

# The University of Edinburgh

## SCHOOL OF PHILOSOPHY, PSYCHOLOGY & LANGUAGE SCIENCES

### PSYCHOLOGY

## FINAL HONOURS PROJECTS 2011-12

## SUGGESTED TOPICS

### **Signing Up for Projects**

This list is designed to help you match your interests with a potential supervisor. You do not need to register your project formally until **Week 3 of the Autumn semester 2011/12**, but it is helpful to many students to have this list now, to enable them to talk to potential supervisors and agree on a project choice before the start of the next academic year. It is up to you to find a supervisor. Contact details of each supervisor are given here to allow you to email or arrange meetings.

**Students may work together in pairs on any project, and are encouraged to do so, but only in exceptional circumstances should this number be exceeded.** In recent years almost 40% of projects have been based on the student's own idea rather than a staff member. However, as with literature reviews, make sure you are choosing a topic which a staff member is willing to supervise. If the supervisor is outwith the department, e.g. a clinical or educational psychologist, then you must have a member of staff agreeing to act as internal supervisor when you register the project at the beginning of the Autumn Term.

Dr Alexa Morcom  
Psychology 4 Course Organiser  
From July 2011

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## **DR SHARON ABRAHAMS**

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Below are some suggested research topics for dissertation projects. I am willing to discuss other areas within my discipline of clinical neuropsychology with a particular focus on executive and memory functions and the effects of aging or neurodegenerative disease. The projects listed below investigate the effect of normal aging. Anyone wishing to undertake a patient group project would need to access this group (e.g. via voluntary centres) independently although I would be happy to supervise.

### **Speed of Processing and Dual Task in Aging**

The study will compare speed of processing and working memory theories of aging. A minimum of two groups of healthy adults will be tested an older and younger group. This study uses a newly developed task which measures both speed of processing using a computerised visual discrimination task combined with a dual task methodology of digit recall. The study aims to show differential effect of aging on dual task and speed of processing.

Kaschel R. Logie RH. Kazen M. Della Sala S. [Alzheimer's disease, but not ageing or depression, affects dual-tasking](#). Journal of Neurology. 256(11):1860-8, 2009 Nov.

Sarah E. MacPherson, Sergio Della Sala, Robert H. Logie and Gordon K. Wilcock. Specific AD impairment in concurrent performance of two memory tasks. Cortex (2007) Volume: 43, Issue: 7, Pages: 858-865

### **The effect of ageing on verbal fluency**

Verbal fluency is a standard measure used within clinical neuropsychology and is thought to be sensitive to frontal lobe lesions. The test involves generating as many words as possible beginning with a given letter. Adaptations of this task have been used in the investigation of neurodegenerative disease (Abrahams et al. 2000) which often occurs in older adults. Dissecting verbal fluency we find the test involves initiation, strategy formation, working memory, word retrieval. What is the contribution of each of these components to verbal fluency and which are most vulnerable to the effects of age? What is the effect of adding constraints onto the fluency task and how is this affected by age?

Abrahams S, Leigh PN, Harvey A, Vythelingum GN, Grise D, Goldstein LH. Verbal fluency and executive dysfunction in amyotrophic lateral sclerosis (ALS). Neuropsychologia 2000;38(6):734-747.

### **Social Cognition and Executive Functions in Aging**

This study will investigate the relationship between measures of social cognition and executive functions in healthy aging. The study will use a new measure of social cognition (social scenarios test) and other measures which assess the more fundamental processes of detection of eye gaze and emotional facial expression. The latter two have been used to measure dysfunction in neurodegenerative disease (Girardi et al. 2010). The study will determine what is the relationship between these measures and whether changes in social cognition are found in parallel with changes in executive functions.

Girardi, A., MacPherson, S. E, Abrahams, S. Deficits in Emotional and Social Cognition in Amyotrophic Lateral Sclerosis Neuropsychology. Neuropsychology 2011, Vol. 25, No. 1, 53–65

## **PROFESSOR TIM BATES**

Email: [tim.bates@ed.ac.uk](mailto:tim.bates@ed.ac.uk)

1. Raising Capability: Can we teach IQ, with lasting results for achievement?

In this project we will conduct research on whether training can raise IQ scores. Dweck and others have suggested that simple manipulations of expectation can make lasting differences. This contrasts with very expensive studies which appeared to fail in this task. Why?

Here's a gentle if somewhat dated introduction to this idea.

<http://www.stanfordalumni.org/news/magazine/2007/marapr/features/dweck.html>

A quick look on Google will show many very recent references to this same topic. If you find the idea engaging, get in touch.

2. Is living a good life hard work?

Since Aristotle, well-being research has been split between hedonic aspects (For instance Weiss, Bates, and Luciano 2008) and eudaimonic aspects (for instance Archontaki, Lewis and Bates, 2011). We will conduct experimental studies to test whether being good is hard: If there is some resource which underpins our ability to exert self-control, to grow, to exert agency over our lives, and to relate well with other people.

You might enjoy reading:

<http://www.heckmanequation.org/heckman-equation-slideshow>

## **PROFESSOR HOLLY BRANIGAN**

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### **1. Children's dialogue**

I am interested in how children produce and understand language in dialogue. I would be happy to supervise any projects in this area, but here are two projects of particular interest:

#### **Repetition of structure in children's dialogue**

Children often imitate or repeat the language they hear around them, and this is thought to play an important role in language acquisition. Recent work has shown that they sometimes repeat abstract grammatical structure, as well as particular words or phrases. This tendency towards grammatical repetition suggests that children have abstract representations of at least some aspects of grammar, in contrast to some theories of language acquisition. We have developed a dialogue 'game' that allows us to investigate children's grammatical repetition: an experimenter and a child take it in turns to describe cards to each other in a 'snap' game. The project will use this task to study the circumstances under which children repeat grammar.

#### **Reference**

Huttenlocher, J., Vasilyeva, M. & Shimpi, P. (2004). Syntactic priming in young children. *Journal of Memory and Language*, 50, 182-195.

#### **Learning to design for an audience**

Children are notoriously bad at designing their utterances so that they can easily be understood by a listener (a process called 'audience design'); for example, they often give insufficient information to identify an object because they assume that a listener has the same knowledge as themselves. This project will investigate whether children can learn to be better communicators by experiencing the consequences of poor versus good audience design at first hand, or through watching other people communicating successfully or unsuccessfully.

#### **Reference**

Brennan, S. E., & Clark, H. H. (1996). Conceptual pacts and lexical choice in conversation. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 22, pp.1482-1493.

### **2. Multi-party dialogues**

There has been a lot of research on how two people communicate in a dialogue. But there has been much less investigation of how larger numbers of people communicate. For example, how well do models of two-person dialogue capture what happens in a meeting with six people, or a tutorial with fifteen people? One possibility is that in larger groups, speakers are less concerned about how well their listeners understand them, and listeners are more willing to tolerate possible misunderstandings.

This project will use a referential communication task, in which participants try to describe objects to teach other, to look at how well people can communicate in conversations involving more than two people.

#### **Reference**

Clark, H. H., Schaefer, E.F. (1987) Dealing with overhearers. In H. Clark (ed.), *Arenas of language use*, University of Chicago Press, Chicago, pp.248-297.

### **DR MARTIN CORLEY**

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#### **1. Producing natural natural speech**

Natural speech is far from perfect: it's littered with disfluencies such as *um*, *uh*, and fumbled words. But what circumstances lead to the production of such disfluencies? If it's because we're finding things hard to say, what do we mean by "hard", and do different types of disfluency result from different types of difficulty? In this project, we'll use a task such as the Network Task (Oomen & Postma, 2001) to examine some of the circumstances in which disfluency in speech occurs.

#### **References**

Clark, H.H., & Fox Tree, J.E. (2002). Using *uh* and *um* in spontaneous speaking. *Cognition*, 84, 73-111.

Oomen, C.C.E., & Postma, A. (2001). Effects of time pressure on mechanisms of speech production and self-monitoring. *Journal of Psycholinguistic Research*, 30, 163-184.

#### **2. "Feeling of another's knowing"**

As speakers, we give out plenty of cues about how confident we are about what we're saying, including changes in pitch, disfluencies such as *um* or *uh*, and facial expressions. But how do these cues affect the people we're talking to? There is plenty of scope here for researching what makes speakers "trustworthy" or "believable", for example.

#### **References**

Brennan, S. E., & Williams, M. (1995). The feeling of another's knowing: prosody and filled pauses as cues to listeners about the metacognitive states of speakers. *Journal of Memory and Language*, 34, 383-398.

Swerts, M., & Kraemer, E. 2005. Audiovisual prosody and feeling of knowing. *Journal of Memory and Language*, 53, 81-94.

#### **3. Speech errors: What do they mean to the listener?**

About 6% of the speech we produce in conversation contains disfluencies, such a repeated part-words or words, or filled pauses such as *um* and *uh*. Although there is a commonly-held view that disfluencies are "noise" and make things harder for the listener, some researchers have argued that they're actually informative to listeners: they provide information about the speaker and the message they're trying to produce. If this is true then we should be able to investigate whether the *perception* of speech can be helped by disfluency. There are several possible experiments in this area, and new ideas are welcome!

#### **References**

Corley, M., MacGregor, L. J., & Donaldson, D. I. (2007). It's the way that you, er, say it: Hesitations in speech affect language comprehension. *Cognition*, 105, 658-668.

Fox Tree, J. E. (2001). Listeners' uses of *um* and *uh* in speech comprehension. *Memory and Cognition*, 29, 320-326.

#### **4. Eliciting slips of the tongue**

Baars, Motley, and MacKay (1975) demonstrated that after reading a series of word pairs beginning with, say, "t . . . p . . ." (e.g., **top post**, **team part**, . . .) participants could be induced to transpose the beginnings of a word pair they were asked to speak aloud (they might *see* **pre** **part**, but *say* **tree part**, as long as the result was two words). Baars et al. attribute this to problems with the *perception* of one's own speech, but it could equally be due to a *misproduction* of the input. There are any number of experiments to be done to tease these two positions apart.

## Reference

- Baars, B.J., Motley, M.T., & MacKay, D.G., (1975). Output editing for lexical status in artificially elicited slips of the tongue. *Journal of Verbal Learning and Verbal Behaviour*, 14, 382–391.
- Hartsuiker, R.J., Corley, M., & Martensen, H. (2005). The lexical bias effect is modulated by context, but the standard monitoring account doesn't fly: Related reply to Baars, Motley, and MacKay (1975). *Journal of Memory and Language*, 52, 58-70.

## DR JENNIFER FOLEY

Email: [jfoley@ed.ac.uk](mailto:jfoley@ed.ac.uk)

### 1. Socio-behavioural correlates of dual task impairment

A few studies have shown that those who demonstrate greater deficits in psychosocial functioning after brain injury also demonstrate greater difficulties performing two tasks at once, or 'dual tasking'. This relationship does not seem to be explained by more general factors such as level of cognitive impairment or severity of brain injury, suggesting that dual tasking may be mediated by the same cognitive mechanisms as socio-behavioural functioning. People with Alzheimer's disease are known to demonstrate difficulties dual tasking, but no studies have examined whether this relationship between dual tasking ability and socio-behavioural functioning also exists in this disorder. This project will investigate dual tasking and its relationship with socio-behavioural functioning in healthy and pathological ageing.

Baddeley, A., Della Sala, S., Papagno, C. & Spinnler, H. (1997). Dual-task performance in dysexecutive and nondysexecutive patients with a frontal lesion. *Neuropsychology*, 11, 187–194.

Foley, J.A., Cantagallo, A., Della Sala, S. & Logie, R.H. (2010). Dual task performance and post traumatic brain injury. *Brain Injury*, 24, 851 – 858.

Logie, R.H., Cocchini, G., Della Sala, S. & Baddeley, A.D. (2004). Is there a specific executive capacity for dual task coordination? Evidence from Alzheimer's disease. *Neuropsychology*, 18, 504 - 513.

### 2. Fractionating the central executive: Is dual tasking a separable executive function?

Our understanding of the executive system has moved away from its conceptualization as a unitary system towards assuming that there are several different executive functions. However, these functions remain poorly defined. This project will focus on exploring executive functioning in healthy cognition, in order to determine if there is evidence for the fractionation of the executive system.

Baddeley, A. (1996). Exploring the central executive. *The Quarterly Journal of Experimental Psychology*, 49, 5 – 28.

Miyake, A., Friedman, N.P., Emerson, M.J., Witzki, A.H., Howerter, A. & Wager, T. (2000). The unity and diversity of executive functions and their contributions to complex "frontal lobe" tasks: a latent variable analysis. *Cognitive Psychology*, 41, 49 -100.

Burgess, P.E. (1997). Theory and methodology in executive function research. In P. Rabbitt (Ed.), *Methodology of frontal and executive function*. Hove: Psychology Press.

## DR ELENA GHERRI

Email: [Elena.Gherri@ed.ac.uk](mailto:Elena.Gherri@ed.ac.uk)

### 1. The effects of gaze and covert attention on tactile processing

When we direct our gaze to one of our hands (even when vision of the hand is prevented), the processing of tactile stimuli presented to the gazed hand is enhanced (Forster & Eimer, 2005). The effect of gaze on tactile processing is very similar to the ERP modulations of tactile stimuli that are usually found when participants covertly attend one of their hands while maintaining their gaze on a

central fixation point. Furthermore, responses to tactile stimuli presented to the gazed hand are faster than those to the same tactile stimuli when presented to the other non gazed hand (c.f. Driver & Grossenbacher, 1996; Honoré, Bourdeaud'hui & Sparrow, 1989). The aim of this project is to systematically investigate the nature of this gaze effect and its links with covert tactile attention. Is the effect of gaze on tactile processing independent from endogenous attention? What happens when gaze and attention are simultaneously directed to different hands? To answer these questions we will directly compare RTs to tactile stimuli presented to one of the hands when 1) only gaze; 2) only attention; 3) both gaze and attention; 4) neither gaze nor attention; are directed to the stimulated hand.

### **References:**

- Driver, J., & Grossenbacher, P.J., 1996. Multimodal constraints on tactile selective attention. In T. Inui & J.L. McClelland (Eds.) *Attention and Performance XVI* (pp 209-235). Cambridge MA: MIT Press.
- Forster, B., & Eimer, M., 2005. Vision and gaze direction modulate tactile processing in somatosensory cortex: evidence from event-related brain potentials. *Experimental Brain Research*, 165: 8-18.
- Honoré, J., Bourdeaud'hui, M., & Sparrow, L., 1989. Reduction of cutaneous reaction time by direction eyes towards the source of stimulation. *Neuropsychologia*, 27, 367-371.

## **2. Perceptual load in a within-hand tactile flanker task**

In the tactile modality, the presence of tactile distractors can impair the detection and discrimination of tactile targets presented simultaneously (e.g. Evans & Craig, 1992; Soto-Faraco, Ronald, & Spence, 2004). In these studies, tactile stimuli (both target and distractors) were presented to both hands simultaneously. However, the mechanisms underlying within-hand and between-hand tactile selection might be different, given that a different pattern of tactile ERP modulations is obtained when the attentional selection is performed between the hands (c.f. Eimer & Forster, 2003a) or within the same hand (c.f. Eimer & Forster, 2003b). Aim of the present project is to investigate whether an analogous interference effect would emerge when target and distractors are presented to fingers of the same hand, establishing a within-hand tactile equivalent of the flanker task (Eriksen & Eriksen, 1974). Crucially, by manipulating the physical difference between the target and the distractors (high and low perceptual load conditions) it will be possible to evaluate whether the interference of incompatible distractors is reduced under high perceptual load condition, as postulated by the load theory of selective attention (Lavie, Hirst, de Fockert & Viding, 2004).

### **References:**

- Eimer, M. & Forster, B., 2003b. The spatial distribution of attentional selectivity in touch: Evidence from somatosensory ERP components *Clinical Neurophysiology*, 114, 1298-1306.
- Eimer, M., & Forster, B., 2003a. Modulations of early somatosensory ERP components by transient and sustained spatial attention. *Experimental Brain Research*, 151, 24-31.
- Eriksen, B. A., & Eriksen, C. W., 1974. Effects of noise letters upon the identification of a target letter in a nonsearch task. *Perception & Psychophysics*, 16, 143-149.
- Evans & Craig, 1992 Evans, P. M., & Craig, J. C., 1992. Response competition: A major source of interference in a tactile identification task. *Perception & Psychophysics*, 51, 199-206.
- Lavie, N., Hirst, A., Fockert, Jan W. de & Viding, E., 2004. Load Theory of Selective Attention and Cognitive Control. *Journal of Experimental Psychology General*, 133 (3), 339-354.
- Soto-Faraco, S., Ronald, A., & Spence, C., 2004. Tactile selective attention and body posture: Assessing the contribution of vision and proprioception. *Perception & Psychophysics*, 66, 1077-1094.

## **3. Conflict monitoring across sensory modalities**

The cognitive adaptation phenomenon can be observed in conflict tasks (Flanker task, Simon task, Stroop task) when the sequential analysis of trials is carried out (that is when the compatibility of both current and preceding trials are considered). Typically, the compatibility effect is reduced after the consecutive presentation of two incompatible trials (e.g. Gratton, Coles, and Donchin, 1992). According to the response conflict monitoring hypothesis (Botvinick, Braver, Barch, Carter, and Cohen, 2001), the response conflict in the preceding trial elicit a stronger top-down control that improve performance in subsequent trials. Aim of this project is to test whether the mechanisms

responsible for conflict monitoring operate in a supra-modal fashion, that is whether these conflict-adaptation effects will still be observed when stimuli of different sensory modalities are presented on successive trials.

#### **References:**

- Botvinick, M.M., Braver, T.S., Barch, D.M., Carter, C.S. & Cohen, J.D., 2001. Conflict monitoring and cognitive control. *Psychological Review*, 108, 624-652.
- Gratton, G., Coles, M.G.H. & Donchin, E., 1992. Optimizing the use of information: Strategic control of activation and responses. *Journal of Experimental Psychology:General*, 121, 480-506.

#### **4. Action-induced shifts of attention: the effect of learning**

A series of behavioural studies demonstrated that programming a pointing or reaching movement towards a location in space facilitate the processing of visual events presented close to that location (e.g. Deubel, Schneider & Paprotta, 1998). This occurred even though the visual targets were presented before the action was initiated, suggesting that shifts of spatial attention are triggered during covert movement preparation. These 'action-induced shifts of attention' appear to be modulated by top-down factors such as task instructions (Gherri, Van Velzen & Eimer, 2009). The aim of this project is to investigate whether other top-down factors such as learning of specific sensori-motor associations might influence these effects. Previous studies have demonstrated that a short training with incompatible S-R mappings (Tagliabue et al., 2000) can completely override the compatible S-R associations that characterize the automatic activation of a spatially corresponding responses in a Simon task. Can analogous 'incompatible' training modulate the action-induced shifts of attention observed during covert reaching movement preparation?

#### **References:**

- Deubel, H., Schneider, W.X., & Paprotta, I., 1998. Selective dorsal and ventral processing: evidence for a common attentional mechanisms in reaching and perception. *Visual Cognition*, 5, 81-107.
- Gherri, E., Van Velzen, J., & Eimer, M., 2009. The instructed context of a motor task modulates covert response preparation and shifts of spatial attention. *Psychophysiology*, 46, 655-667.
- Tagliabue, M., Zorzi, M., Umiltà, C., & Bassignani, F., 2000. The role of long-term-memory and short-term-memory links in the Simon effect. *J Exp Psychol Hum Percept Perform*, 26(2), 648-70.

#### **DR WENDY JOHNSON**

Email: [wjohnson@staffmail.ed.ac.uk](mailto:wjohnson@staffmail.ed.ac.uk)

I am prepared to supervise Final Honours projects investigating individual differences in intelligence, achievement, personality, and health developmental processes throughout the lifespan, particularly if they involve consideration of genetic and environmental influences Interested students should contact me to discuss project ideas and design. I can be especially helpful in suggesting methodology. For conceptual background reading, see:

#### **References**

- Johnson, W. (2007). Genetic and environmental influences on behavior: Capturing all the interplay. *Psychological Review*, 114, 423-440.

#### **DR PETER LAMONT**

Email: [peter.lamont@ed.ac.uk](mailto:peter.lamont@ed.ac.uk)

#### **Belief maintenance: a discursive approach**

Much research has been carried out into paranormal belief, most of which has depended upon questionnaires as measures of belief, despite the fact that psychologists have identified a number of problems with these measures. Meanwhile, little work has been done on how beliefs are maintained at a discursive level: how are they expressed and defended in the real world? This project would use discourse analysis to examine how beliefs are constructed and warranted.

References:

Wooffitt, R. (1997). Telling tales of the unexpected: the organization of factual discourse. Hemel Hempstead: Harvester Wheatsheaf.

Lamont, P. (2007). Paranormal belief and the avowal of prior skepticism. *Theory and Psychology*, 17(5), 681-96.

### **Explaining the unexplained: scepticism about the paranormal**

Psychologists have written a great deal about belief in the paranormal, yet very little has been written about disbelief. This, despite the fact that disbelief is arguably a minority position, and is problematic in a variety of ways. For example, people are often faced with evidence in favour of paranormal phenomena, yet do not have an alternative explanation. This project would use discourse analysis to identify how scepticism towards the paranormal is justified.

References:

Potter, J. (1997). *Representing reality: discourse, rhetoric and social construction*. London: Sage Publications

Lamont, P., Coelho, C., & McKinlay, A. (2009). Explaining the unexplained: justifying disbelief in the paranormal. *Discourse Studies*, 11(5), 543-559.

### **Framing extraordinary psychological feats**

From the earliest mind-readers, such as Washington Irving Bishop, to the current psychological illusionists, such as Derren Brown, various performers have framed their seemingly extraordinary abilities as psychological. In the process, they have convinced many people of abilities that contemporary psychologists would regard as contrary to scientific psychological knowledge. This project would use discourse analysis to examine how such abilities have been framed by performers, scientists and the public.

References:

Lamont, P. (2007). Discourse analysis as method in the history of psychology. *History and Philosophy of Psychology*, 9(2), 34-44.

Lamont, P. (2006). Magician as conjuror: a frame analysis of Victorian mediums. *Early Popular Visual Culture*, 4, 131-142.

### **Debunking and the Psychology of belief**

Since before the emergence of Psychology as a discipline, psychological scientists have been in the business of debunking (what we now call) psychic phenomena. In the process, they have warranted the need for a scientific Psychology, presented themselves as experts on such matters, and explained the beliefs of others according to their own beliefs. This project would use discourse analysis to examine what has been going on in the process of debunking.

References:

Coon, D. (1992). Testing the limits of sense and science: American experimental psychologists combat Spiritualism. *American Psychologist*, 47, 2, 143-151.

Lamont, P. (2010). Debunking and the psychology of error: a historical analysis of psychological matters. *Qualitative Research in Psychology*, 7(1), 34-44.

## **DR BILLY LEE**

*Email: [b.lee@ed.ac.uk](mailto:b.lee@ed.ac.uk)*

Below are some examples of dissertation topics. I am happy to discuss other projects to explore experience and behaviour using observational or phenomenological approaches. I am happy to discuss areas that may be unusual, different or less established. Possible areas include experiences of immigration, gender and sexuality, psychotherapy and counselling, and health, well-being and quality of life.

### **1. Exploring Lived Experience**

The aim of your project will be to explore and to understand a particular experience of your choosing. You will use IPA as a qualitative method to illuminate the phenomenology of your chosen experience. This method has been used to study health, sexuality, gender, identity etc. IPA is inductive, rather than hypothesis driven. It avoids prior assumptions and tries to get at the experience as it is lived by people and at the meanings they assign to their experiences.

Reid, K., Flowers, P., Larkin, M. (2005). "Exploring lived experience." *The Psychologist* 18 (1): 20-23.

## **2. Nonverbal Communication in Interpersonal Relationships**

This project investigates interpersonal communication via body posture, gesture, and facial expression. You will make video recordings of pairs or groups of people, partners, friends or strangers, interacting spontaneously or performing a task. The purpose of the project will be to devise ways of understanding and categorizing the behaviour observed. This analysis may be used as a basis for illuminating psychological processes such as attachment, emotional intelligence, or personality disorders.

Tucker, J. S. & Anders, S. L. (1998). Adult attachment style and nonverbal closeness in dating couples. *Journal of Nonverbal Behaviour*, 22, 109-124.

### **DR ALISON LENTON**

Email: [a.lenton@ed.ac.uk](mailto:a.lenton@ed.ac.uk)

#### **State Authenticity: Project 1**

Dr Alison Lenton (with Dr Letitia Slabu as secondary supervisor)

The majority of existing empirical research has explored authenticity (the ‘true self’ or ‘real self’) from a trait perspective, but far less is known regarding if and how people experience authenticity in specific situations (i.e., state authenticity). The present programme of research directly addresses this neglect. Specifically, we aim to investigate some of the factors that may contribute to the state of feeling authentic (i.e., feeling like the ‘real me’).

In this study, we will use experimental methods to isolate one of the factors that causes people to feel more or less authentic. For example, we might look at: (1) the role of psychological need satisfaction (or need deprivation) in the feeling of authenticity, **or** (2) the role that private or public self-consciousness plays in producing feelings of authenticity (or inauthenticity), **or** (3) the effects of ideal-self (or values-priming) on the sense of (in)authenticity. There are a number of directions we could take this project. The potential to increase one’s well-being as a function of authentic experiences has important theoretical and practical (clinical) implications. *Note: Students will be able to integrate their own interests when elaborating upon this project.*

#### References:

Goldman, B. M., & Kernis, M. H. (2002). The role of authenticity in healthy psychological functioning and subjective well-being. *Annals of the American Psychotherapy Association*, 5, 18-20.

[Retrieve: [http://a-s.clayton.edu/bgoldman/Research/2002\\_Authenticity\\_BGMK.pdf](http://a-s.clayton.edu/bgoldman/Research/2002_Authenticity_BGMK.pdf)]

Heppner, W. L., Kernis, M. H., Nezlek, J. B., Foster, J. D., Lakey, C. E., & Goldman, B. M. (2008). Within-person relationships between daily self-esteem, need satisfaction, and authenticity. *Psychological Science*, 19, 1140-1145.

[Retrieve: <http://www.joshuadfoster.com/heppneretal2008ps.pdf>]

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#### **State Authenticity: Projects 2 – 3**

Dr Letitia Slabu (with Dr Alison Lenton as secondary supervisor)

The majority of existing empirical research has explored authenticity (the ‘true self’ or ‘real self’) from a trait perspective, but far less is known regarding if and how people experience authenticity in specific situations (i.e., state authenticity). The present programme of research directly addresses this neglect. Specifically, we aim to investigate some of the factors that may contribute to the state of feeling authentic (i.e., feeling like the ‘real me’).

We envision two studies that will investigate the role of automatic versus controlled (or self-regulated) processes in producing the feeling of authenticity and its counterpart inauthenticity. For example, we might look at whether people feel especially “real” when they engage in familiar, well-learned

behaviours (i.e., habitual behaviours). Or we could look at how acts of self-regulation impact on feelings of authenticity. The potential to increase one's well-being as a function of authentic experiences has important theoretical and practical (clinical) implications. *Note: Students will be able to integrate their own interests when elaborating upon this project.*

#### References:

- Fleeson, W., & Wilt, J. (2010). The relevance of big-five trait content in behavior to subjective authenticity: Do high levels of within-person variability undermine or enable authenticity? *Journal of Personality*, 78, 1353-1382.  
[<http://personality-project.org/wilt/publications/authenticity.pdf>]
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74, 1252-1265.  
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## **PROFESSOR ROBERT LOGIE**

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### **1. Impact of the fMRI environment on cognitive function**

There has been a dramatic growth in the use of brain imaging techniques, such as fMRI to study the neuroanatomical correlates of human cognition. However, very little is known about how the physical environment of the fMRI scanner affects the cognition that is being studied, and whether the way in which participants perform cognitive tasks changes when they are tested within the scanner relative to a standard laboratory. Using a full size simulator of an fMRI scanner, this project will investigate the impact on the cognitive strategies of participants of the fMRI environment relative to testing in a standard behavioural laboratory setting.

#### **References**

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### **2. Visual imagery and visual perception. Do they overlap?**

Visual perception involves identifying and recognising objects in the environment, allowing us to interact successfully with the environment, but also to form mental images or representations of what has been perceived. Mental images also can be formed from memories of previous experiences, with no external stimulus input. There is a widely held view that the cognitive functions, and the neural networks involved in visual perception, largely overlap with those used for imagery. An alternative

view is that mental imagery involves a cognitive function that deals with the products of perception, but perception and imagery involve separate systems between which there is a flow of information. This project will assess experimentally the extent to which the processes of visual perception and of mental visual imagery might be more distinct than is generally assumed.

### References

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Saito, S., Logie, R.H., Morita, A. & Law, A. (2008). Visual and phonological similarity effects in verbal immediate serial recall: A test with kanji materials. *Journal of Memory and Language*, 59, 1-17.

Van der Meulen, M., Logie, R.H. & Della Sala, S. (2009). Selective interference with image retention and generation: Evidence for the workspace model. *Quarterly Journal of Experimental Psychology*, 62, 1568-1580. DOI: 10.1080/17470210802483800

### 3. Remembering to do things: Prospective Memory

Every memory function relies on remembering to carry out our intentions, whether it is to post a letter, meet a friend, turn up for a tutorial or take medicine. This ability is known as Prospective Memory. How we remember intentions at the appropriate time is not entirely understood, and it is known to decrease with age with laboratory tasks but not when tested in the home environment. This project would examine prospective memory in real and laboratory simulated prospective memory tasks, and could focus on healthy young adults, or compare different adult age groups.

Bailey, P.E, Henry, J.D., Rendell, P.G., Phillips, L.H., & Kliegel, M. (2010). Dismantling the “age–prospective memory paradox”: The classic laboratory paradigm simulated in a naturalistic setting. *Quarterly Journal of Experimental Psychology*.

Craik, F.I., & Bialystok, E. (2006). Planning and task management in older adults: cooking breakfast. *Memory & Cognition*, 34, 1236-1249.

Law, A., Logie, R.H. & Pearson, D.G. (2006). The impact of secondary tasks on multitasking in a virtual environment. *Acta Psychologica*, 122, 27-44.

Logie, R.H., Law, A.S., Trawley, S. & Nissan, J. (2010). Multitasking, working memory and remembering intentions. *Psychologica Belgica*, 50, 309-326.

*NB - This journal is not in the University Library. If students who are interested in this topic would like a copy of this paper, then please contact Professor Logie.*

Logie, R.H. & Maylor, E.A. (2009). An internet study of prospective memory across adulthood. *Psychology and Aging*, 24, 767–774

### 4. Doing two, or three or more things at once

Most people can walk and talk at the same time, but would have problems trying to hold a conversation while reading. One theoretical assumption (e.g. Barrouillet et al Cowan, 2005) is that we have available a single, general purpose attention system that is of limited capacity. According to this assumption, increasing the difficulty of a task should stretch this capacity to its limits and result in a breakdown in performance. Adding a second task should have an even greater effect on task performance. An alternative view (Baddeley & Logie, 1999; Logie & van der Meulen, 2009) is that we have different capacities available, and so if two tasks each use different cognitive abilities, then doing two tasks at once should be no more difficult than doing only one task at a time.

## References

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- Logie, R.H. & Duff, S.C. (2007). Separating processing from storage in working memory operation span. In N. Osaka, R.H. Logie, & M. D'Esposito (Eds.) *The cognitive neuroscience of working memory*. Oxford, UK: Oxford University Press, pp 119-135.

## DR GRAHAM MACKENZIE

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### 1. The caricature effect in face identification

Sketch artists caricature faces by enhancing distinctive features, whereas psychologists caricature faces by increasing the overall distance of their features with respect to the features of an average face. The *caricature effect* is a recognition advantage for caricatures over veridical faces, and it has been observed using line drawings (Benson & Perrett, 1994) and photographic stimuli (Lee, Byatt & Rhodes, 2000), although photographic stimuli have produced mixed results. In parallel research, it has been shown that averaging together multiple photographs of the same person creates a facial representation that is recognised more accurately than any individual photograph (Jenkins & Burton, 2008). This project will investigate the effects of caricaturing and/or averaging familiar faces on the access to identity representations stored in memory.

#### Reference:

- Benson, P.J., & Perrett, D.I. (1994). Visual processing of facial distinctiveness. *Perception*, 23, 75-93.
- Lee, K., Byatt, G., & Rhodes, G. (2000). Caricature effects, distinctiveness, and identification: Testing the face-space framework. *Psychological Science*, 11, 379-385.
- Jenkins, R., & Burton, A.M. (2008). 100% accuracy in automatic face recognition. *Science*, 319, 435.

### 2. Long-term memory for scenes

Our ability to remember details of visual stimuli is vast (Brady *et al.*, 2008) yet very little is known about the retrieval processes that support this ability. This project will investigate long-term memory for photographs of real-world scenes using recognition memory experiments such as the Remember/Know technique, which requires participants to introspect upon the quality of their memory, and allows inferences to be drawn about the contributions of different retrieval processes.

#### Reference:

- Brady, T.F., Konkle, T., Alvarez, G.A., & Oliva, A. (2008). Visual long-term memory has a massive storage capacity for object details. *Proceedings of the National Academy of Sciences*, 105, 14325-14329.
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## **DR MAGGIE MCGONIGLE**

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### **(1) Co-operative verbalization by children during problem-solving**

Surprisingly little research has been carried out since the 1970s on young children's explicit verbalizations during problem-solving, leaving unresolved the issue of how helpful they are to themselves and others. An undergraduate project (2010/2011) established that pre-schoolers were more likely to talk to themselves when an adult was present in the room, though this did not seem to improve task performance. The task developed for that project was a child-friendly computer-game and designed to elicit problem-relevant speech. This project would use the same task in an overtly communicative context to see if being encouraged to explicitly verbalise their problem-solving strategies to themselves and others helps them to perform the task.

Blank, M. (1975) Eliciting verbalization from young children in experimental tasks. *Child Development*, 46,1, 254-257

Schunk, D. (1986) Verbalization and children's self-regulated learning. *Contemporary Educational Psychology*, 11, 4, 347-369

Undergraduate theses by Smith, A. and Slater, H. In Psychology Library from July

### **(2) 'Safe Gap' estimation by young children**

Although it is known that children's velocity judgements improve during childhood, this has yet to be clearly tied in with the high levels of road-crossing accidents and children's judgements of a 'safe gap'. One reason is the lack of suitable methods for evaluating this with young children and possible confounds between motor and perceptual reaction times. This project would require ingenuity in designing a method of simulating moving objects and a child-friendly task of related perceptual judgement and reaction times.

te Velde, A.F., van der Kamp, J., Salvendy, G.J.P. (2008) Five to twelve year olds' control of movement velocity in a dynamic avoidance collision task. *British Journal of Developmental Psychology*, 26, 1, 33-50

Benguini, N., Broderick, M.P., Baures, R. and Amorim, M-A. (2008) Motion prediction and the velocity effect in children. *British Journal of Developmental Psychology*, 26, 389-407

## **DR ROB McINTOSH**

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In addition to the following suggestions, I am happy to discuss students' ideas for any projects related to motor behaviour, visual attention, or any of the ongoing projects in the Visuomotor Lab ([www.psy.ed.ac.uk/people/rmcintosh/VMLprojects.html](http://www.psy.ed.ac.uk/people/rmcintosh/VMLprojects.html)).

### **Mirror-writing in children**

Mirror-writing, the writing of letters or words in mirror-reversed form, can arise spontaneously after brain damage, is common amongst children learning to write, can arise spontaneously after brain damage, and is intentionally practiced by some rare individuals (Leonardo Da Vinci, Lewis Carroll). This intriguing phenomenon has received relatively little neuropsychological investigation. This project will investigate mirror-writing amongst children attending Uni-Tots nursery, within the Psychology Department, and investigate what factors influence the likelihood of mirror-writing, and whether it is associated with perceptual confusion of mirror-image forms. The experiments will be guided by a recently proposed hypothesis of mirror writing (Della Sala & Cubelli, 2007). This is part of a larger research programme going on in the visuomotor lab: you can watch a short BBC film about this research at: [http://www.psy.ed.ac.uk/people/rmcintosh/BBC\\_mirror\\_writing.wmv](http://www.psy.ed.ac.uk/people/rmcintosh/BBC_mirror_writing.wmv).

Della Sala S, Cubelli R (2007) 'Directional apraxia': A unitary account of mirror writing following brain injury or as found in normal young children. *Journal of Neuropsychology*, **1**: 3–26.

Schott GD (2007) Mirror writing: neurological reflections on an unusual phenomenon. *Journal of Neurology, Neurosurgery & Psychiatry*, **78**: 5–13.

intentionally practiced by some rare individuals (most famously, Leonardo Da Vinci).

### **Familiar size in action**

If people are familiar with the true size of an object, they can use this knowledge to estimate how far away that object is. We have found that people use this information when they reach out to grasp an object (McIntosh & Lashley, 2008). We showed this by having people grasp matchboxes repeatedly and then, on critical trials, replacing the standard matchbox with a scaled-down or scaled-up replica. When the scaled-down replica was presented, people assumed that the box was larger and further away than it really was, thus reaching too far and opening their hand too wide (opposite effects were seen for the scaled-up replica). A subsequent study suggested that people may use this cue only for objects (like matchboxes) that are familiar from everyday life, not novel ones that have just been learned about in the lab (Borchers et al, 2011). It would be interesting to test more directly whether people's daily experience does indeed predict their use of familiar size. For instance, we might predict that smokers would have a strong mental representation of the size of a 20-pack of cigarettes, and would reach too far if presented with a scaled-down replica, even without any laboratory learning; non-smokers should not do this because they would not be so familiar with the size of a 20-pack (this is just an example; you may have better ideas for what real-world objects we could use).

Borchers S, Christensen A, Ziegler L & Himmelbach, M. Visual action control does not rely on strangers — effects of pictorial cues under monocular and binocular vision. *Neuropsychologia* 49 (2011) 556–563

McIntosh RD & Lashley G (2008). Matching boxes: familiar size influences action programming. *Neuropsychologia* 46: 2441-2444.

### **Cognition in action**

Our moment-to-moment actions proceed mostly without much thought, but certain aspects seem to require more cognitive effort. Creem & Proffitt (2001) showed that, while distracted by a difficult mental task, people will do daft things like picking up spoons by their bowl-end rather than by their handle. At the same time, the execution of those actions remained very skilful. This suggests that deciding *how* to pick something up may take cognitive effort, but carrying out the action once the decision has been made is automatic. This project will extend this method to study the 'end-state-comfort' phenomenon, in which people choose actions that minimise postural awkwardness. We would predict that this kind of action selection, like tool grasping, should require cognitive involvement, resulting in poor choices of grasp posture under dual-task conditions, but that the quality of the grasp itself will not be similarly affected. Several other aspects of action selection and guidance could be investigated by similar means.

Creem SH, Proffitt DR (2001). Grasping Objects by Their Handles: A Necessary Interaction Between Cognition and Action. *Journal of Experimental Psychology: Human Perception and Performance*, **27**: 218-228.

Dijkerman HC, McIntosh RD, Schindler I, Nijboer TCW & Milner AD (2009). Choosing between alternative wrist postures: action planning needs perception. *Neuropsychologia* 47: 1476-1482.

### **DR ALEXA MORCOM**

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My main research interest is in memory: basic memory mechanisms, and how memory changes as we age. For more details see my website:

<http://www.cns.sbms.mvm.ed.ac.uk/people/academic/morcom.html>

I am happy to discuss the supervision of other potential projects related to my research, as well as those outlined below. Student input into the project topic is encouraged.

In both areas of interest, projects are possible examining how memory changes in ageing, or investigating the basic mechanisms of episodic memory in young adults. Ageing projects are more challenging because of the involvement of two groups. Basic mechanisms can be pilots for ageing studies, and are critical to build an understanding of the memory processes that may change in ageing. Good combinations are for 2 study partners to work together on 1 basic mechanisms project and 1 ageing project, or 2 related ageing projects, sharing data collection.

Please come and see me if you are interested in doing a project with me.

### **Episodic memory and episodic memory in ageing**

Conscious long-term memory for specific events is one of the abilities most affected by ageing. Older adult' episodic memory is characterised by problems remembering details, context, and associations between items (2-5). Events are less likely to be recollected, and a non-specific feeling of familiarity often dominates (2). Importantly, older people are prone not only to failing to remember unique events, but also to false memories, that is, mistakenly 'remembering' events that did not happen. We are investigating this using tests of memory for similar-appearing objects, tests of memory for words linked by meaning or by perceptual details, and tests of memory for unfamiliar faces.

General references

1. Eichenbaum H, Yonelinas AP, Ranganath C 2007. The medial temporal lobes and recognition memory. Annu Rev Neurosci. 2007. 30:123–52.
2. Luo L, Craik FIM. 2008. Aging and memory: a cognitive approach. Can J Psychiatry. 53(6):346-53.

Current themes include:

#### ***A. Ageing and false memory***

Why do older adults mistake new items for old ones? Is it due to difficulties with cognitive control, linked to frontal lobe damage? Or is it because of impairments in the encoding of detailed memories, linked to hippocampal damage? Some research supports the control theory: older adults are more prone to forming general or 'gist-based' memories, and may be more easily misled by semantic information (2). But other research also suggests that in older adults, the hippocampus is less able to 'pattern-separate', leading to difficulties in encoding distinct memories of different events (3). Work is ongoing investigating the contribution of these two factors and the critical role of meaning.

3. Koutstaal W. 2006. Flexible remembering. Psychon Bull Rev. 13(1):84-91.
4. Yassa MA, Lacy JW, Stark SM, Albert MS, Gallagher M, Stark CE. 2010. Pattern separation deficits associated with increased hippocampal CA3 and dentate gyrus activity in nondemented older adults. Hippocampus. [Epub ahead of print]

#### ***B. 'Environmental support' of older adults' memory***

I am also interested in how 'environmental support' for memory encoding can reduce older adults' recollection. Providing strategic support does not always reduce age-related impairments (2,5), but providing pre-existing meaningful links may help (5). The potential for support for older adults' memory has important practical implications, but also provides opportunities to evaluate the extent to which older adults' memory difficulties stem from problems with memory control. This project mainly involves associative memory tasks and comparing young and older adults.

5. Naveh-Benjamin M, Hussain Z, Guez J, Bar-On M. 2003. Adult age differences in episodic memory: further support for an associative-deficit hypothesis. J Exp Psychol Learn Mem Cogn. 29(5), 826-837

#### ***C. Retrieval search and strategy in ageing***

A little studied aspect of episodic memory is the search process – how do people constrain memory search when they are seeking particular information? Are such strategic processes impaired in ageing? Some evidence suggests that older adults do not process items for meaning when they are trying to remember items processed for meaning, whereas young people do – and this is helpful to memory (4).

The suggestion is that failure to engage a controlled search may explain the failure to recollect. Basic mechanisms of this need exploration in young adults, too.

6. Jacoby LL, Shimizu Y, Velanova K, Rhodes MG. 2005. Age differences in depth of retrieval: Memory for foils. *J Mem Lang*. 52:493-504.

### **Procedural memory and procedural memory in ageing**

Procedural learning and memory involves learning and expressing knowledge about regularities in the environment without necessarily having explicit (declarative) knowledge of what is learned. Recent neuroimaging studies have reawakened debate about whether these automatic aspects of learning change in ageing, and posed new questions about whether they are really independent in the young (7). But simple behavioural experiments can be very informative too.

#### **A. Learning in an uncertain world**

An alternative approach to assessing people's procedural learning of a fixed 'hidden' sequence is a more 'lifelike' probabilistic approach in which the dependencies of one event on another change over time. A recent fMRI study showed hippocampal is sensitive to variations in uncertainty about an 'implicit' pattern over task trials (7). A basic mechanisms project would replicate and extend (7) behaviourally to determine how uncertainty is linked to procedural learning in young adults. An ageing project would use the same paradigm to explore the novel question of how uncertainty and surprise interact in older adults. The task is a simple serial reaction time task. (For a student with good computational skills, the Bayesian approach to modelling learning (7) can be applied, and some code exists to do this, but it is not essential).

7. Harrison LM, Duggins A, Friston KJ. 2006. Encoding uncertainty in the hippocampus. *Neural Netw.*19(5):535-46.

#### **B. Does it help to 'try' to learn?**

Procedural learning is traditionally regarded as independent of declarative, including episodic, memory. However, some studies suggest that different memory 'systems' may sometimes interact and/or compete, particularly in older adults with reduced processing resources. The evidence so far is conflicting (6,7).

8. Howard DV, Howard JH Jr (2001) When it does hurt to try: adult age differences in the effects of instructions on implicit pattern learning. *Psychon Bull Rev.* 8:798-805.
9. Song S, Marks B, Howard JH, Howard DV. 2009. Evidence for parallel explicit and implicit sequence learning systems in older adults. *Behav Brain Res* 196:328-322.
10. Rieckmann A, Fischer H, Bäckman L. 2010. Activation in striatum and medial temporal lobe during sequence learning in younger and older adults: relations to performance. *Neuroimage*. 2010 Apr 15;50(3):1303-12.

#### **A note on neuroimaging**

Because of the complexity of the data and analysis involved, I do not usually supervise dissertation projects that use neuroimaging methods (fMRI/ ERPs). However, I will consider it on a case by case basis depending on funding and the student's expertise (an early start would be essential, as well as previous experience and/or a particular aptitude for data processing and analysis, and excellent computer skills).

### **DR ANTJE NUTHMANN**

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My research interests include perceptual, oculomotor and attentional control in scene perception and reading. Because human visual perception involves active information seeking via eye movements, I use eye tracking as my primary behavioural method. For more details, including demos, see [www.nuthmann.de/antje](http://www.nuthmann.de/antje).

The following list provides some project examples. As the proposed projects involve eye tracking, students will receive training and supervision on how to collect and analyse eye-tracking data.

### **1. Can semantic object information be extracted from parafoveal vision?**

Vision is best in the foveal region (2 degrees in the centre of vision), but some information can also be extracted from the parafoveal region (extending from the foveal region to about 5 degrees on either side of fixation). The project will investigate whether semantic information about objects is extracted from parafoveal vision. Participants will be viewing pairs of photographs of objects, taken from the [BOSS database](#). The second object will be either semantically related or unrelated to the first object (examples: strawberry - mango or strawberry - football). To vary the visibility of the second object when processing the first one, two spatial distances between objects will be tested (close vs. far). Will the viewing time on the first object, measured with the eye-tracking methodology, be modulated by these factors?

#### **Reference**

Malpass, D., & Meyer, A. S. (2010). The time course of name retrieval during multiple-object naming: Evidence from extrafoveal-on-foveal effects. *Journal of Experimental Psychology: Learning Memory and Cognition*, 36(2), 523-537.  
(But note that these authors tested object naming rather than object recognition.)

### **2. The contributions of foveal versus extrafoveal vision to visual search in real-world scenes: Evidence from eye movements**

Background: When we inspect a real-world scene, we are not able to see all of the objects or elements in the scene equally well. This is because of visual acuity limitations. The perception of detail is limited to the foveal region, i.e., a very narrow region of space around the current point of gaze.

Research question: What is more important when searching for an object in a real-world scene: foveal vision or extrafoveal vision? A gaze-contingent display change technique will be used to create a viewing experience where the subject will be searching scenes with moving “Blindspots” or “Spotlights”. The basic paradigm is already implemented, for demos see <http://www.nuthmann.de/antje/Site/scotoma.html>. Factors that can be manipulated in dissertation projects include the size, type, or shape of the Blindspot/ Spotlight, or the type of search objects.

#### **References**

Larson, A. M., & Loschky, L. C. (2009). [The contributions of central versus peripheral vision to scene gist recognition](#). *Journal of Vision*, 9(10):6, 1-16. (no eye tracking, no search, but great literature review)

Loschky, L. C., & McConkie, G. W. (2002). Investigating spatial vision and dynamic attentional selection using a gaze-contingent multiresolutional display. *Journal of Experimental Psychology: Applied*, 8(2), 99-117. (Spotlight manipulation only)

### **3. Gaze control during search in real-world scenes: How long do we look?**

When we look at a natural scene, the eyes move in a series of jerky jumps called *saccades*. Between saccades, the eyes come to rest for brief periods of time called *fixations*. It has been proposed that the durations of these fixations are under direct moment-to-moment control of the current visual scene input (e.g., Nuthmann et al., 2010). The project will investigate this assumption by using a fixation-contingent scene quality paradigm. During the experiment, the subject’s gaze behaviour is constantly monitored. We will know when the eyes land in a new fixation, and selected fixations will be subjected to experimental manipulations. Here, foveal and extrafoveal influences will be manipulated: When searching a given scene viewers will encounter a number of fixation-contingent “Blindspots” or “Spotlights” (see Project 2). The resulting effects on fixation durations will be examined.

#### **Reference**

Nuthmann, A., Smith, T. J., Engbert, R., & Henderson, J. M. (2010). CRISP: A computational model of fixation durations in scene viewing. *Psychological Review*, 117(2), 382-405.

## **DR LARS PENKE**

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### **Research interests**

Evolutionary significance of individual differences, especially of general intelligence, personality traits, and attractiveness; genetics; cognitive aging, especially in relation to the brain's white matter integrity; evolutionary psychology of human mate choice and mating behaviour.

### **Projects**

#### *Measuring facial and body symmetry in 3D*

The newly established Symmetry Lab allows us to quickly take 3D measures of participants' faces and bodies in great detail. A primary application is the measurement of fluctuating asymmetry, a putative indicator developmental stability that has for example been related to intelligence, physical and mental health, attractiveness and the mating domain. The setup can also be used to take other measures of body built that can be related for example to attractiveness, mating strategies, sex differences or social dominance. I can supervise students who want to work with me on projects in any of these or related domains.

#### References:

- Brown, W. M., Price, M. E., Kang, J., Pound, N., Zhao, Y., & Yu, H. (2008). Fluctuating asymmetry and preferences for sex-typical bodily characteristics. *Proceedings of the National Academy of Sciences USA*, *105*, 12938–12943.
- Gangestad, S. W., & Scheyd, G. J. (2005). The evolution of human physical attractiveness. *Annual Review of Anthropology*, *34*, 523-548.
- Penke, L., Bates, T. C., Gow, A. J., Pattie, A., Starr, J. M., Jones, B. C., Perrett, D. I., & Deary, I. J. (2009). Symmetric faces are a sign of successful cognitive aging. *Evolution and Human Behavior*, *30*, 429-437.
- Van Dongen, S., & Gangestad, S. W. (in press). Human fluctuating asymmetry in relation to health and quality: a meta-analysis. *Evolution and Human Behavior*.

## **PROFESSOR MARTIN PICKERING**

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### **1. Cross-linguistic structural priming and bilingualism**

Bilinguals might store their two languages separately. However, they might find it economical to share information where possible. Recent structural priming studies suggest that some grammatical information can be shared, at least when the two languages form a particular grammatical structure in a similar way (Hartsuiker et al., 2004). In this project, you would investigate this issue by testing structural priming between any pair of languages (with one normally being English). At least one student should have good knowledge of the languages to be studied, and you would also need access to 20-30 participants.

#### **Reference**

Hartsuiker, R. J., Pickering, M. J., & Velkamp, E. (2004). Is syntax separate or shared between languages? Cross-linguistic syntactic priming in Spanish/English bilinguals. *Psychological Science*, *15*, 409-414.

### **2. Exploring the shared Stroop effect**

When two people "share" certain tasks, their performance interferes with each other, in a way suggesting that they co-represent the task (Sebanz et al., 2003). Our pilot studies have shown similar effects in language, using a shared Stroop task. Two participants sit side-by-side and respond to different colours, and we show that their assumptions about each other's potential responses affects their own responses.

This project would apply this technique to explore the mechanisms underlying the social nature of language use.

## References

Sebanz, N., Knoblich, G., & Prinz, W. (2003). Representing others' actions: Just like one's own? *Cognition*, 88, B11–B21.

### 3. Language as joint action

To be successful at a joint activity (such as playing a duet or using a two-handed saw), both participants need to coordinate their behaviours.

Dialogue is a form of joint activity using language and interlocutors are remarkably good at it. We would investigate joint language use by "splitting" tasks between two participants. For example, one participant might describe the first part of an event (e.g., "the boy") and the other participant might complete it (e.g., "is kicking the ball"). By comparing joint and individual language use, we expect to determine the extent to which speakers represent what they think their partner is likely to say, and thus create a kind of "shared reality" for language use. For some background see:

Garrod, S., & Pickering, M.J. (2004). Why is conversation so easy? *Trends in Cognitive Sciences*, 8, 8-11.

### 4. Social manipulations of audience design

Speakers clearly produce their utterances with particular addressees in mind, for example using simpler language when addressing non-experts than experts in a particular domain (Isaacs & Clark, 1987). But can they be non-consciously primed to be more or less helpful? In this study we apply techniques from social psychology to this aspect of the psychology of language.

## References

Isaacs, E. A., & Clark, H. H. (1987). References in conversations between experts and novices. *Journal of Experimental Psychology: General*, 116, 26-37.

## DR RICHARD SHILLCOCK

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Projects in the area of reading, vision, cognitive modelling, language representation and processing. Students interested in carrying out a project in these areas should contact me to discuss the possibilities. Two specific suggestions involving a qualitative and quantitative exploration of two visual effects are described below:

#### 1. The "Plastic Effect"

The Plastic Effect concerns the reporting of enhanced perception of depth when a picture is viewed monocularly and with no good real cues to distance. It is a surprising phenomenon, with little research attaching to it. We will reproduce the plastic effect in the eye-tracking laboratory and record the movements of the eye when it is being experienced. We will test the hypothesis that quantitatively different eye-movements occur when the Plastic Effect is being experienced compared with when the same stimuli are framed so as not to induce the Plastic Effect. The student carrying out this project will learn how to work the eye-tracker (Eyelink 1000), how to help modify the apparatus to explore the effect in question, and how to interpret some of the rich data available from this paradigm.

Useful references

Vishwanath, D. & Hibbard, P. (2010). Quality in depth perception: the plastic effect. *Journal of Vision*, 10 no. 7 article 42.

Schlosberg, H. (1941). Stereoscopic depth from single pictures. *The American Journal of Psychology*, Vol. 54, No. 4.

#### 2. Micropsia

Micropsia is the experience that things look smaller than they actually are. It has numerous causes, but it can be induced by blurring the frame of a photographic scene, giving the appearance that the contents of the scene are a "scale model". We will induce micropsia with a series of pictures in the eye-tracking apparatus and record the movements of both eyes. We will test the hypothesis that

quantitatively different eye-movements occur when micropsia is being experienced compared with when the same stimuli are framed so as not to induce micropsia. The student carrying out this project will learn how to work the eye-tracker (Eyelink 1000), how to help modify the apparatus to explore the effect in question and how to interpret some of the rich data available from this paradigm.

Useful references

The following reference might be a starting-point for finding out about micropsia, but is not critical.

On, H., Muter, P., & Mitson, L. (1974). Size-distance paradox with accommodative micropsia. *Perception and Psychophysics*, 15, 301-307.

## **DR CAROLINE WATT**

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I will be supervising up to 4 students on two projects addressing the psychology of precognitive dream experiences. General topics are suggested below.

### **1. Selective recall**

Goal: To elucidate the role that memory plays in the interpretation of dreams as 'precognitive', in a replication and extension of the unpublished Madey (1993) study.

A small amount of research has focused on how memory biases may create the sense that one's dreams predict the future. One study presented students with a fake dream diary alongside a diary of significant events in the life of the supposed dreamer. The students were later asked to recall as many of the dreams as they could, and it was found that a greater proportion of 'confirmed' dreams was remembered compared to 'unconfirmed' dreams. (Madey, 1993, cited in Gilovich, 1997).

Gilovich, T. (1997). Some systematic biases of everyday judgement. *Skeptical Inquirer*, March/April, 31-35.

Madey, S. F., & Gilovich, T. (1993). Effect of temporal focus on the recall of expectancy-consistent and expectancy-inconsistent information. *Journal of Personality and Social Psychology*, 65, 458-468.

### **2. Propensity to find connections between unrelated events**

Goal: To identify whether those who believe in precognitive dreaming are more able to see correspondences between dreams and events than those who do not believe in precognitive dreaming.

Several researchers have observed a connection between a propensity to link unrelated events, and paranormal beliefs (e.g., Brugger, 1997; Brugger & Graves, 1997). Brugger and colleagues have suggested that this propensity arises out of greater levels of right hemisphere activation, and a bias towards right hemisphere processing, amongst paranormal believers (e.g., Brugger & Taylor, 2003).

Bressan, P. (2002). The connection between random sequences, everyday coincidences, and belief in the paranormal. *Applied Cognitive Psychology*, 16, 17-34.

Brugger, P., & Taylor, K. I. (2003). ESP: Extrasensory perception or an effect of subjective probability? *Journal of Consciousness Studies*, 10, 221-246.

## **DR ALEXANDER WEISS**

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Students choosing me as their dissertation supervisor will be required to devise their own dissertation project. I am willing to supervise feasible dissertations that focus on topics such as human or nonhuman animal personality, animal behavior, evolutionary psychology, health psychology, and aging. Please see me before you decide to select me as it is important that we discuss the potential feasibility of a project or any pitfalls.

## **DR SUE WIDDICOMBE**

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### **1. 'Should we feel guilty?': a qualitative approach to collective guilt.**

We can think of numerous examples throughout history where one group has behaved towards another group in an aggressive or unjust manner. Examples include slavery, the Holocaust, the treatment of indigenous people in New Zealand and Australia, the invasion of Iraq, discrimination against women and ethnic minorities, apartheid. One possible response to these historical events is a feeling of 'collective guilt'. Social psychologists have tried to measure this feeling, to ascertain its antecedents and consequences, and its relation with social identity. This project, by contrast, will adopt a qualitative /discursive approach and examine the meanings of 'our' guilt, when notions of collective guilt are mobilised, how such feelings are avoided, denied or justified within a particular context. The data collected for this project could include interviews, online forum or parliamentary discussions and so on and the focus could be on a particular conflict situation, or inequalities among people, environmental behaviour, or any other situation which is likely to be associated with feelings of collective guilt.

McGarty, C., Pedersen, A., Leach, C.W., Mansell, T., Waller, J. & Bliese, A.M. (2005). Group-based guilt as a predictor of commitment to apology. *British Journal of Social Psychology*, 44, 659-680.

Doosje, B., Branscombe, N.R., Spears, R. & Manstead, A.S.R. (1998) Guilty by association: When one's group has a negative history. *Journal of Personality and Social Psychology*, 75, 872-886.

Augoustinos, M. & LeCouteur, M. (2004). On whether to apologize to Indigenous Australians: The Denial of White Guilt. In N.R. Branscombe & B. Doosje (eds.) *Collective Guilt: International Perspectives*. Cambridge: Cambridge University Press.

### **2. Youth subcultures and identity**

This project could 'update' the social psychological literature on youth subcultures (e.g. by looking at goth or emo subcultures), considering in particular how members characterise their motivation for involvement and their identities. Alternatively, the project could explore how member 'do' being a group (or community) via the internet.

Widdicombe, S. & Wooffitt, R. (1995) *The Language of Youth Subcultures: Social Identity in Action*. London: Harvester Wheatsheaf. Chapter 1, 7 and 8. (Read chapter one first, as it takes you through Cultural Study's theoretical explanation for the existence of subcultures which is referred to in the other references)

Wilson, B & Atkinson, M. (2005) Rave and Straightedge, the Virtual and the Real: Exploring Online and Offline Experiences in Canadian Youth Subcultures, *Youth & Society*, 36, 276-311.

Hollingworth, S. & Williams, K. (2009) Constructions of the working-class 'Other' among urban, white, middle-class youth: 'chavs', subculture and the valuing of education. *Journal of Youth Studies*, 12, 467-482.