th>
<th>MD (n = 10)</th>
<th>PD (n = 10)</th>
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<td></td>
<td>f</td>
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<td>f</td>
<td>%</td>
</tr>
<tr>
<td>God/Allah</td>
<td>10</td>
<td>100</td>
<td>10</td>
<td>100</td>
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<td>Academic supervisors</td>
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<td>100</td>
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<td>Family and friends</td>
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<td>20</td>
<td>6</td>
<td>60</td>
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<tr>
<td>Interest groups</td>
<td>0</td>
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</tr>
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</table>

Note: UGD = Undergraduate dissertations; MD = Master’s dissertations; PD = PhD dissertations.
Are acknowledgements in psychology dissertations a science-bound or religion-bound script?

Ethical approval and permission to access copies of dissertations were granted by the two academic institutions.

**Findings**

*University of Ghana*

Generally, God/Allah; academic supervisors; family and friends; participants; technicians/research assistants; and institutions were the persons and/or entities acknowledged in the Psychology dissertations submitted to the University of Ghana analysed (see Table 1). All the 30 dissertations submitted to the DoP-UoG acknowledged God/Allah (100 per cent) and academic supervisors (100 per cent). Interest groups (3.3 pre cent) were the least acknowledged. Specifically, only one PhD dissertation acknowledged an interest group, as below:

‘Thank you to … [Professor] of [University], … for allowing me to be part of the [Lab] during my stay as a Visiting Research Scholar in the University. To all [Lab members]
I say a big thank you for your time …’

*(PhD dissertation: DoP – UoG).*

Generally, the observations in the dissertations submitted to the DoP – UoG are epitomised by the acknowledgements below:

My utmost gratitude goes to the Almighty God for the His never-ending grace and faithfulness towards me; and for giving me life, strength, good health and the knowledge to start and complete this work. My immense gratitude goes to my supervisors, [Professor] and [Dr], I could never have made it without their help. Next, I thank the Greater Accra Regional Directorate of the Ghana Education Service, and the wonderful school children who so willingly participated in the study. Of course, I cannot forget my friends, who assisted me in diverse ways to get this research done. God richly bless you all. I also wish to thank [name] for helping me with SPSS. Finally, I would like to thank my family for their love, support, encouragement and immeasurable sacrifice, just to see me through. God bless you for being the wind beneath my wings.

*(Master’s dissertation: DoP – UoG).*

In the above acknowledgements, the student expresses gratitude to God; academic supervisors; an institution; participants; a technician/research assistant; and family and friends. An interesting observation is that the entire script of the acknowledgments is interspersed with kind religious lexica and pronouncements (i.e., God richly bless you and God bless you).

*University of Leeds*

Academic supervisors; family and friends; participants; technicians/research assistants; institutions; and interest groups were acknowledged generally across all the

<table>
<thead>
<tr>
<th>Person/Entity</th>
<th>UGD (n = 10)</th>
<th>MD (n = 10)</th>
<th>PD (n = 10)</th>
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<tr>
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<tr>
<td>Interest groups</td>
<td>6</td>
<td>60</td>
<td>3</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 2. Persons and entities acknowledged in dissertations submitted to the SoP-UoLs.

Note: UGD = Undergraduate dissertations; MD = Master’s dissertations; PD = PhD dissertations.
psychology dissertations analysed from the University of Leeds. Academic supervisors (100 per cent) were acknowledged in all the dissertations whereas God/Allah was acknowledged in only one (3.3 per cent) of the dissertations (see Table 2).

The following is a typical corpus of acknowledgements in dissertations submitted to the SoP-UoL:

I would like to thank [Dr] and [Dr] for supervising this project as well as providing guidance and advice throughout its duration.
I would like to thank [name] for training me in extracting blood glucose measures vital for conducting this project. Furthermore, I would like to thank all of the other researchers at the University of Leeds Human Appetite Research Unit for being patient, welcoming and helpful during my time there. Finally, I would like to thank my family and friends for always being supportive and encouraging me in everything I do.
(Master’s dissertation: SoP – UoL).

The author of the acknowledgements above expresses appreciation and gratitude to academic supervisors; technicians/research assistants; an interest group; and family and friends; but not gratitude to God/Allah or any transcendental/religious being.

Juxtaposing Tables 1 and 2, it can be observed that, generally, between the two academic institutions the pattern and trend of acknowledgements of academic supervisors; family and friends; participants; technicians/research assistants; and institutions were common. Comparatively, whilst God/Allah was acknowledged in all of the dissertations submitted to the DoP-UoG, a religious entity was acknowledged in only one of dissertations from the SoP-UoL. Although more than half of the dissertations submitted to the SoP-UoL acknowledged interest groups, only one from the DoP-UoG did so.

Discussion
This brief content analysis of the acknowledgements sections in psychology dissertations has shown that, comparatively, God/Allah is frequently acknowledged in the dissertations submitted to the Department of Psychology, University of Ghana (DoP-UoG), whereas interest groups are frequently acknowledged in dissertations submitted to the School of Psychology, University of Leeds (SoP-UoL).

The high frequency of acknowledgement of God/Allah in the dissertations submitted to the DoP-UoG may be explained by the significant influence of religion in Ghana. Ghana is ranked first among the top 10 religious populations in the world (Gilani, Shahid, & Zuettel, 2012). According to the Ghana Statistical Service (GSS, 2013), 71 per cent of Ghana’s population is Christian, 18 per cent is Muslim, 5 per cent represents adherents of African Traditional Religion (ATR), and 6 per cent identifies as belonging to other religious groups or without any religious beliefs. As observed by eminent African philosophers (e.g., Gyekye, 2003; Mbiti, 2015), the cultural and historical heritage of Africans, and for that matter Ghanaians, is intensely religious. Religion pervades every sphere of a Ghanaian’s life. ‘In all undertakings – whether it be cultivating, sowing, harvesting, eating, travelling – religion is at work’ (Gyekye, 2003, p.4).
Given this purview, acknowledgements by a Ghanaian student in a dissertation are typically framed as a religio-scientific script. Thus, the acknowledgements section of a dissertation affords the student an opportunity to enact an academic discourse that is composed of a trove of religious beliefs and values; and scientific elements. However, acknowledgements sections in dissertations submitted to the SoP-UoL can be described as scientific scripts, in that they are written mainly to meet only scientific patterns as required by academic conventions and standards (e.g., APA style). Only ‘empirical’ persons and groups/entities are acknowledged in such scripts. This lends support to previous findings about graduates’ gratitude expression in dissertations (Cheng, 2002; Hyland, 2003, 2004; Hyland & Tse 2004; Salager-Meyer, et al., 2010).
Are acknowledgements in psychology dissertations a science-bound or religion-bound script?

Again, although about 72 per cent of people in England and Wales may be identified as Christian (Voas, & Bruce, 2004), generally, religion in Britain has been described as either ‘believing without belonging’ (Davie, 1990, p.463) or ‘neither believing nor belonging’ (Voas, & Crockett, 2005, p.1). The observation is that within British society many people have religious beliefs but do not necessarily put these beliefs into practice (Voas & Crockett, 2005). The implication is that people in British society have shifted from supernatural attachment onto the path of critical rationality or scientific norms (Davie, 1990; Voas & Crockett, 2005).

Formal interest groups or research labs abound in the SoP-UoL (e.g., Human Appetite Research Unit; Behavioural Neuroscience laboratory; Leeds mindfulness research group; Neuroscience research at Leeds, etc.). Throughout the period of their studies in the SoP-UoL, students have the privilege of taking advantage of the relevant interest groups to enhance their training and research experience. However, formal interest groups are virtually non-existent in the DoP-UoG. The only PhD dissertation which acknowledged an interest group (see quote above) was written by a student who had the opportunity to join a research lab, as a visiting research scholar, at a different university.

Nevertheless, one potential limitation of the present study is that it could not identify certain relevant demographic characteristics, such as, nationality, religious orientation, or gender of the students whose dissertations were sampled for the study. Knowing these characteristics could have enabled the study to match the patterns of acknowledgements to these characteristics in order to tease out the cross-cultural similarities and differences between the two academic institutions.

Despite this, the current study contributes to our knowledge about graduates’ gratitude expression in dissertations, with the key observation that acknowledgements in Psychology dissertations submitted to the DoP-UoG are framed as religio-scientific scripts (i.e., religion-and-science bound scripts) whereas acknowledgements in dissertations submitted to the SoP-UoL can be described as science-bound scripts.

Acknowledgement
I wish to thank Eva Cizkova of the School of Psychology, University of Leeds, for her technical assistance, and all the reviewers of the manuscript. I also wish to thank Naa-Shasha, Nii-Shidaa, Nii-Laryea and Johnny Andoh-Arthur for their encouragements.

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References
Reflective Paper:

Rocks don't think! A reflection on interdisciplinary studies from a geologist studying psychology

Hazel Gibson

For some interdisciplinary researchers, the gap between your original subject (the one you studied as an undergraduate) and your new one can seem insurmountable at first. As a geologist who has started studying cognitive psychology as part of my PhD, I understand this gap in a very personal way. However, in the course of my studies I have found that, far from being a stumbling block, combining these two very different subjects has given me a better understanding and appreciation of both. This article is based on my reflections of being an interdisciplinary researcher, and the challenges and advantages that it brings.

I'M HAZEL and I study geology and psychology.' Whenever I meet people at an academic event or any event for that matter, more often than not, I get the same reaction when I introduce myself. First, a long pause, accompanied by a look of befuddlement, and then the usual question: ‘I can’t think how those two subjects go together at all, so, what do you do?’ or my personal favourite, ‘But, rocks don’t think, do they?!’ Welcome to the world of an interdisciplinary researcher!

To many interdisciplinary researchers, the confusion about how subjects or disciplines intersect is the most visible part of a type of study that is immensely challenging and frustrating, but also hugely rewarding (Rhoten & Parker, 2004). Interdisciplinary research exists as a part of a suite of integrative research types that combine one or more subject area, which include transdisciplinarity and cross-disciplinarity (Tress, Tress, & Fry, 2005). Sometimes these subjects maybe similar already and have many skills and approaches in common, but in other circumstances they can be very different – like geology and psychology. Interdisciplinary research requires you to take knowledge and understanding either from your existing field into a new one, or bring skills and approaches from your new field back to your existing one, sometimes even using both subjects concurrently to see what new approaches can be developed. Using cognition to better understand how people think and talk about geology is the integrated approach that I use in my own work, and it has taken me very far from my comfort zone in the familiar world of geological science.

I study geo-cognition, or how people think and learn about the geological world. It is a study that developed from geology classrooms in universities (Kastens et al., 2009) to the public realm and is particularly relevant today, as increasingly people are facing difficult decisions about how we use our geological resources. Recent studies into carbon capture and storage technology (Wallquist, Visschers, & Siegrist, 2010) and the deep geological disposal of radioactive waste (Vari, 2004) have highlighted the value in using an interdisciplinary approach to the issue of controversial geological decision-making. I am applying the question of ‘what do people think exists in the geological subsurface’ to examine if there is any consensus of perception of geology, in the Southwest of England – particularly in Devon and Cornwall, where I grew up.
From a very young age, I loved science. Using toy microscopes, dissecting roast chicken dinners, collecting pebbles and shells from the beach, stargazing and pressing flowers were all popular activities in my house. It was therefore no surprise that I decided I wanted to be a scientist growing up, particularly a geologist. I loved studying our planet, how it worked, and the mysteries and questions it posed; so I threw myself with abandon at the physical sciences. Social science and psychology, however, were unfamiliar territory. I was uncertain about sciences that did not seem to follow the ‘proper’ scientific route of replicability and objectivity as established by natural and physical scientists in the early 1900s (Dodick & Orion, 2003). As is the case with many other ‘natural’ scientists I know, my educational experience heavily influenced me to subscribe to the stereotypical idea of the social sciences as having less worth because they did not always conform to the empirical ideal of falsifiable hypotheses. The methodology of science was what gave it rigour and reliability and without that, I believed, it was not really science (Berliner, 2002). I did not understand how it was possible to generalise results from sample sizes in the tens rather than thousands and how any data without numbers were data at all! So, without giving much thought to the potential influence of the social and psychological sciences, I focussed all my attention on the ground beneath my feet.

Many cheerful years passed in this way, but as I moved my work from the university classroom and laboratory and out into the field, I began to realise certain things about working as a geologist. First, that if I wanted to work as a scientist, then I had to work with people who were not scientists. Second, non-scientists often did not think about my science in the same way as I did, and this led to confusion and potential risks. One notable circumstance involved an engineer requesting that I change my geological model to make his plan easier, with little understanding that by changing my model I would create a critical flaw in the design of the infrastructure we were working on. Later, my career moved into public engagement with geology and the problem of comprehension between geologists and non-geologists became clearer and more central to my work. Why do I not think about the Earth and geology in the same way as the people that I am talking to? I attempted using different language, different educational approaches, but nothing appeared to be solving the problem of the gap between myself as a scientist and the people I was speaking with. I realised that in order to answer the questions about how people interact with and around the subject of geology that I would need a new tool under my belt: A better understanding of how people think and learn, a completely different science! At which point I realised that I needed psychology.

Still, I was apprehensive. I had never studied psychology and still had those (slightly less than complimentary) attitudes about the value of the social and psychological sciences left over from my strictly physical sciences education. How would I overcome these issues? Could I, as Donovan et al. (2011) said, ‘learn the customs and languages of a foreign discipline’? Well, as it turns out, one of the attributes of being any kind of scientist or researcher solved the problem for me. That is, having a healthy sense of curiosity (Heberlein, 1988). Trying to understand how people think and learn is an endlessly fascinating subject, one that I am ashamed that I dismissed before. By using cognitive theories, such as mental models theory (Johnson-Laird, 1983), to try to understand how I think about my science, as well as how others perceive it, I gained a greater appreciation for my own thought process. I realised the futility of trying to be completely objective in research, as even the physical scientist brings some bias to interpretation (Wilholt, 2009). I learned that geology is a science just as challenged by its association to the historical and observational approach as psychology is (Frodeman,
Rocks don’t think! A reflection on interdisciplinary studies from a geologist studying psychology

1995); in fact, the two sciences have far more in common than I had ever previously thought. Whilst geoscientists attempt to understand the invisible ground beneath our feet, psychologists face a similar challenge in attempting to understand the invisible world inside our heads.

Furthermore, I also grew to appreciate the importance of qualitative data, something I had been dismissive of in the past. The separation of objective, ‘hard’, quantitative data and subjective, ‘soft’ qualitative data is one that I had been introduced to in school and had never challenged (Cherardi & Turner, 2002). This contextualisation of the different methodologies of science left me clinging to the stability of the qualitative method and yet, by embracing a mixed methods approach, I deepened my understanding of my data and their relationship to my participants. According to social work researcher Brené Brown (2012), ‘maybe stories are just data with a soul’. I have since come to agree with her. I still value what I previously perceived to be the ‘easy’, testable, reliability of quantitative data, but if I have learned anything in my career as an interdisciplinary researcher, it is that science, like life, is messy and cannot be understood with numbers alone. Interestingly, in a way, my career as a geologist prepared me for this new confidence in qualitative data. Each rock sample, though it will share broader characteristics of structure and chemistry with other rocks, will have unique attributes. Each fossil, though general features can be used to classify it, is one of a kind. Each person I interview for my study, although they may have had similar experiences, is an individual with their own distinct ideas.

It is this appreciation for the complexity of how we interact with our world, both in the rocks we stand on and the people we meet, that has been one greatest rewards of interdisciplinary research for me. Although I often yearn for the ‘simplicity’ of doing research that sits easily within my original discipline of geology, I would never go back. Becoming a hybrid researcher has made me a better researcher, not only because I have gained insight into a different scientific discipline, but also because I am now a better geologist. I now have a better understanding of my own limitations and bias as a researcher. By allowing geology and psychology the space to exist alongside each other in my research, my practice of both subjects has steadily improved. I now speak to other psychologists about the nature of household energy, hydrocarbons and heat, and human perceptions of those subjects. I speak with geologists about how the skills they use to think about geology are drastically different to the way that most people think about geology, but suggest that those skills can be a benefit instead of just a barrier if geoscientists are willing to take the differences between us into consideration. Interdisciplinary research is not easy, but it is essential if we are to move our sciences closer together, learning new approaches and attitudes from many fields to improve them all.

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References
Reflective Paper:
The challenges and joys of interdisciplinary research: Insights from a psy-art collaboration

Raluca A. Briazu

Interdisciplinary research is becoming increasingly popular. The experience of participating in interdisciplinary projects can be equally risky and exciting. The current article synthesises some benefits and challenges inherent to such collaborations. These insights are based on the author’s personal experiences of working in partnership with experts from the fields of science, arts and humanities. The experiences are particularly related to graduate school, and it is hoped that this will encourage other students to consider such collaborations in the future.

Academic disciplines provide normative standards and enable researchers to partition vast amount of information into manageable units (Casadevall & Fang, 2014). However, it is becoming increasingly evident that discipline specialisation can also fragmentise knowledge. This is inadequate for tackling the multifaceted issues we now face. To develop solutions to problems that go beyond the scope of single discipline researchers are now urged to engage in interdisciplinary research (Williams, 2015). Interdisciplinary research constitutes a study that integrates perspectives, methods and concepts from two or more disciplines (Porter, Roessner, Cohen & Perreault, 2006).

Efforts to produce a shift towards interdisciplinary research are apparent. Journals such as Leonardo (MIT Press) have been developed expressly to encourage collaborations among experts from the arts, sciences and technology. Interdisciplinary teaching and learning methods which advocate for the integration of knowledge from disciplines previously regarded as incompatible, are now gaining ground (Jones, 2009). Partnerships between artists and scientists are even hoped to provide the answer to the current antibiotic resistance crisis (Williams, 2015).

As a discipline, psychology is in an excellent position to contribute to interdisciplinary research. Not only can it inform successful interdisciplinary collaborations but it can also instigate them (Cacioppo, 2007). The majority of questions at the heart of psychological enquiry extend beyond its disciplinary borders; hence opportunities for collaboration are abundant. Sometimes the intersection between psychology and other disciplines is apparent, such as psychology and evolutionary biology or environmental science. At other times, opportunities for collaboration are less evident, as is the case with psychology and art. Whilst interest in the psychology of art has been long-standing (Arnheim, 1952), interest in assimilating art methodologies within psychological research is more recent (Leavy, 2015). Joint degrees which incorporate psychology and art are now available, however my own experience of undertaking a science-based course highlights that traditional programmes are limited in their exposition of art and its methodologies. This might be why arts’ capacity to contribute to research outputs is not being fully explored.

However, psy-art collaborations do exist. An example of the successful way in which psychologists can collaborate with
artists include projects such as the *False Memory Archive*. In this exhibition, artist A.R. Hopwood (2014) teamed up with experimen-
tal psychologists such as Dr Elizabeth Loftus and Dr Kimberley Wade in order to dismantle the experience of false memo-
ries. They used findings from experimental research alongside contributions from members of the public to create contempo-
rary artworks as well as a unique collection of personal accounts of events that never actu-
ally occurred. This body of work could then be used to reflect upon the veracity that is con-
tained within a false memory, which can in turn, provide experiential insights and inform future research.

Personally, I was unaware of the poten-
tial that psychology and art partnership held until I began my PhD project as part of CogNovo (www.cognovo.eu), a multi-
disciplinary doctoral training programme which combines science and humanities. Being part of such a diverse team where disciplinary boundaries are rarely taken into account has permitted me to work in the same environment as artists (as well as robot-
icists and computational neuroscientists) and attend art seminars and workshops. This has inspired a rich dialogue which has enabled me to integrate views from different disciplines and topics within my chosen PhD subject and beyond. Alongside my PhD, I’ve also contributed to a project entitled, *Affective Embodiment of Testing Tools* (Briazu, Francis & Haines, 2015). For this project, I teamed-up with my colleagues, Kathryn Francis, a fellow psychologist and Agi Haines, an artist, to cast a critical eye over the methodological approach of experimental moral psychology. The project, which integrates expertise and perspectives from both psychology and the arts, queries the possibility and value of developing testing materials which could replicate the affective nature of real-life moral decision-making.

The work was presented in front of a multi-
disciplinary audience as part of *Off the Lip*, an international conference showcasing trans-
disciplinary approaches to cognitive inno-
vation. The project was also published as a paper in the conference proceedings, and we are currently producing a short film which explores the potential application of ideas contained within the project. In the following section, I am going to describe the challenges and joys met along the journey that lead to these outputs.

**Challenges**

1. **Resources**

Interdisciplinary research often requires additional resources, such as added infra-
structural support, time and effort (Stember, 1991). During my own project I quickly became aware how the need for these resources coupled with the realities of a grad-
uate programme can impede the enthusiasm to collaborate. Time is the most valuable resource of all, especially when it comes to the deadline-orientated nature of PhD endeav-
ours. I was surprised when I discovered how much time was required in order to adjust to a new way of doing research. Though I allocated time for exploring evidence beyond psychology, I underestimated the amount of time and effort it took to shift focus away from psychology and work with unfamiliar terminology and methodology. For example, retrieving information about exhibitions and art projects requires a different strategy in comparison to accessing journal articles.

I must admit that this challenge would have been far greater had the project not been hosted within the supportive realm of a multidisciplinary research programme. The infrastructure we were working within meant that we shared the same environment. The availability of a common space reduced the administrative burden of organising meetings thus enabling us to share knowledge whenever necessary. Additionally, this setup enabled support from our supervisors which meant that our aim to study a familiar topic using different methodologies was encouraged.

2. **Achieving balance**

From the beginning, my colleagues and I established that we wanted the project to
be integrative. Therefore, we agreed to all provide input across all areas of the project, including writing up. Making this decision implied a series of challenges, both practical and personal.

Personally, I initially found it difficult to formulate my arguments beyond the familiar APA style which characterises psychology. It took considerable effort to adopt a different perspective and relinquish some of my disciplinary ego. Humanities are known to be primarily critical and speculative which opposes the empirical nature of the scientific approach. As such, I found myself being less impartial and encouraging, yet more critical and idea-orientated. This meant that I found it difficult to reconcile the demands of the project with my usual writing voice, and felt that I was constantly trying to fight off the dreaded writer's block.

In practical terms, it also became apparent early on that presenting this work would also be challenging. This was a theoretical project, which did not require observation at any stage. This method contrasted with the empirical approach I am accustomed to and I found there were no graphs and tables that I could rely on when presenting. As such my customary presentation techniques were inadequate and I had to shift towards using more images and less jargon. The outcome was a coherent mixture of ideas expressed in a writing style that we later acknowledged was not characteristic of any particular discipline. Even so, we felt we had conveyed our ideas in a manner each of us could identify with. For us, this constituted a sign of the balance we had painstakingly strived for.

3. Risk-taking
Embarking on a PhD is risky enough; once there, most are likely to keep to safe territory and take less risky steps in order to complete in time and graduate (Evans, 2004). Interdisciplinary collaborations are especially risky as they are unpredictable, both in their outcome and process (Kanakia, 2007). Apart from the risks associated with interdisciplinary teamwork, it is also the case that it is more difficult to publish, and once published earns fewer citations (van Noorden, 2015). It is therefore easy to understand why some regard such endeavours as being far from a reliable way of achieving tenure (Kanakia, 2007).

These issues are especially pertinent for early career researchers for which establishing a disciplinary identity is essential to academic survival. Whilst there is advice available about how to achieve better collaborations (Nancarrow, 2013), it might be that such risks can never be truly avoided.

In my experience however, the benefits are not only achieved through the outcome, but they are gained throughout the process itself. Coincidently, the struggles one faces during the challenges described above also lead to the benefits that can be achieved through such collaborative work. In the next section, I turn to some of the benefits that I personally gained through my interdisciplinary collaboration.

Joys

1. Fresh perspectives
Interdisciplinary research has the potential to deepen knowledge in one’s own discipline (Svensson, 2015). My own experience supports this. Engaging with a different discipline has allowed me to gain fresh perspectives on my own work as well as psychology in general. I believe that this is the most important reason why working through the challenges described above was worth the effort. Understanding how specialists in other fields conceptualise and contextualise research has encouraged me to be more critical of theories and methodologies used in my own field. This has further challenged me to pose new questions for future research. Additionally, I learnt to appreciate how tools used in other disciplinary areas could be integrated within psychological research. I now frequently consider using artwork and art galleries to expand my research practice.

2. Transferable skills
Inevitably, interdisciplinary work will involve managing different and sometimes
conflicting opinions (Todorova, Brake & Weingart, 2011)). This experience can enhance verbal and written communication, teamwork and time management skills. It can be difficult to hear criticisms about things one strongly believes in. However, a positive outcome of experiencing this discomfort can result in deep learning. In interdisciplinary teams, one is often forced to explain domain-specific concepts in a clear and concise manner, leading to a better understanding of your own material. Being able to mediate opposing opinions has also helped me enhance my team working abilities and increased my confidence about being able to contribute to similar teams in the future.

Something needs to be said about the process of undertaking an interdisciplinary project alongside a disciplinary PhD. Switching between different approaches might be challenging but encourages the development of time management and organisation skills. These are all required both in academia and elsewhere.

3. Personal growth
Wandering outside the fringes of my discipline provided the opportunity to learn more about psychology and the arts; crucially it has taught me more about myself and my research practice. By interacting with experts from other fields, I often found myself listening more and trying to understand things I would have previously been eager to dismiss. Additionally, I learned how to be firm and convincing, defending my arguments when required to do so. More than ever, I was reminded that disciplinary conventions shouldn’t limit one’s approach to research. I realised how reliant I was on hinging my argument on the analytical process, and how I sometimes lacked the confidence to present novel ideas without prior consultation of the available literature. An insight into how other disciplines work has allowed me to appreciate that I can and should express myself more freely. Throughout, I learned that being taken out of my comfort zone can support the kind of personal introspection that has the potential to lead to lifelong learning skills.

Conclusion
Overall, I believe that the benefits of interdisciplinary research far outweigh the challenges and risks. Others have highlighted how collaborative research can enrich the graduate experience (Golde & Gallagher, 1999). Interdisciplinary collaborations should not be a by-product of graduate studies but rather part and parcel of it, as demonstrated not only through my own experience but through the available literature reflected upon in this article.

Acknowledgements
I would like to acknowledge my colleagues and friends, Kathryn Francis and Agi Haines, without whom the Affective Embodiment of Testing Tools project would not have been a reality. I hope they enjoyed the experience as much as I have.

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References
Reflective Paper:
Women in science – but what will I wear?!
Priya Silverstein

The focus of many ‘women in science’ events and workshops is often on the low percentage of women in higher positions in academia (e.g., assistant and full professors). However, little recognition is given to the issues that may affect these observed differences. For example, the difference in ‘femininity’ required for different academic roles. Here I describe and discuss personal experiences of the benefits and challenges of being female that I have faced in different psychology-based roles. It is then argued that these kinds of experiences may ultimately impact upon career progression for women in science.

I WAS A FEMALE MSC STUDENT in cognitive neuroscience, worked part-time as a research assistant in a developmental cognition lab, and have come across gender issues in both roles that I did not expect.

Femininity as an asset
As a research assistant, my femininity is encouraged by the role. When dealing with the public, such as in recruitment activities and while testing, dressing smartly and femininely suggests both approachability and professionalism. Following instructions without asking too many questions (a prototypically feminine behaviour) can be helpful when things just need to be done; there is not always time or an expectation for critical thinking.

In the psychology department that I work in, there are no male research assistants. This could be partially due to the fact that the majority of psychology students are women (Willyard, 2011). However, I don’t feel this fully explains the situation, considering roughly a quarter of psychology PhD students are male (Kessel & Nelson, 2011). Where are the male students trying to improve their CV by working as a research assistant for a year or two? As I have hinted, the role of a research assistant lends itself to historical expectations of what a woman should be like – professional and obedient. This could affect multiple stages of job application and performance, such as causing initial differences in application rates (e.g., women feeling more suited to the role), influencing applicant selection (e.g., women appearing more suited to the job in the interview due to seeming more professional), and ultimately women being more successful in the role (success being measured as how well they do what they are instructed to do). I believe that this could be a factor making women more successful or favourable research assistants and therefore perhaps one of the reasons for the lack of male research assistants.

Femininity as a disadvantage
Conversely, in my MSc class, there are roughly equal numbers of male and female students. Here, wearing make-up to a lecture is seen as overdoing it, wasting time that could have been spent doing something more useful. However, from what I understand the male students on my course are not exactly using this time doing anything ‘useful’; many are rolling out of bed just fifteen minutes before the lecture and yet they receive no implicit or explicit criticism for this. As discussed by LaCosse, Sekaquaptewa, and Bennett (2016) negative behaviours by male peers can directly affect female performance in STEM (science, technology, engineering, and mathematics) subjects. My instinctive feeling that there was an air of criticism for women wearing make-up in academia being reinforced at the University
of Warwick Language and Learning group Women in Science workshop that I attended. Here, academic staff disclosed having heard comments after PhD and job interviews that said in no uncertain terms that the applicant was wearing too much make-up and so should not be chosen as they are not the right ‘fit’ for the position.

I have juggled studying, my job, and applying for PhDs. This is hard enough and puts me under a lot of pressure. However, I chose that pressure because I knew that all the responsibilities I chose would increase the chances of me achieving my dream of becoming an accomplished researcher. What I didn’t choose was to constantly be fighting against or taking advantage of my femininity depending on the scenario. It is difficult, embarrassing, and unnecessary. Whether I am wearing a pencil skirt or jeans does not reflect my research capabilities. If it did, I would be creating a style blog to attach to my CV. I don’t want to spend the night before a PhD interview worrying about the perfect outfit that makes me look like I’ve made just enough effort but also spent the morning reading.

In conclusion, although women make up nearly three-quarters of psychology PhD students (Kessel & Nelson, 2011), the issues I have discussed may contribute to the fact that the percentage of women in full professor roles drops to below 30 per cent. Several factors have been suggested that could affect this, including males’ false perception of females’ lower ability, and females’ false perception of their own lower ability, among others (LaCosse et al., 2016). It is important to acknowledge how the issues I have outlined about women in psychology-based roles may contribute to a glass ceiling for their career progression.

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Reflective paper:
An overseas study visit to the Netherlands
Celine Chhoa

Studying or working abroad as part of a student’s academic study career is becoming increasingly common. The Erasmus Student Exchange Programme, for example, is very popular among European students, with nearly 270,000 students going abroad in 2012–2013 (European Commission, 2014). Despite its popularity with undergraduate and taught postgraduate students, overseas visits for PhD students are less common. Yet this can be an enriching experience for early career researchers and the benefits are often overlooked, especially in the field of psychology. In this article, I reflect on my own overseas research visit and how it has benefited me and my research.

When I applied for my PhD, there was a blank field on the application form for applicants to suggest potential external placements. The Doctoral Training Centre at my institution that funds studentships encourages students to take part in research placements at external institutions. While placements do not have to be undertaken overseas, this possibility held great personal appeal. Even visits to external research groups at the national level are hugely beneficial, giving students an opportunity to acquire skills not available at their own institution and start building a wider professional network. Doing this at a foreign institution had further benefits of experiencing a different research culture and the opportunity to explore postdoctoral options further afield.

For my study visit, I went to Utrecht University in the Netherlands. Having worked on an Open Research Area (ORA) grant with a research group at Utrecht University, my supervisor had close ties with a number of the academic staff at the Faculty of Behavioural and Social Sciences, one of whom agreed to host me as a visiting research student. I outlined a plan of activities and tasks to accomplish, which was approved by my supervisor and academic host at Utrecht University. I painstakingly researched the most economical travel and accommodation options. The only hurdle left was practical – how to pay for the visit. The Economic and Social Research Council allots funding for overseas institution visits, however, my application for the grant was not successful. At this time, PsyPAG had just announced their research grant bursaries, one of which was for a study visit. Very fortunately, my application was successful and I was awarded a PsyPAG study visit bursary. With the final hurdle cleared, I was ready to go!

My research examines cognitive processes associated with antisocial behaviour in young children in order to design interventions for antisocial youths and relies heavily on experimental methods. While this is a common and frequently used method in the field of psychology, the challenge was to design age-appropriate tasks that would sufficiently engage preschool-aged children while being sensitive to their cognitive capacities. This is especially important when working with children with behaviour problems (the target population in my research) who may experience hyperactivity or difficulties with attention and staying on task. Expert guidance was needed.

The research group I visited at Utrecht University utilises experimental designs in combination with randomised controlled trials of interventions to unravel causal mechanisms driving psychopathology in children. The knowledge gained through experimental research is used to improve outcomes.
of interventions, including parent training and cognitive behaviour therapy for children and adolescents. Therefore, their research objectives and methodology are strongly aligned with my own. More importantly, my host was an experimental cognitive psychologist with extensive experience of designing experiments with children. During my study visit, I worked closely with my host to tailor my experiments and received invaluable input and guidance regarding the design and implementation of tasks and procedures for assessing risk factors for antisocial behaviour in young children.

A broader and long-term aim of a research visit is to establish a research network that will be beneficial for the student’s current and future career. As part of my research visit, I was given the opportunity to present my research to the academic staff and students in the faculty. The chance to discuss my research with prolific researchers in my field of study opened doors to new ideas and new insight. Furthermore, I learned about novel assessment tools and techniques and new research through discussions with both academic staff and students. Meeting people whose work I have come across in my literature review and will be citing in my thesis, was at once a humbling and inspiring experience. The visit therefore provided an excellent opportunity to begin making contacts with world-leading researchers in my field of study.

During my visit, I was also exposed to a different doctoral experience. PhD study commonly takes four years to complete in the Netherlands, compared to the usual three years full-time in the UK. During this time, students are expected to publish three to four papers which are then reproduced in their PhD thesis as a series of studies. One of the experiences that really stuck with me was meeting a postdoctoral researcher who, to my bemusement, presented me with a copy of his PhD thesis to keep. A5-sized, beautifully and professionally soft-bound with an artistic cover, it was thinner and only slightly larger than a paperback novel – the perfect size to slip into my bag and carry around for reading. I have since learned that this is customary practice in the Netherlands to print and soft-bind several hundred copies of completed theses to give out as a way of thanking people for their support, as well as a means of disseminating one’s research. I enjoyed learning about diverse research practices and atmosphere in a different country.

There is a strong case for students going overseas for the purpose of study, research, or work. The UK Higher Education International Unit (2014) reported that for undergraduates who have studied abroad, the risk of long-term unemployment is less than half of that for those who have had no international experience. Finding research-based employment after the PhD is increasingly difficult. With more PhD graduates entering the market than the number of academic jobs available, there is consid-

Figure 1. A Dutch (top) and a British (bottom) thesis.
erable competition for such opportunities. Incorporating an overseas visit during your PhD and developing specialist skills can give you an edge over other applicants. In addition to promoting understanding of other cultures, research or otherwise, it is a great opportunity to learn and build a research network early in your academic career. I thoroughly enjoyed my overseas research visit and strongly encourage others to consider this as part of their doctoral experience.

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Reflective Paper:

From BSc Psychology to DPsych Health Psychology: An unplanned journey of eight years

Ilham Khan

My decision to enrol onto the Professional Doctorate in Health Psychology (DPsych) course was preceded with uncertainty and confusion as I did not plan to study to this level. Nonetheless, it has been incredibly rewarding. Currently in the third year of my DPsych studies, I reflect on the eight-year journey which began in my undergraduate years. I hope to offer insight into the challenges I faced along the way and strategies I used to manage them as a doctoral student, a member of the British Psychological Society (BPS) and an NHS healthcare professional.

The first three years: Being a BSc student

I joined Middlesex University London in 2008 as a BSc (Hons) Psychology student. Here, I learnt about various sub-disciplines in psychology including forensic, social, health, developmental and cognitive. By the end of the first year, I already knew I wanted to pursue a Masters but was unsure what sub-discipline to specialise in. To get a practical idea of the settings I could work in after completing an MSc in any of these sub-disciplines, I seized as many work placements as possible. The work placements were all self-sought: I contacted organisations in clinical and laboratory settings, as well as teaching and research. Specific job roles within these organisations included being a teaching assistant, clinical trials recruitment consultant, research assistant and optical assistant. During my undergraduate studies, I acquired a number of transferrable skills including analysing quantitative and qualitative data, writing reports, presenting and speaking in public, collaborative working, sharing knowledge, leadership and thinking critically. These are all in addition to psychology-specific skills such as developing research proposals, understanding health inequalities and applying behavioural/social/cognitive approaches to understand human behaviour. Equipped with these skills, I was able to build a strong CV.

The variety of placements I undertook expanded my skillset. The different work settings not only helped me to build relationships with professionals and grow my network but also helped me to meet people from various disciplines and ask questions about their career path. Another reason why I felt work placements were necessary was to determine where my skills and interests lay due to the ‘independent study’ nature of any MSc in psychology – I needed to be genuinely interested in what I was doing to sustain my learning.

During these placements, I was able to chisel out my likes, dislikes, areas for improvement and merits as a young professional which carried me through my post-graduate studies. I realised that I enjoy front-line teaching more than a laboratory-based job role, and that I am a hands-on person – something I was not aware of before these experiences. I also craved variety in my working week, and my passion for research grew exponentially.

In the third year of the BSc, I made a list of all the psychology-related questions I wanted to explore in my career to make a decision of which psychology sub-discipline to pursue.
The questions included, ‘What motivates humans to continue to do things that they know to be harmful to themselves?’, ‘Why do smokers quit smoking and then relapse?’ and ‘How can resilience and willpower be improved?’. All these were heavily based on my experiences from my placements. From this list, I noticed most of the questions were related to lifestyle; more specifically, chronic illnesses. At the same time, I explored MSc courses by reading about the modules taught and the subsequent career options available. The information I gained through this, combined with my developing skillset, made me realise that an MSc in Health Psychology was the best fit.

The fourth year: Being a MSc student
Immediately after graduating from my BSc, I pursued an MSc in Health Psychology at Middlesex University. The one-year MSc ended with a mandatory work placement as a researcher in NHS Public Health for a deprived, ethnically diverse, inner London borough. This placement was arranged by the university, and I worked on a set research project which explored the low uptake of the Seasonal Flu Vaccination during pregnancy despite recent public health campaigns. This study found that the factors influencing low uptake of the flu vaccination included mothers not knowing the specific risks of non-vaccination, not knowing what flu actually is, social influences, believing the vaccination is unnatural and ineffective, the inconvenience of booking an appointment with a health care professional for administration, and limited discussion with health care professionals on this topic during pregnancy.

While my primary interest at the time was to explore why women who quit smoking during pregnancy relapse after giving birth, I approached the Seasonal Flu Vaccination project as another learning curve which became increasingly interesting as I read the existing literature. The data collection phase taught me the influence of the researcher on participant responses in qualitative research. Although I introduced myself to participants as a ‘researcher’ rather than a “student”, I exhibited few “researcher” traits. For example, I did not explore as much as I could have and my questions were often double-barrelled or poorly framed, making it difficult for participants to respond effectively. I overcame these issues by temporarily surrendering the ‘student’ mindset. As someone who had always been in full-time education with limited experience of data collection, this placement offered the opportunity for me to transform into a professional researcher. I presented myself as a mature, responsible ‘researcher’ rather than a meek ‘student’ who was afraid of asking too many questions. This positively impacted the project as interview responses became richer; participant recruitment easier and talking to other professionals less intimidating. In the end, I was confident about my professional conduct and it was also very clear that I enjoyed qualitative more than quantitative research.

The fifth year
Having completed the MSc in Health Psychology, I was, again, unsure about my next steps, so I withdrew from academia the following year. In 2012, when Public Health and NHS funding were restructuring, securing a degree-related job proved difficult, but I persistently applied for entry-level positions while also considering alternative options including undergoing formal teacher training, completing an MPhil, enrolling for a Professional Doctorate or starting full-time employment. After several weeks of confusion and exploration, I decided that it was the Doctorate in Health Psychology course that offered everything I wanted in a subsequent career (e.g. workload variety, frontline interventions, understanding individual differences in health, opportunities for research and teaching). However, I could not apply for the DPsych as I was neither in full-time nor part-time employment – a requirement of the course to practise as a trainee health psychologist.

The DPsych is based on a minimum two-year work placement for full-time students.
to fulfil five core competencies to qualify as a Chartered and Health Psychologist: Teaching, consulting, delivering behaviour change interventions, conducting research and acquiring generic professional skills. All of these competencies need to be evidenced in a portfolio and submitted for assessment. Trainees are assigned a supervisor at the university to guide them, and workshops are held throughout the year by course lecturers. Trainees are expected to complete a portfolio based on their workplace independently. With this in mind, I began to apply for job roles which matched the required competencies for the DPsych.

By January 2013 I realised that I consistently fell into the ‘qualified, but under experienced’ category, as most organisations asked MSc graduates for a minimum of one year’s work experience for advertised vacancies. Although I obtained diverse experiences, they did not meet the time criterion. I then decided to email my CV to NHS trusts, health improvement programs, charities and private healthcare providers without advertised vacancies; enquiring about possible opportunities based on my qualifications and experience. This led to a call for an interview at a West London NHS Stop Smoking Service in February 2013. Little did I know that this was going to be the turning point of my career. I completed Levels 1 and 2 training – a requirement to provide behavioural support and medication to smokers wanting to quit cigarette smoking. By March 2013, I became bank staff – a post not usually advertised by stop smoking services – while continuing to apply for additional roles. I then secured a full-time Stop Smoking Specialist role in a North-West London borough in July 2013. Although this was only a temporary one-year contract, I applied to City University London for the DPsych and was successful, but was strongly advised to find opportunities to fulfil the second year of practice or to apply for permanent roles. The university also agreed that this was a suitable job role to fulfil all five competencies. I continued to search for appropriate jobs to secure the second year of the DPsych. By the end of July 2013, I had applied and been selected for a similar role on a permanent basis within the same West London service that I was a bank staff member of earlier that year. With my permanent work placement arranged, I was eligible to commence the doctorate in September 2013 without having to apply for further job roles to fulfil the minimum two-year requirement.

The final three years: Being a trainee health psychologist

Undertaking doctorate training while in a full-time job was initially challenging, since I was a beginner in both ventures and I had a steep learning curve ahead of me. Striking the work-study balance was paramount if I were to be successful in both. I learned the balance through self-motivation: Declining invitations to social events, studying during break times at work, and communicating with my course supervisor at the university throughout my two-year practice. I learned to be realistic when setting goals and now also include small tasks when planning my daily schedule as all tasks take time, even if it is only one hour which further helped me realise:

’If I could just study for one hour, just three days a week before or after work, I have studied for an extra three hours that week. This equates to 12 hours a month. Even if this isn’t enough in its own, at least I am 12 hours better off’.

At home, I invested much of my personal time in understanding how health psychology contributes to smoking cessation. Specifically, by reading about behavioural interventions and assessing the evidence for certain practices through evaluative papers, and reflecting on what I could have done differently during my working day. At work, learning about population-level legislation was enriching, and I was fascinated by the amount of detail that goes into policymaking and day-to-day protocols to support individual service users. I soon became
familiar with Harm Reduction policies, The National Institute for Health and Care Excellence (NICE) guidelines, the local Tobacco Control agenda and the local populations I was dealing with.

During my two-year practice, my work remit focussed particularly on smokers in routine and manual occupations in local workplaces. This included meeting with employers to negotiate stop smoking clinics on-site, designing tailored interventions, creating referral systems, delivering training, using motivational interviewing to encourage smokers to quit, and creating evaluation systems to assess intervention outcomes. I also gained practical insight into health inequalities and barriers to behaviour change. The recent introduction of the Behaviour Change Wheel (Michie, Stralen and West, 2011) was timely when considering contextual factors in behaviour change including education, enablement, and opportunity for this population. Based on this research, I further understood the importance of undertaking multi-disciplinary work – also encouraged in the Doctorate training – which involved working with drugs and alcohol services, teaming with charities and supporting other health services within my local authority.

My doctoral training has shaped me into a professional and academic in ways which would not have been possible otherwise. Following my two-year practice, I have spent the eighth year of my journey completing the portfolio writing and am excited to pursue new opportunities as a qualified health psychologist in due course.

The findings from the above studies and the NICE recommendations for early intervention have highlighted the importance of interventions such as PACT which aim to address the early markers of ASD through focusing on the parent-child interaction. We hope to continue providing PACT through a full-time member of staff but also through other professionals in the service who are able to provide PACT alongside their clinical work. In Gwynedd, we currently run PACT supervision groups once a month where professionals who deliver PACT can meet to bring videos and discuss cases and we hope that other professionals who work with young children and who have an interest in delivering PACT will have the opportunity to work using these principles.

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Adapting and validating questionnaires

Zoë Moon

Modifications to validated questionnaires are often necessary in order to ensure they are relevant and applicable to a specific population. This article describes the steps needed to modify and validate questionnaires. First, researchers must understand the target population and identify areas requiring modifications. These modifications should then be tested in a think-aloud study, which may lead to further amendments to the questionnaire. Once the items have been finalised, researchers should ideally test the validity and reliability of the scale as the revised version may not hold the same psychometric properties as the original scale.

Why do we need to modify questionnaires?

The vast majority of studies in psychology utilise questionnaires in order to operationalise certain constructs or variables. There are hundreds of published validated questionnaires already available. Using one of these pre-validated questionnaires saves researchers from creating new measures and allows the use of a measure which is known to be reliable and valid. Furthermore, results can easily be compared across studies. However, not all of these questionnaires are relevant in all contexts and therefore they may need to be modified. For example, questionnaires may be adapted to suit specific populations, such as a certain demographic group, or different cultures or languages. Specific guidelines are in place for how to translate a questionnaire from one language to another, which include the importance of checking the cultural and semantic meaning of translated items (see Beaton, Bombardier, Guillemin, & Ferraz, 2000). The Revised Illness Perceptions Questionnaire (IPQ-R; Moss-Morris et al., 2002) is a generic scale created to measure illness representations across different illness groups. However, researchers have suggested that the IPQ-R may not provide insight into the unique beliefs held by different patient groups (French & Weinman, 2008). This article will describe the steps involved in modifying and validating questionnaires, with reference to modification of the IPQ-R for use with breast cancer survivors as an example.

How do you modify a questionnaire?

Step one: Qualitative research or literature review in specific population

The first step to modifying a questionnaire is to understand what modifications will be needed in the specific population of interest. Ideally, this stage should be carried out using qualitative research methods, but if time or resources are limited, then a review of the literature and a consideration of the theoretical issues will suffice. Discussion with an expert panel would also be beneficial. It is important to get a clear understanding of the issues relevant to this population and whether they would be captured with the original questionnaire. When translating to a different language, it is important to ensure that the words mean the same thing, that the items are applicable in that context and that the items do not contain any idioms which would not translate well. For example, references to cottage cheese were replaced with a low-fat Portuguese cheese in a modification of a food questionnaire to Portuguese (Ferro-Lebres, Moreira, & Ribeiro, 2014) and sports not relevant to Brazilian culture.
were removed from a quality of life scale in Brazilian children (La Scala, Naspitz, & Solé, 2005). Likewise, when modifying questionnaires for use in adolescents, references to professional or work life should be modified to reflect an academic and peer environment. Language also needs to be modified or simplified for an adolescent sample (Castelao et al., 2014).

Ideally, qualitative interviews with the target population would be carried out. For example, when modifying the IPQ-R for breast cancer survivors, we interviewed eighteen women and asked questions specifically relating to IPQ-R concepts, such as treatment control, coherence and emotional representations. We then analysed the transcripts using thematic analysis and identified key themes in the data on which to base modifications. We found that breast cancer survivors did not identify as currently having breast cancer and we therefore amended items that asked women about their breast cancer in the present tense. We also modified items to measure control over risk of recurrence as opposed to control over current illness as in the original questionnaire.

**Step two: Test the modifications in a think-aloud study**

Once you have finalised your modifications, you should test them in a think-aloud study. This helps to examine if the items are being understood and interpreted in the way in which you expected. It also shows if the items are relevant and applicable in your population. Think-aloud studies are usually conducted with a small sample, but some include up to 45 participants (Darker & French, 2009). They can be conducted face to face or over the telephone. Participants are asked to tell you everything they are thinking as they read the question and decide how to answer it (Ericsson & Simon, 1998). If the participant is silent for long periods of time, or if they answer the question without verbalising their thought process, you will need to prompt them to think-aloud again. The results of the think-aloud study are very important as they allow you to make changes to your questionnaire in order to increase the likelihood that it will be understood and interpreted correctly. For example, in the think-aloud study we conducted, we found that several women had difficulty understanding the instructions for some of the scales, and hence we amended these instructions. You may also find participants have difficulty with negatively worded or repetitive questions. Think-aloud studies also show if items are relevant. For example, the IPQ-R includes a question relating to work life, but our think-aloud study showed that some women were not working and would not be able to answer this question, so we amended it to work/social life.

**How do you test if the questionnaire is valid?**

After modifying a questionnaire, you should conduct psychometric testing to ensure the questionnaire is still valid and reliable. Even if you have only translated a questionnaire, or made minor modifications, it is still possible that it will not be valid or reliable in the new population.

**Step one: Factor analysis**

Depending on the extent of the revisions you have made, you should either conduct an exploratory factor analysis (EFA) or a confirmatory factor analysis (CFA). CFA is conducted when you want to test a hypothesised model, such as making sure that the original factor structure for the questionnaire is still a good fit for your modified questionnaire. Before you get to this stage, you can visually inspect a correlation matrix of your items. If the items do not correlate in the expected way then it may be more appropriate to conduct an EFA. CFA can be carried out using statistical packages such as Mplus, AMOS and Lisrel. To conduct the CFA, specify the hypothesised factor structure and then test the fit of this model. There are multiple indices available to assess model fit. Chi-squared is sensitive to sample size (Byrne, 2001) and therefore other indices
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are often preferred in larger samples. In our analysis, we used the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA). CFI and TLI values of greater than 0.95 suggest acceptable model fit (Hu & Bentler, 1999). RMSEA values of 0.08 indicate reasonable fit and values under 0.06 indicate good fit (Hu & Bentler, 1999). You can also review the individual factor loadings for items. Based on the results of the CFA, you may want to rerun the analysis with some items removed. A more thorough overview of CFA and fit indices can be found in Brown (2015) and Harrington (2009). Sample size guidelines for CFA vary from 10-20 participants per variable to at least 500 participants. The majority of studies use at least 200.

If you have made substantial changes to the questionnaire then it may be more appropriate to perform an EFA, where the factor structure is not pre-specified. The default option in SPSS is to perform a Principal Components Analysis (PCA), however, this method does not always yield the best results. For a commentary of these issues and recommendations for overcoming them see Basto and Pereira (2012), and Preacher and MacCallum (2003). The first step in EFA is to determine the number of factors to retain, which can be done using parallel analysis. Once the number of factors has been determined, extract these factors and review the factor loadings for each item. You may need to remove items at this stage, such as items which do not load onto any factors or items which cross-load on multiple factors. As with CFA, sample size recommendations for EFA vary significantly, with the majority of studies recommending at least ten participants per variable (Everitt, 1975; Floyd & Widaman, 1995). Step by step instructions on how to conduct an EFA using SPSS can be found in Courtney (2013).

**Step two: Internal Consistency**

Once the factor structure of the questionnaire has been determined, you can check the internal consistency of the subscales. This assesses how well the set of items measure a particular concept. If a subscale has high internal consistency then all the items are measuring various aspects of the same concept. Internal consistency is usually assessed using Cronbach’s alpha, where a value of 0.90 is considered excellent consistency, 0.80 is considered good and 0.7 is acceptable (L’Insalata et al., 1997). Scales with low alpha can be improved by eliminating certain items. Cronbach’s alpha of 1.0 indicates that there is very high correlation between your items. This means you may have redundancy in the scale, as some items may be measuring the exact same aspects of the construct.

**Step three: Test retest reliability**

Test-retest reliability is conducted to examine if a questionnaire is stable over time. The duration between the two time points will depend on the nature of the construct you are measuring. The correlation coefficient between the two sets of responses should not be less than 0.70 (Paiva et al., 2014). The minimum sample size for test-retest reliability is usually 20–30 participants.

**Step four: Construct validity**

Construct validity refers to the extent to which a test measures the construct it is intending to measure. It is usually assessed by examining correlations between the new measure and other measures which may be theoretically related to this measure. Convergent validity is assessed by correlating the new measure with an established measure of the construct. For example, a new intelligence test may be compared against the Wechsler Adult Intelligence Scale, and if there is a strong relationship between the two then they are assumed to be measuring the same construct. Divergent validity, on the other hand, can be measured by showing that your measure is different from another construct. For example, researchers might want to prove that their quality of life scale is not simply measuring distress. They can do this by showing that the new quality of life scale does not highly correlate with a distress
scale. Researchers also assess construct validity by examining if the dimensions of a scale correlate in the expected way. The correlations we conducted between IPQ-R dimensions were consistent with theory and with previous research, suggesting that the modified dimensions showed construct validity. For example, illness consequences correlated with emotional representations and treatment control beliefs, which is consistent with the underlying theory. Another measure of validity is predictive validity, where the new construct should be able to predict an outcome, such as beliefs around illness consequences or treatment control predicting medication adherence.

Conclusions
Modifying a questionnaire is often an essential part of research, in order to ensure that previously validated questionnaires will be relevant for specific populations or cultures. This article summarises the steps we took to modify a questionnaire as part of my PhD, and aims to provide a starting point for other researchers who wish to modify a pre-validated

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Hints and tips:

Seeing through (and making the most) of your first year of a PhD

Sarah Jenkins

Applying for the PhD, succeeding at interview, securing your place, receiving the introductory pack- it all seems to happen quickly, right up until you step into the university building and the realisation of the challenge ahead dawns on you! In this article, I outline some of the advice I would have given myself during the ups and downs of life as a first year PhD student.

Tip number 1: Set yourself goals
You’re sat at your desk, you’ve got your computer set up and everyone else in the office is beavering away quietly working. What on earth do you start on? It helps to set goals, be they daily, weekly or monthly- whatever works for you. A PhD is often a long road with few ‘official’ milestones to keep you on track (in contrast to a job, where if you don’t keep up, someone will usually step in or give you the sack). Having goals will make you accountable to yourself, helping you keep track of your progress so those days don’t just keep disappearing into each other.

Tip number 2: Know thyself
At this point in your academic career (and life for that matter), you’ve got to know yourself fairly well. You know when, where and how you work best, so organise yourself to make sure you have a routine that works for you. If you know you get easily distracted, disconnect your internet connection, install a ‘net nanny’, turn off your emails, keep a pad of paper next to you to write everything which popped into your head when you started work, or set a timer to do short bursts of work and reward yourself. If you know you work best to a plan, write yourself a list of what you want to achieve and set deadlines. Think about yourself; you will accomplish much more if you play to your strengths.

Tip number 3: Get involved
Pay attention to what is going on around you (including those emails about events which pop up so incessantly in your inbox). Seminars and talks offer you the opportunity to meet visiting speakers from across the world. Don’t limit yourself to just those within your department, there’s a whole host of topics that universities hold events on and as well as being interesting, it may just kick start an idea about your own research. It also provides a welcome break from what you’re working on, without the guilt of feeling that you are not doing enough ‘academic stuff’.

Tip number 4: Write write write!
We all know the rather large word limit waiting for us at the end of the programme. It is easy to keep putting off writing for another day, but writing regularly not only gets you used to the process, but can also help clarify your ideas. Furthermore, writing even when you don’t need to is also a really good way to help you keep track of what you’ve read. We have all fallen into the trap of thinking we will remember that all important statistic or quote, but as time passes, we just can’t locate where we found it. Having documents to refer back to not only saves you from forgetting information, but it can also be a comfort to come back to, especially if you’ve hit a wall. It’s important to remember that what you write doesn’t have to be perfect – the most important thing is getting going, after all, you can’t edit nothing.
Tip number 5: Be social and make time for fun
Whilst being left to your own devices to lead your own research is liberating, it can sometimes be a solitary experience, especially if not many others are doing similar work to your own. Get to know your colleagues, have fun with them and make time to take breaks. Having a life outside of your research is key- find something you enjoy doing- whether it be sport, music or cooking and find time for it! Stay in touch with your friends- they will be the ones you want to celebrate with when all is well and keep you going when it's not.

Tip number 6: It’s OK to not know everything
It can be easy to compare yourself to others at the start of a PhD – others who seem to know what they are doing, or further ahead than you, but it’s not a competition. The more you read, the more you realise there is to know and learn, which can be daunting. It is important to remember that there is a reason that you are doing a PhD – you are still very much on a learning journey. Take heed of this when you get your first bit of work back from your supervisor, complete with lots of edits. This feedback is not a criticism, but a basis for improvement- listen to it and incorporate it in your work. Don’t be afraid to ask your supervisor questions if you aren’t clear or don’t know how to do some-thing – they are there to help you and won’t think any less of you. Your PhD is very much a process of learning to be an academic- you’re not expected to know it all!

Tip number 7: Keep going
There will be times that you hit a bit of a lull, and question your motivations for doing a PhD. With the majority of the hard work still looming ahead of you, it can feel daunting. However, it is worth considering the age-old question of ‘how do you eat an elephant?’ The answer is with a knife and fork, bit by bit. The key is to show up and keep going, even when you’re discouraged- you don’t need to be perfect, but it is important to keep moving forward and making progress.

Tip number 8: Enjoy it!
A PhD offers many opportunities, from meeting interesting people to travelling around the world for conferences. Furthermore, few jobs will ever allow you the freedom, flexibility and time to pursue a subject that you feel passionately about. Your PhD will fly by, so enjoy the opportunities it has to offer now!

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Conference review:

BPS Annual Conference 2016 Review

Karim Mitha

I had the privilege of being awarded a BPS Postgraduate Bursary to attend the BPS Annual Conference in Nottingham in April 26-28 2016. For me, this was a wonderful opportunity to not only present some of my work related to mental health and stigma in Muslim diasporic communities, but also to get a sense of the cross-section of research being conducted across the various psychological disciplines. I was amazed by the wide variety of topics, panels, and attendees from all over the UK, and, indeed, from different corners of the world! The conference, spanning three days, was a whirlwind of activity including plenary lectures, breakout sessions with multiple talks straddling different themes in psychology, as well as a signing ceremony of a new memorandum of understanding between the BPS and its New Zealand counterpart!

As a cultural psychologist, I was quite intrigued by the wide range of cross-cultural issues being considered – including work examining psychological wellbeing in the United Arab Emirates, working to identify students with learning disabilities in Saudi Arabia, the role of religiosity in student perceptions to casual sex in the UK, and challenges of de-stigmatising mental health issues in central Asian countries such as Belarus and Kazakhstan. This speaks to the truly international and cross-cultural applicability of psychologists, and shows it spans a wide variety of domains. What I found particularly interesting was the panel of addressing spiritual and religious needs and how some sense of spirituality played an instrumental role in psychological wellbeing, selfhood, identity, and development of compassion and altruism. The presentations in this theme from researchers at Leeds Beckett and Nottingham Trent universities used interpretive phenomenological analysis to examine respondents from a variety of religious backgrounds and how notions of spirituality and awakening were seen in populations wide ranging from users of Alcohol Anonymous to ‘reverts’ to Islam. The inclusion of this religion and spirituality theme in psychology shows that there is a valid consideration of psychology in religion and vice versa, which can run contrary to often extant assumptions of the disciplines being irreconcilable.

The plenary lectures were quite interesting and relevant. What I was struck by was just how GPs have been demonstrating regarding the imposition of the new junior doctor contract and how, despite deep intrinsic motivation, they have concerns about their working environment affecting their health, this, too, was echoed by those working in mental health and caring professions. The first plenary lecture by Professor Gail Kinman discussed how psychologists have a high sense of self accomplishment, but also a large degree of burnout. This has implications for their own sense of resilience and how coping strategies such as emotional dissonance and presentee-ism may actually lead to a sense of de-motivation and high attrition post-training. The plenary lecture by Dame Vicki Bruce on facial recognition was eye-opening in just how prevalent face fallacy is – and the fact that those at the passport office are no better than undergraduate students at facial recognition! Whilst this may an interesting tidbit to recall the next time one is held up at UKVI or the Home Office, Dame Vicki Bruce’s lecture also pointed out more serious consequences this can have in terms of identifying people for judicial and legal purposes. However, there was hope in that she noted there was a difference.
between resemblance and identity and that new composite software are getting better at compiling a more accurate image of facial recognition.

The conference also enabled awareness of new research methods in psychology, including cyberpsychological tools – showcasing how psychology continues to be applicable and adaptable to modern technologies. For instance, a presentation on examining Autism Spectrum disorders post age 50 discussed how multiple modes of interaction were used with respondents, including telephone/in-person/e-mail interviews. There was also discussions on how technology could aid in recovery of depression and anxiety through Computerised CBT and internet-based therapy sessions, which were said to be more effective, less time intensive, and helped to reduce stigma.

One of the opportunities the BPS conference enabled was emerging scholars to mix and mingle with well-established ones. I particularly remember one poster presented by Rachael Worrell from the University of Bedfordshire whose poster on how women’s clothing choice impacted other’s perceptions of their intelligence generated quite a flurry of interest! For me, personally, the highlight was being able to meet and speak with eminent scholars such as Professors Paul A. Singh Ghuman and Martyn Barrett. These two scholars, primarily in education and social psychology, have worked significantly in examining issues of race, identity, and multiculturalism. Hearing Professor Ghuman recount his own life story whilst receiving the Award for Promoting Equality of Opportunity and learning first-hand what motivated him to pursue studying inequalities and ethnic minorities in Australia and the UK was inspirational, particularly when he narrated how he effectively countered the argument of racialist individuals when discussing ethnic inequalities. His experiences and work has great relevance today, particularly when faced with discourse regarding UKIP, Brexit, and immigration. Indeed, the poster by Rachael Booth regarding accusations of racism by UKIP in the 2015 General election showed how discourse regarding racism can be crafted and moulded to suit political purposes.

Finally, the conference also addressed the topic of aging. What was striking was that many speakers in the themed panels discussed issues in older individuals that one would intrinsically associate with younger people including issues of body image, eating disorders, sports, sexuality, the ‘peter pan syndrome’, and gendered dynamics of masculinity and femininity. This shows there is still quite some work to do in de-stigmatising mental health conditions across the board and the life-span, and, as the panel on political psychology indicated, the fact that the former Norwegian Prime Minister, Kjell Magne Bondevik, has been the only political leader to talk openly about his mental health shows that there is still work to do in this area, and the importance that we, as psychologists, and the BPS itself have to promote and disseminate our work.

I look forward to the next annual conference in Brighton in 2017!

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Conference review:

Consortium of European Research on Emotion 2016

Eglantine Julle-Daniere

This year’s Consortium of European Research on Emotion Conference (CERE) took place in The Netherlands, in the oldest university of the country – Leiden University (www.cere-emotionconferences.org/). The venue was the main building of the Psychology department, modern, brightly lit by bay windows and livened up by a small waterfall and climbing plants. Prior to the conference itself, Dr Mariska Kret organised a PhD workshop ‘Connecting minds and sharing emotions through wires and neurons in man and animal’. I am a first year PhD student and my abstract was selected for an open paper to present at CERE 2016. I was also invited along with my supervisor to attend the workshop as assistant speaker. In this review, I will share my experience and some (useful?) tips to survive the stress of conferences.

By organising this small workshop where 25 PhD students, postdocs and researchers were present, Dr Mariska Kret wanted to create a discussion on emotions, focussing on the functional and evolutionary approaches, and looking at emotion expression as an adaptation to social living. Throughout the course of the day, experts in primatology (Dr Mariska Kret), psychology (Dr Bridget Waller), robotics (Dr Lola Camanero, Dr Maarten Lamers) and social neuroscience (Professor Simone Shamay-Tsoory) gave presentations on emotion and social interaction from their differing perspectives. The goal was to allow attendees to see their own subject within a bigger, broader picture. When we start a PhD course, we tend to focus on our subject from a very specific perspective; this workshop put things back into perspective, highlighting the fact that the same question can be answered using very different techniques. For a detailed summary of the day, see: www.mariskakret.com/news/summary-of-masterclass-connecting-minds-and-sharing-emotions-through-wires-and-neurons-in-man-and-animal.

I had the chance to attend this workshop as an assistant speaker. I study facial expressions, mostly in humans for my PhD, but have also studied the expressions of different animals from an evolutionary perspective. My supervisor, Dr Bridget Waller, was invited to give a talk on the evolution of facial expressions. After presenting ChimpFACS (www.chimpfacs.com), we organised a hands-on session where attendees could practice the coding of facial movements in chimpanzees using this anatomically-based tool. This workshop was also a chance for me to do some scouting for the next day conference.

The first day of the conference started (after the usual coffee reception) with a word of welcome from Professor Wilko van Dijk, a researcher at Leiden University and organiser of this year’s CERE. Professor van Leiden University campus
Dijk then handed over to Professor Roger Giner-Sorolla, who presented an overview of his work on social emotions and their role in social interactions. He focussed on the difference between anger, disgust, shame and guilt, highlighting the important social value (what is your place in society? What is appropriate for you to express) of those social, moral emotions. Throughout the course of the conference, three more keynote speakers presented their work. Professor Giselinde Kuipers talked about humour-style and how humour is the cornerstone of our social sense of belonging. Professor Kuipers showed how different cultures present different sense of humour that would connect people within a cultural group. On the second day of the conference, Professor Carolien Rieffe presented the different faces of empathy through her work with children. Her research focuses on the use of emotion regulation skills during childhood in typical and atypical development (e.g. autism, deafness).

After Professor Giner-Sorolla’s presentation and a coffee break, attendees were invited to attend one of the five parallel sessions running in the morning. My presentation was scheduled in this time slot and as I was (let’s admit it) quite stressed, I decided to go directly to the room where it would all happen. I was not scheduled until after the break but I wanted to check the room, the equipment, and view other presentations in the room before my turn to present. This first paper session entitled ‘Trust, guilt, and embarrassment’ hosted five presentations. Being totally honest, I could not give a detailed summary of the first three presentations as I was too focussed on my own nerves, but they all focussed on related topics: the correlation between the level of trust in others and your own level of happiness; the impact of knowledge in opinion formation; the relation between social context and self-punishment in guilt alleviation. By break time, I could barely sit still. It was time for my presentation, I was as ready as I could be and there was no escape possible. I was standing in front of those 20-something people, I took a deep breath, and I started talking. I talked about my preliminary results regarding facial expressions of guilt across cultures. After a 13-minute talk, 10 minutes of questions followed. There were questions about emotions, about the difference between primary and secondary emotions, about my opinion. It was a discussion. At the end, I felt relieved.

Following what I thought was a well-deserved lunch break, during which I got to socialise with other presenters, PhD students and researchers, I went to one of the four parallel sessions of the afternoon: a symposium on nonverbal vocalisations of emotions, organised by Dr Disa Sauter from the University of Amsterdam. Five researchers successively presented recent findings on emotional sounds, across situations, species and ages. After Professor Kuipers’ keynote address, the day ended with a poster session where 23 different studies were presented. The poster session was not only a chance to learn more about emotion and eye-tracking, mind-reading ability, compassion, and many other topics, but also (and maybe mainly) a chance to socialise with other attendees. Poster sessions are an opportunity to ask further questions regarding a specific presentation on a more informal level, or share experience with fellow PhD students. Poster and drinks/coffee sessions at a conference are about talking research in a less formal setting, but it is also about creating bonds with people in your field.

The second day opened with Professor Rieffe’s keynote presentation and was followed by five parallel sessions. I choose to attend another symposium on ‘Contextual influences on social effects of emotion’, organised by Marc Heerdink and Xia Fang from the University of Amsterdam. Five really interesting presentations were offered during this symposium, looking at the impact of social context (presented by Prof. Ursula Hess), cultural background and the role of expression of emotion on the interpretation and perception of facial expressions. After this session came lunch, where I met
one of the presenters, Xia Fang (University of Amsterdam), also working on facial expression across cultures and we had a long chat about the Facial Action Coding System (FACS), dynamic versus static stimuli and how to code facial movements. It was a really interesting and really nice discussion.

The first half of the afternoon was divided into five parallel sessions. A fellow student from the University of Portsmouth was also attending the conference. He supported me during my presentation and so I returned the favour and attended his session, which focused on emotional expressions and emotion processing. I learned about gaze direction according to different emotions, the facial thermography of criers, and emotion processing in humans and chimpanzees (among other things). The second half of the afternoon was divided into six parallel sessions; I attended a paper session on facial expressions where we talked about cultural orientation salience, the interaction between language and mimicry on emotional expression categorisation, and the difference between affectional and semantic valence.

After this last round of presentations, the conference came to an end, and what better way to do so than with a conference dinner? If the thought of finding yourself surrounded by famous researchers and people who all know each other seems scary, fear not! You will always find yourself involved, even by just listening, in discussions and you get to learn more about a researcher’s own research, different research systems and cultures and you can create durable bonds that could lead to future collaborations.

CERE 2016 included three keynotes, nine symposia, 16 open paper sessions, and a poster session over two exciting days. The event was very well organised, vibrant, and highly stimulating. If some questions were challenging, every discussion happened in a curious, interested manner. Over 200 people attended the conference but paper sessions were quite intimate, allowing a very supportive atmosphere. It was really impressive and a great opportunity to present my work to my peers and to walk among giants in the field. I came back more convinced than ever about the importance of reading papers outside your specific field of research; I work in non-verbal communication of emotion across cultures, which means that I need to know more about display rules, emotional definition in different cultures and the impact of social relationships on emotion.

Presenting findings to your peers is such an important step in postgraduate development, the benefits far outweigh the stress and anxiety prior to any presentation. The feeling you have when you realise your research provokes interest is worth it. I look forward to CERE 2018, and I also hope to be able to attend the International Society for Research on Emotion (ISRE) conference in 2017.

Acknowledgments
I would like to thank the University of Portsmouth, for allocating research funds to all PhD students, and PsyPAG, for awarding me an International Conference Bursary. Thanks to both organisations, my attendance fees to this conference were supported.

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Conference review:

Social Psychology Section Annual Conference 2016

Becky Louise Scott

The theme of this year’s Social Psychology Section Annual Conference was ‘Reclaiming Social Psychology: Interdisciplinary Dialogues’. From the outset, the conference addressed some of the most pressing issues that are faced by social psychologists from all backgrounds, including the potential for social change offered by working across disciplines, as well as a rallying cry for social psychology to be taken seriously, particularly where it’s human and social elements are concerned. These issues are simultaneously conflated with the current educational and political backdrop in which disciplines compete for publication and impact factor, and as such were strong themes throughout the conference.

This year’s Social Psychology Section Annual Conference took place over a three-day period in Cardiff, Wales at the Mercure Holland House Hotel. Having been elected to the role of PsyPAG Social Psychology Section representative shortly after having my abstract accepted for a poster, I was quite excited to have the opportunity to get to grips with my new role and responsibilities within such a stimulating context and beautiful city.

The Social Psychology Section provides a great opportunity for academics, practitioners and students to disseminate research from a variety of backgrounds, disciplines and settings. The Social Psychology Section also aims to facilitate contact between, and represent the interests of social psychologists, whilst also encouraging a strong and distinctive voice for social psychologists. Therefore, this year’s theme ‘Reclaiming Social Psychology: Interdisciplinary dialogues’ did much justice to the ethos of the Social Psychology Section, whilst also addressing some of the challenges, both present and future, which are currently being faced by those within the field. One of the most eminent examples of this was when a passing remark about the Research Excellence Framework (REF) prompted a lengthy series of questions and concerns, despite the REF not being the concern of the talk in question!

This rallying cry for social psychology to be taken seriously was echoed by the four fascinating keynote speeches during the conference. Most importantly, in raising these issues, material solutions were offered by the speakers who felt passionately about the space that social psychology takes up within the wider academic and political context. In the opening keynote speech, Professor Clifford Stott explored the capacity for crowd research to reclaim relevance for social psychology through opening up an inter-disciplinary dialogue, which allows for a real social and political impact. This notion was echoed by Professor Steven Brown who, in discussing the social psychology of mediated experience, noted that social psychology is both interdisciplinary and diverse. Professor Rebecca Lawthom’s keynote speech ‘reclaiming and being human in slow interdisciplinary spaces of community and disability’ also identified the potential contribution of interdisciplinary dialogues in working together to promote social justice, and ‘reclaiming human’. reclaiming ‘human’ suggests that rather than focusing on the division between ‘ability’ and ‘disability’, we should focus on the notion of vulnerability as a shared
common trait that makes us all human, and use this as the stepping stone for political and social activism. To close the conference, Professor Paul Stenner explored ‘social psychology as a liminal field’ and discussed the contributions that liminality may offer social psychology.

With the concept of ‘interdisciplinary dialogues’ in mind, the conference covered a varied range of topics, including citizenship, social influence, power, religion and sexting, using a diverse range of methods. With over 100 talks and over 30 posters, I could continue to discuss how interesting each individual submission was until I run out of space. However, I do feel that the Naturism symposium deserves special mention due to their ability to break down preconceptions and misunderstandings about what it means to be a naturist. I attended the symposium with the intention of trying to understand something I knew very little about, and left the symposium with more understanding than I could have ever anticipated. I was particularly impressed by the clothing optional status of the symposium and felt some pride to be part of a social psychology that promotes inclusivity whilst pushing the boundaries in academia.

Social events included a wine reception at Mercure Holland House, with the opportunity to explore Cardiff afterwards, and the Gala Evening, again at Mercure Holland House, featuring a three-course meal, wine, and music. As the Social Psychology Section conference is one of the larger conferences I have attended thus far, it was refreshing to be able to avoid the anxiety of navigating an unfamiliar city. Though the fact that the hotel itself was beautiful likely helped!

One of my favourite features of the conference was the poster snapshot session. Before attending the Social Psychology Section conference, I had grown somewhat despondent with poster presentations as I often felt they were an afterthought and lacked parity with oral presentations (despite the amount of effort, time, and sometimes frustration that goes into creating one). The snapshot session took place over around a 30-minute period, during which each presenter enters the stage, stands beside their pre-prepared slide, and is required to say three to five interesting things about themselves and their poster within 60 seconds. The session itself was well-organised and ran smoothly, which I feel helped presenters manage the daunting task of summing up, for example, an entire PhD in a few sentences.

In between the snapshot session and the poster exhibition was lunch – which was quite useful as it gave delegates an opportunity to revitalise! I presented the first half of my PhD research here which explores how people with mental health difficulties are represented in British newspaper media in regard to claiming benefits. When I first began to plan my presentation, I found it to be a daunting task as I was typically used to planning to speak for around twenty minutes, though I found that it went surprisingly well and I was able to communicate my ideas effectively within the time constraint. The snapshot session provided a good experience in terms of disseminating my ideas as it reflects how a PhD student would briefly discuss their research with colleagues or other students in normal conversation, allowing researchers to consolidate and summarise theoretical ideas, arguments and some brief conclusions. Although transporting an A0 poster to Cardiff on the train was a bit of a struggle, it was definitely worth it!

Overall, Cardiff provided a fantastic location for an equally fantastic conference. After having had done so much writing about resistance during my own PhD studies, there was something refreshing about seeing this in action and to experience some unity with people who share some of the concerns I also have about the future of social psychology and academia, enough so that I returned home feeling tired, but also inspired. The conference was friendly and accommodating, whilst also providing some excellent networking opportunities between researchers of all stages and levels.
Dates for your Diary

26–28 July 2017
PsyPAG Annual Conference, Northumbria University, Newcastle

30 August–1 September 2017
Cognitive Section Annual Conference, Newcastle-upon-Tyne

31 August–1 September 2017
Social Psychology Section Annual Conference, Leicester

6–8 September 2017
Division of Health Psychology Annual Conference, Cardiff

6–8 September 2017
Psychobiology Section Annual Scientific Meeting, Windermere

7–9 September 2017
Consciousness and Experiential Psychology Section Annual Conference, Egham

13–15 September 2017
Developmental Section Annual Conference, Stratford-upon-Avon

26–27 September 2017
Faculty for Children, Young People and their Families Annual Conference, Reading

27–28 October 2017
Psychology of Education Section Annual Conference, Edinburgh

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

Psychology in the Pub events

Exeter
25 October – ‘Exeter Psychology in the Pub: Do men and boys need help from psychologists?’, Dr John Barry

Plymouth

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## PsyPAG Committee 2016/2017

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<th>Position</th>
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PsyPAG’s 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 onto. Elections are held at the PsyPAG Annual Conference each year.
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