Open exchange of new ideas is central to EPS meetings. To foster up-to-date discussion, presenters are mandated to report work that is not yet published. We ask that attendees respect this mandate. Please do not record or publish presented material (e.g. via Twitter or Facebook) without the presenter's permission. To remove any ambiguity regarding permission, this programme now includes a symbol next to every abstract (the hashtag shown on this page), where the presenter has agreed permission for their work to be shared on social media. Where no symbol is shown for a given presentation, there should be absolutely no filming, pictures, or social media of any kind. For explicit guidance on reporting at EPS meetings, please refer to the EPS handbook.
A hybrid scientific meeting will be held at the Department of Cognitive, Perceptual & Brain Sciences, University College London, 26 Bedford Way, London, WC1H 0AP, and online, between 5 - 7 January 2022.

The local organiser is Jo Taylor.

**49th Bartlett Prize Lecture**  
*Thursday 6th January, 5:15pm*

Consciousness, (meta)Cognition, Culture.  
Professor Chris Frith, University College London.

**19th Mid-Career Prize Lecture**  
*Friday 7th January, 1:00pm*

Title of Lecture: TBC  
Professor Michael Anderson, University of Cambridge.

**28th EPS Prize Lecture**  
*Wednesday 5th January, 4:00pm*

How can neurocognitive measures of development help us to tackle the consequences of poverty?  
Dr Sarah Lloyd-Fox, University of Cambridge.

**Poster Session and Drinks Reception**

Due to the hybrid nature of this meeting, some will be displayed live with a drinks reception, and all posters will be presented virtually on Gather.

- Wednesday evening at 5:00pm in Room 305 and 313, with drinks being served in the Common Room 308.  
- [Link to the Gather Poster Room](#)

Delegates may put up posters from 4:00pm and should take them down by the end of the session.

**Platform Presentations**

In-person sessions will be held in the Ground Floor and Lower Ground Floor Lecture Theatres, in person speakers are marked below with a ^ before their name. Both theatres have data projectors available for PowerPoint presentations. Presenters may provide their own laptops and connector leads, or bring USB keys for the on-site computers. Online talks will be hosted on Zoom, using relevant links in the programme schedule below (for free).
If you are attending in person and require a quiet space, please use room 312 on the third floor. This space can also be used by poster presenters who wish to attend in person, but are presenting virtually. Attendees need to bring their own laptops to use in this room, either for viewing talks via Zoom or to present their poster/view other posters via Gather.

Any queries about facilities in the theatres should be sent to the local organiser, Jo Taylor (joanne.taylor@ucl.ac.uk).

**Conference Dinner**

Due to the ongoing Covid-19 pandemic, the usual *conference dinner will not be held* during this meeting.

**COVID-19 Guidelines for In-Person Attendance**

The EPS committee have ensured that the meeting is compliant with UCL’s generic risk assessment.

It is expected that everyone on campus, including visitors, will **wear a face covering** in all indoor spaces. Standard exemptions will apply.

All attendees are asked to take a **lateral flow test** no more than 48 hours prior to attending and if this is positive you should not attend.

If an attendee tests positive during or within seven days of the meeting they are kindly requested to let the committee know (exppsychsoc@kent.ac.uk). We can then contact all attendees to let them know that someone at the meeting tested positive.

**Event pre-registration is required** and a comprehensive list of attendees has been provided to UCL in advance of the event. Please do not join in person if you have not formally registered and had your in-person place confirmed.

Please try to maintain social distance. Spaces have been booked that have a larger capacity than the scheduled number of event attendees (i.e., the two lecture theatres have a capacity of 100 per room, and we are allowing 50% occupancy for each room).

Full mechanical ventilation will be maintained and used in all spaces where it is available and, where they exist, windows will be opened before and during events.
START OF PARALLEL SESSIONS

Session A
Lower Ground Floor Lecture Theatre – [Zoom Link to be provided soon]

EPS Prize Symposium.
Early development in the context of poverty: Mechanisms, methods and interventions.
Organised by Mark Johnson and Gaia Scerif

11:30  ^Sobanawartiny (Sobana) Wijeakumar (University of Nottingham) Stunting in the first year of life is associated with changes in the dorsal and ventral attention networks.

12:00  ^Jukka Leppänen (University of Turku, Finland) Early development of visual attention in children in low-income countries.

12:30  Kim Noble (Columbia University, United States of America) Socioeconomic inequality and child brain development.

13:00  Tea / Coffee

13:30  ^Elizabeth Shephard and Polanczyk Guilherme (Faculdade de Medicina FMUSP, Universidade de São Paulo, Brazil, University of São Paulo Medical School, Brazil) Effects of a home-visiting intervention on early neurodevelopment in infants of adolescent mothers living in poverty in Brazil.

14:00  ^Jelena Obradović (Stanford University, United States of America) A study of early childhood parenting behaviours, home environment, and children’s executive function skills in a disadvantaged, rural Pakistan context.

14:30  ^Amina Abubakar (Aga Khan University (AKU), Kenya Medical Research Institute and Wellcome Trust Research Programme (KEMRI), Nairobi, Kenya) Early childhood development in urban informal settlement.

15:00  Break

15:15  Annual General Meeting

16.00  Lower Ground Floor Lecture Theatre - 28th EPS Prize Lecture
^Sarah Lloyd-Fox, University of Cambridge
How can neurocognitive measures of development help us to tackle the consequences of poverty?

17:00  Posters and Drinks Reception - Link to the Gather Poster Room
Posters displayed in Room 305, with drinks served in Room 308 (Common Room).
START OF PARALLEL SESSIONS

Session B
Ground Floor Lecture Theatre – [Zoom Link to be provided soon]

11:30  ^Akul Satish*, Robin Hellerstedt, Michael Anderson and Zara Bergström (University of Kent, Department of Psychology, University of Cambridge, MRC Cognition and Brain Sciences Unit, University of Cambridge) (Sponsor: Zara Bergström) Neural Oscillations and ERPs Track Successful Suppression and Unwanted Intrusions of Morally Relevant Autobiographical Memories.

12:00  ^Samantha Gregory* and Klaus Kessler (University of Salford, Aston University, University College Dublin, Ireland) (Sponsor: Klaus Kessler) Retro-cuing with uninformative dynamic social and non-social VR stimuli influences working memory.

12:30  ^Luc Boutsen (Aston University) Recognition memory for faces with disfiguring features.

13:00  Tea / Coffee

13:30  Marina Martinčević*, Andrea Vranić* and Robert Logie (University of Zagreb, Croatia, University of Edinburgh) (Sponsor: Robert Logie) Verbalization and goal neglect in prospective memory tasks.

14:00  ^Chiara Scarampi* and Matthias Kliegel* (University of Geneva, Switzerland) (Sponsor: Sam Gilbert) Age Differences in Metamemory for Prospective Memory: Does the reference point affect our judgements?

14:30  Tina Seabrooke and Philip Higham (University of Southampton) Metacognitive awareness of the levels-of-processing effect.

15:00  Break

15:15  Annual General Meeting

16.00  Lower Ground Floor Lecture Theatre - 28th EPS Prize Lecture
 ^Sarah Lloyd-Fox, University of Cambridge
 How can neurocognitive measures of development help us to tackle the consequences of poverty?

17:00  Posters and Drinks Reception - Link to the Gather Poster Room
Posters displayed in Room 305, with drinks served in Room 308 (Common Room)
Session A

Lower Ground Floor Lecture Theatre – [Zoom Link to be provided soon]

9:30  ^Rima Alhaider*, Chris Donlan and Merle Mahon (University College London) (Sponsor: Chris Donlan) Effects of grammar on the formation of number concepts.

10:00  ^John Shaw* and Marie-Josee Bisson (De Montfort University) (Sponsor: Marie-Josee Bisson) The role of sleep in consolidation of mathematical concepts.

10:30  Tea / Coffee

11:00  Anthony Atkinson (Durham University) Foveal vs. extrafoveal processing of facial features for emotion recognition: A data-driven approach, introducing 'foveal-advantage statistical parametric maps'.

11:30  ^Magdalena Sliwinska, Ryan Elson and David Pitcher (Liverpool John Moores University, University of York, University of Nottingham) TMS demonstration of the importance and differential contribution of the right and left posterior superior temporal sulci to facial expression recognition.

12:00  Iliyana Trifonova, Cade McCall, Matthew Fysh, Markus Bindemann and Mike Burton (University of York, University of Kent) Dynamic approach-avoidance behaviours affect first impressions from faces: Evidence from Virtual Reality.

12:30  Lunch
Session B

Ground Floor Lecture Theatre – [Zoom Link to be provided soon]


10:00 Lena Wimmer*, Gregory Currie*, Stacie Friend* and Heather Ferguson (University of Freiburg, Germany, University of York, Birkbeck, University of London, University of Kent) (Sponsor: Heather Ferguson) Opening the closed mind? Effects of reading literary fiction on the need for closure and creativity.

10:30 Tea / Coffee

11:00 Efthymia Kapnoula and Arthur Samuel (Basque Center on Cognition, Brain and Language, Spain, Stony Brook University, United States of America, Ikerbasque, Basque Foundation for Science, Spain) Immediate (but not delayed) production hurts word learning.

11:30 ^Erin Minton-Branfoot*, Richard O'Connor and Henning Holle (University of Hull) (Sponsor: Henning Holle) Gesture as a stepping stone into rapid second language acquisition.


12:30 Lunch
Session A
Lower Ground Floor Lecture Theatre – [Zoom Link to be provided soon]

Bartlett Prize Symposium
Making up the mind: Culture, imagination and the creation of conscious experience.
Organised by Stephen Fleming

13:30 Hakwan Lau (Riken University, Japan) Mental quality space and the prefrontal cortex.

14:00 ^Stephen Fleming (University College London) Computational determinants of conscious awareness: mental strength, mental contents and higher-order state spaces.

14:30 ^Nadine Dijkstra (University College London) Fundamental constraints on distinguishing reality from imagination.

15:00 Tea / Coffee

15:30 ^Cecilia Heyes (University of Oxford) Explicit metacognition – for and from social interaction.

16:00 ^Philip Corlett (Yale University, United States of America) Hallucinations and delusions as aberrations of belief.

16:30 ^Dan Bang (Virginia Tech, United States of America) Private-public mappings in brain and behaviour.

17:00 Break

17:15 Lower Ground Floor Lecture Theatre - 49th Bartlett Prize Lecture
^Chris Frith, University College London
Consciousness, (meta)Cognition, Culture.
Session B
Ground Floor Lecture Theatre – [Zoom Link to be provided soon]

13:30 Dario Fuentes Grondon* and Nina Kazanina (University of Bristol) (Sponsor: Nina Kazanina) Lost (and found) in pronunciation.

14:00 Romi Zäske, Denise Humble*, Axel Mayer*, Tim Jesgarzewsky*, Christian Dobel* and Stefan Schweinberger (Friedrich Schiller University, Germany, Jena University Hospital, Germany, University of Bielefeld, Germany) The Jena Voice Learning and Memory Test (JVLMT): A standardized tool for assessing the ability to learn and recognize voices.

14:30 ^Kate Slade*, Christopher Plack*, Charlotte Pennington, Rob Davies and Helen Nuttall (Lancaster University, Manchester Centre for Audiology and Deafness, University of Manchester, Aston University) (Sponsor: Helen Nuttall) The impact of the COVID-19 pandemic on socialisation, cognition, and hearing in younger and older adults in the UK.

15:00 Tea / Coffee

15:30 Annika Boldt, Kobe Desender and Nick Yeung (University College London, Katholieke Universiteit Leuven, Belgium, Oxford University) Suboptimal reliance on incongruent evidence for the computation of confidence.

16:00 ^Harry Farmer, Anna Ciaunica and Antonia Hamilton (University of Greenwich, University of Lisbon, University College London) Trait depersonalisation predicts increased judgements of agency in ambiguous situations.

16:30 ^Antony Trotter*, Yuchunzi Wu and Patti Adank (King’s College London, University College London) (Sponsor: Patti Adank) Automatic imitation: Stimulus response compatibility effects across domains are robust to cognitive load.

17:00 Break

17:15 Lower Ground Floor Lecture Theatre – 49th Bartlett Prize Lecture
^Chris Frith, University College London
Consciousness, (meta)Cognition, Culture.
Session A

Lower Ground Floor Lecture Theatre – [Zoom Link to be provided soon]

Mid-Career Prize Symposium


9:00 Robert Bjork and Elizabeth Bjork (University of California, Los Angeles, United States of America) Symposium-Induced Remembering about Retrieval-Induced Forgetting.

10:00 ^Maria Wimber (Centre for Cognitive Neuroimaging, University of Glasgow) Shaping memories by active use.

10:30 Tea / Coffee

11:00 ^Roland Benoit (Max Planck Institute for Human Cognitive & Brain Sciences, Germany) Sustained consequences of retrieval suppression.

11:30 ^Dace Apsvalka (MRC Cognition and Brain Sciences Unit, University of Cambridge) A common brain mechanism for stopping unwanted actions and memories.

12:00 ^Pierre Gagnepain (INSERM, Université de Caen-Normandie) Is Post-Traumatic Stress Disorder an active forgetting disorder.

12:30 Break

13:00 Lower Ground Floor Lecture Theatre – 19th Mid-Career Prize Lecture

^Michael Anderson, University of Cambridge

Title of Lecture: TBC

End of Meeting
Session B

Ground Floor Lecture Theatre – [Zoom Link to be provided soon]

9:00  Danielle Kelly*, Brona Nic Giolla Easpaig* and Paola Castillo (De Montfort University, Australian Institute of Health Innovation, Macquarie University, Australia, Charles Sturt University, Australia) (Sponsor: Shira Elqayam) ‘You Game Like a Girl’: Perceptions of gender and competence in gaming.

9:30  Theodore Parthimos*, Kleopatra Schulpis*, Yannis Loukas* and Yannis Dotsikas (De Montfort University, Institute of Child Health, Aghia Sophia Children’s Hospital, Athens, Greece, National and Kapodistrian University of Athens, Greece) (Sponsor: Mark Scase) The significant role of exercise on neurotransmission amino acid blood concentrations in relation to neuropsychological performance.

10:00  Tara Zaksaite, Catherine Loveday*, Trudi Edginton*, Hugo Spiers* and Alastair Smith (University of Plymouth, University of Westminster, City, University of London, University College London) Individual differences in spatial navigation: Evidence from real-world and laboratory-based tasks.

10:30  Tea / Coffee

11:00  Maria Laura Filippetti, Caryn Cook and Laura Crucianelli (University of Essex, Karolinska Institutet, Sweden) Changes in self-other boundaries modulate children’s body image attitudes.

11:30  Alejandro Galvez-Pol*, Pavandeep Virdee* and James Kilner* (University of the Balearic Islands, Spain, University College London) (Sponsor: Antonia Hamilton) Active touch sensing is modulated by the cardiac cycle.

12:00  Elisabet Parès-Pujolràs* and Patrick Haggard (University College Dublin, Republic of Ireland, University College London) (Sponsor: Patrick Haggard) A neural marker of unfolding choice and urgency.

12:30  Break

13:00  Lower Ground Floor Lecture Theatre – 19th Mid-Career Prize Lecture
^Michael Anderson, University of Cambridge
Title of Lecture: TBC

End of Meeting
1. Sarah Griffiths*, Rogier Kievit* and Courtenay Norbury (University College London, Radboud University Medical Center, The Netherlands, University of Oslo, Norway) (Sponsor: Courtenay Norbury) Mutualistic coupling of vocabulary and non-verbal reasoning in children with and without language disorder.

2. Maria Jelen*, Sarah Griffiths, Laura Lucas, Joanne Saul* and Courtenay Norbury (University College London) (Sponsor: Courtenay Norbury) The role of language in mental health during the transition from primary to secondary education.

3. Victoria Adedeji*, Julie Kirkby, Martin Vasilev and Timothy Slattery (Bournemouth University) (Sponsor: Timothy Slattery) Syllable processing during reading development.


5. Lena Blott, Anna Gowenlock, Kate Nation and Jennifer Rodd (University College London, University of Oxford) (Sponsor: Jennifer Rodd) Understanding language comprehension: the challenge of measuring individual differences within experimental designs.


7. Pennie Haigh*, Naveen Hanif and Angela de Bruin (University of York) (Sponsor: Angela de Bruin) Language comprehension: How are healthy ageing adults affected by sentence contexts and task demands?

8. Naveen Hanif*, Elizabeth Jefferies and Angela de Bruin (University of York) (Sponsor: Angela de Bruin) Lexical retrieval in healthy ageing: An exploration of context effects.


10. Veniamin Shiron*, Silke Goebel and Angela de Bruin (University of York) (Sponsor: Angela de Bruin) Bilingual Number Processing: does frequent use of a second language affect number comparison performance?

11. Fritz Peters*, Lucy MacGregor, Rebecca Gilbert and Matthew Davis (University of Cambridge, University College London) (Sponsor: Lucy MacGregor) Comprehension of sentences with ambiguous words is predicted by language-specific and domain-general abilities.

13. Rebecca Crowley*, Amir-Homayoun Javadi and Jakke Tamminen (Royal Holloway, University of London, University of Kent) (Sponsor: Jakke Tamminen) Language, Learning, Memory Forgetting of newly learned words: Fragmented or holistic depending on retrieval practice.

14. Chloe Brunskill*, Phot Dhammaapeera, Robin Hellerstedt and Zara Bergström (University of Kent, Chulalongkorn University, Thailand, University of Cambridge) (Sponsor: Zara Bergström) Counterfactual imagination as a source of memory distortion: cognitive and brain mechanisms.

15. Méline Devaluez, Audrey Mazancieux, Chris Moulin and Céline Souchay (Université Grenoble Alpes, France, Université Paris-Sud, France) (Sponsor: Chris Moulin) A meta-analysis of episodic and semantic feeling-of-knowing in aging.

16. Simon Evans*, Gulin Yatagan* and Erkan Alkan* (University of Surrey) (Sponsor: Emily Farran) Effects of glycaemic control on memory performance, hippocampal volumes and depressive symptomology.

17. Stella Guldner*, Clare Lally*, Nadine Lavan, Lisa Wittman*, Frauke Nees* and Carolyn McGettigan (Heidelberg University, Germany, University College London, Queen Mary University of London, University of Regensburg, Germany, Institute of Medical Psychology and Medical Sociology, University Medical Centre Schleswig Holstein, Kiel University, Germany) (Sponsor: Carolyn McGettigan) Voluntary social trait expression in voices.


20. Han Wang* and Patti Adank (University College London) (Sponsor: Patti Adank) Robust perceptual learning of noise-vocoded speech under divided attention: A dual-task paradigm.

21. Harry Farmer, Uri Hertz and Anotnia Hamilton (University of Greenwich, University of Haifa, Israel, University College London) Research Plan – Learning about similarity between self and other.

22. Elin Williams* and Bhismadev Chakrabarti (University of Reading) (Sponsor: Bhismadev Chakrabarti) Social cue integration in perception of social interactions.


24. Paula Wicher* and Antonia Hamilton (University College London) (Sponsor: Antonia Hamilton) How do people respond to similar or different choices from another person? An online study of art preferences.

26. Mahmoud Elsherif, Caroline Richards, Andrew Surtees and Wieske van Zoest (University of Birmingham) Research Plan – Autistic children understanding of nonverbal gestured directed to a first and third person.

27. Marchella Smith*, Lindsey Cameron and Heather Ferguson (University of Kent) (Sponsor: Heather Ferguson) Autism Imagining fictitious events among people with and without Autism.

28. Lydia Hickman*, Dagmar Fraser, Paul O’Reilly and Jennifer Cook (University of Birmingham, Icahn School of Medicine at Mount Sinai, United States of America) (Sponsor: Jennifer Cook) Research Plan – Elucidating the genetic underpinnings of the increased prevalence of Parkinson’s Disease diagnosis in the autistic population.

29. Bianca Schuster*, Sophie Sowden, Alicia Rybicki, Dagmar Fraser, Clare Press and Jennifer Cook (University of Birmingham, Birkbeck University of London, University College London) (Sponsor: Jennifer Cook) Dopaminergic modulation of dynamic emotion perception.

30. Connor Keating*, Eri Ichijo* and Jennifer Cook (University of Birmingham, University of Oxford) (Sponsor: Jennifer Cook) Identifying the contribution of internal representations of emotion to facial expression recognition.

31. Sophie Sowden and Jennifer Cook (University of Birmingham) Spatial and kinematic influences on arousal and valence judgments from dynamic facial emotion expressions.

32. Nicholas Thompson*, Carien van Reekum* and Bhismadev Chakrabarti (University of Reading) (Sponsor: Bhismadev Chakrabarti) Task measures of empathy and their relationship with trait emotion dysregulation.

33. Ellen Blythe*, Lucia Garrido and Matthew Longo (Birkbeck, University of London, City, University of London) (Sponsor: Matthew Longo) Accurate perception of emotions from images of isolated body parts.

34. Maille Gracey*, Sophie Sowden, Ned Jenkinson* and Jennifer Cook (School of Psychology, University of Birmingham, School of Sport, University of Birmingham) (Sponsor: Jennifer Cook) Social and motor functions in Parkinson’s Disease. Withdrawn


36. Caitlin Naylor*, Michael Proulx and Gavin Buckingham (University of Bath, University of Exeter) (Sponsor: Gavin Buckingham) Using immersive virtual reality to examine how visual and tactile cues drive the material-weight illusion.
37. **Denise Cadete* and Matthew Longo** (Birkbeck, University of London) (Sponsor: Matthew Longo) The long sixth finger illusion: The representation of the supernumerary finger is not a copy and can be felt with varying lengths.

38. **Helen Olawole-Scott* and Daniel Yon** (Goldsmiths, University of London, Birkbeck, University of London) (Sponsor: Daniel Yon) Research Plan - Expected precision and perceptual confidence.

39. **Antonio Zafarana*, Alessandro Farnè* and Luigi Tamè** (University of Kent, Neuroscience Research Centre of Lyon, France) (Sponsor: Luigi Tamè) Visual perceptual learning near and far.

40. **Christina Papoutsi*, Rebecca Frost and Hans Rutger Bosker** (Max Planck Institute for Psycholinguistics, The Netherlands, Edge Hill University) (Sponsor: Padraic Monaghan) Statistical learning at a cocktail party.
Stunting or linear growth faltering (i.e., a standardized height-for-age z score [HAZ] less than -2) impacts approximately 162 million children under the age of five worldwide. Yet, it is still unknown how stunting impacts cognition and underlying brain function in the first year of life. We investigated how stunting impacts visual cognition and underlying brain function in infants in rural Uttar Pradesh, India. Looking behaviour was assessed using portable eye-tracking and brain function was assessed using functional near-infrared spectroscopy while infants engaged with a preferential looking visual working memory task. Critically, in normal height infants, greater preference to the changing side was associated with longer sustained looking – the longer infants explored the displays, the better infants were at detecting the changing side. In contrast, in stunted children, longer looking time was associated with poorer change preference scores. Thus, despite longer looking, stunted children struggled with detecting the changing side, suggesting they were distracted by the non-changing side. Stunting was also associated with the modulation of two key brain areas, left anterior intraparietal sulcus (laIPS), a part of the dorsal attention network important for top-down goal-driven attention, and the right temporoparietal junction (rTPJ), a part of the ventral attention network involved in shifting attention away from current goals to task-relevant distractors. This is the first study to identify a mechanism early in development through which stunting might lead to poor cognitive outcomes.

Early development of visual attention in children in low-income countries.

Jukka Leppänen
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Field-applicable tests of neurocognitive function in infants could add a dimension to the assessment of early childhood development in global health studies, and contribute to our understanding of the acute and long-term effects of poverty. In this talk, I will present studies in which we have used automated eye tracking to assess attentional orienting (i.e., saccadic reaction time) and face preference (i.e., delayed disengagement of attention from faces vs. patterns) in infants in rural Malawi and South Africa. I will present data on the feasibility and psychometric properties of the assessments, data on the associations between attentional measures and the child’s socioeconomic and nutritional status, and preliminary results from analyses that have examined whether individual variations in early-developing attentional functions predict long-term cognitive outcomes in children (i.e., executive function, cognitive ability, and some aspects of social behaviour).
Socioeconomic inequality and child brain development.

Kim Noble  
Columbia University, United States of America  
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Socioeconomic disparities in childhood are associated with differences in cognitive and socio-emotional development during a time when dramatic changes are occurring in the brain. Recent work has focused on understanding the neurobiological pathways through which socioeconomic factors shape development. A theoretical model will be presented whereby differences in the home language environment and family stress likely impact particular brain systems, which in turn support distinct neurocognitive skills. Evidence for the model, as well as ongoing and future work testing aspects of the model, will be discussed. Finally, Baby's First Years, the first clinical trial of poverty reduction in early childhood, will be introduced.

Effects of a home-visiting intervention on early neurodevelopment in infants of adolescent mothers living in poverty in Brazil.

Elizabeth Shephard¹ and Polanczyk Guilherme²  
¹ Faculdade de Medicina FMUSP, Universidade de São Paulo, Brazil  
² University of São Paulo Medical School, Brazil  
gvp@usp.br

Adolescent motherhood remains common in low-and-middle-income countries (LMICs) such as Brazil and is associated with elevated rates of risk-factors for impaired child development, including poverty and maternal psychopathology. In this context, early interventions that support adolescent mothers and their infants are crucial. We present findings from a randomised controlled trial (RCT) of a home-visiting program developed to support parenting abilities and mental health of adolescent mothers and their infants’ development during the first 24 months of life in an impoverished urban region of São Paulo, Brazil. The program showed positive effects on the mother-infant relationship and infants’ social-communication abilities at age 12 months and on infants’ language development at age 24 months. Our findings also indicated that enhanced neurophysiological markers of social attention to the mother at age 6 months may represent one mechanism that mediated the positive effects of the program on early development.
A study of early childhood parenting behaviours, home environment, and children’s executive function skills in a disadvantaged, rural Pakistan context.

Jelena Obradović
Stanford University, United States of America
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Despite the universal relevance of early executive function (EF) skills in supporting goal-directed behaviours, prosocial interactions, and school success, research on experiences and interventions that promote these important skills has been conducted predominantly in high-income countries. Dr. Obradović will draw from a follow-up study of children who participated in the Pakistan Early Child Development Scale-Up Trial to discuss lessons learned during cultural and developmental adaptations of EF assessments for preschool children. Further, she will review study findings that show how maternal cognitive scaffolding behaviours and home stimulation mediate the effect of parenting intervention administered during the first two years of life on pre-schoolers’ EF and related cognitive skills. She will highlight the robustness of short-term parenting intervention effects on EF skills, while identifying important contextual experiences and biological processes that need to be further studied to better understand how to promote cognitive development in boys and girls growing up in a disadvantaged, rural Pakistan context.

Early childhood development in urban informal settlement.

Amina Abubakar
Aga Khan University (AKU), Kenya Medical Research Institute and Wellcome Trust Research Programme (KEMRI), Nairobi, Kenya
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It is estimated that over 250 million children under 5 years of age growing up in low- and middle-income countries are at risk of not reaching their full developmental potential. Children born and raised in urban informal settlements are particularly vulnerable due to exposure to extreme conditions of poverty, violence and other forms of social adversity. I will present a multi-phased study. In the first phase, formative research was conducted in informal settlements of Nairobi which included a household survey, comprehensive situational analysis of health and social services and adaptation of neurodevelopmental assessments for this setting. In this phase more than 1000 participants were involved. In the second phase, an integrated early childhood intervention was implemented. Preliminary results from this intervention will be presented.

End of Symposium
EPS Prize Lecture.

How can neurocognitive measures of development help us to tackle the consequences of poverty?

Sarah Lloyd-Fox
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Abstract – TBC.
Neural Oscillations and ERPs Track Successful Suppression and Unwanted Intrusions of Morally Relevant Autobiographical Memories.

Akul Satish¹, Robin Hellerstedt², Michael Anderson³ and Zara Bergström¹
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Remembering unpleasant events from our past can trigger negative feelings. A large body of research indicates that unwanted retrieval of memories can be prevented, improving our mental state. The current scientific understanding of memory suppression is however mostly based on simpler memories such as associations between words or pictures, which may not reflect how we deal with unpleasant memory intrusions in everyday life. Here, we investigated the neural and behavioural dynamics of suppressing personal and emotional autobiographical memories using a modified version of the think/no-think task. Participants attempted to suppress memories of their own past immoral actions, which were hypothesised to be both highly intrusive and motivating to suppress. We found novel evidence from real-time behavioural, ERP and EEG oscillation measures that autobiographical memory retrieval can be suppressed and suggest that autobiographical suppression recruits similar neurocognitive mechanisms as suppression of simple word associations. EEG evidence indicated memory intrusions may have occurred due to a lapse in sustained control. Importantly however, participants improved at limiting intrusions with repeated practice. Furthermore, both behavioural and EEG evidence indicated that intentional suppression may be more difficult for memories of our morally wrong actions than memories of our morally right actions.

Retro-cuing with uninformative dynamic social and non-social VR stimuli influences working memory.

Samantha Gregory¹ and Klaus Kessler²,³
¹ University of Salford
² Aston University
³ University College Dublin, Ireland
s.e.a.gregory@salford.ac.uk

We previously found that joint attention (i.e. the shared gaze of individuals on an object/event) affects working memory for cued objects (uninformative pre-cueing) using simple face stimuli and dynamic full bodied virtual human agents. We also found a similar effect on memory when a dynamic stick cue acted as a control, but no effect when using arrow cues. Here we investigate the effect of these dynamic cues during memory maintenance using an uninformative retro-cuing paradigm with dynamic full bodied virtual human agents and dynamic non-social control cues (blocked design). In an online experiment, participants encoded 4 objects, (2 on the left, 2 on the right) while the cue looked/pointed forwards. Then, the objects disappeared, and the cue looked/pointed towards either the left or right location during the memory maintenance period. After an additional blank maintenance interval, the probe was shown. The probe could have been initially presented in the looked at location, the looked away from location or was initially absent from the array. Results showed that for both the social and non-social cue memory was better for objects that appeared in the subsequently cued location, indicating that this is not a uniquely social effect.
Recognition memory for faces with disfiguring features.

Luc Boutsen  
Aston University  
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Face recognition memory is known to be based on configural or holistic perceptual encoding, in which both features and their spatial relations are represented. The presence of anomalous facial features, e.g., a disfigurement, may interfere with holistic face processing, reducing the strength of the memory representation and subsequent recognition performance. To test this hypothesis, we investigated the effect of a disfiguring facial feature on old/new recognition memory, and compared this to performance for faces with an accidental, occluding, feature and for typical faces. Recognition memory was evaluated using signal detection measures as a function of face orientation (upright vs. inverted) and intent-to-remember (incidental vs. intentional learning). The results show that the presence of a disfiguring, and to a lesser extent an occluding feature, reduced recognition memory compared to memory for typical faces. Face inversion reduced performance irrespective of the presence or nature of the added feature. Finally, intent-to-remember improved recognition memory for typical faces, but not for faces with a disfiguring or occluding feature, suggesting a reduced motivation to individuate anomalous faces during study. The impact of anomalous features on face recognition is discussed in the context of theories of first impression formation.

Verbalization and goal neglect in prospective memory tasks.

Marina Martinčević¹, Andrea Vranić¹ and Robert Logie²  
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Prospective memory (PM) refers to memory for an intended action to be performed in the future. Studies have focused on distinguishing between prospective and retrospective memory errors in PM tasks overlooking other possible causes of errors, such as goal neglect. Neglect is most often observed in people with brain damage, but it can also be found in healthy adults under conditions of multiple task requirements. A way to measure neglect is via verbalization, yet verbalization could interfere with PM performance. Two studies were conducted to investigate whether goal neglect might cause errors in PM tasks and whether verbalization can serve as its proxy. Participants in both studies (N1=83, N2=71) were randomly assigned to either experimental (instructed to verbalize the task while performing it) or control group, and completed a 3-day (Study 1) or a 5-day version (Study 2) of the Virtual week (VW) task (Rendell & Craik, 2000), respectively. The results of both studies showed that verbalization does not affect PM. Errors in PM tasks can primarily be attributed to PM errors, and to a smaller extent to recall failure and goal neglect. Results indicate that goal neglect can cause PM failures, especially in more demanding PM tasks.
Age Differences in Metamemory for Prospective Memory: Does the reference point affect our judgements?

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This pre-registered online study investigated the role of metamemory in prospective memory (PM) in younger and older adults; specifically, we were interest in whether metamemory judgements are affected by A) the reference point used to evaluate performance and B) the order of presentation of the instruments. Half of the participants were asked to estimate their upcoming PM performance with a general confidence rating (performance condition) whereas the other half were asked to compare it to other people of their age (peers condition). They also completed some metamemory questionnaires, either at the beginning of the experimental session or after the PM task, in a counterbalanced order. In terms of performance, we did not observe age differences in PM. In terms of metamemory, younger and older participants were similarly under confident in the performance condition and overconfident in the peer’s condition. Moreover, older adults reported significantly better PM abilities than younger adults, and participants generally reported more memory failures when the metamemory questionnaires were administered after the PM task and in the performance condition. These findings suggest that different metacognitive measurements and their order of administration can account for age-related differences in PM performance. Theoretical and practical implications will be further discussed.

Metacognitive awareness of the levels-of-processing effect.

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It is well-established that orienting tasks requiring “deep” levels of encoding (e.g., semantic tasks) produce better subsequent memory than tasks requiring comparatively “shallow” levels of processing (e.g., phonemic tasks) – the Levels-Of-Processing (LOP) effect. Recent work has reported that participants are, at best, only somewhat metacognitively aware of this fundamental memory principle (e.g., Tekin & Roediger, 2020). In the present work, we examined metacognitive awareness of the LOP effect by asking participants to encode a list of target words either semantically or phonemically. Some participants provided Judgements of Learning (JOL) for each target, while others did not. Participants only partially predicted the LOP effect when the level of target processing was manipulated with orienting questions. When the level of target processing was manipulated using semantically related or rhyming word pairs, by contrast, the participants substantially overpredicted the size of the effect. In contrast to previous research, no evidence of JOL reactivity was observed in either experiment. On-going work seeks to further investigate this latter finding, while also testing whether participants’ awareness of the LOP effect extends to transfer-appropriate processing effects.

Effects of grammar on the formation of number concepts.

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We ask whether grammatical number marking influences the formation of number concepts. In particular, does exposure to dual case marking (as found in Arabic language but not in English language) support young children’s understanding of cardinality? We assessed cardinality in 77 three-year-old Arabic/English bilingual children, using a modified version of the Give-a Number task (Wynn 1990) presented in both languages. We also tested comprehension of dual case marking in Arabic, and number sequence knowledge in both languages. We found that dual case comprehension exerts a strong influence on cardinality tested in Arabic, independent of age, general language skills and number sequence knowledge. No such effect was found for cardinality tested in English. Our findings are consistent with a model within which the direct effect of dual case marking is language specific, but concepts, once acquired, may be represented abstractly and transferred between languages.


The role of sleep in consolidation of mathematical concepts.

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Within mathematical cognition the development of conceptual knowledge is seen as critical to developing understanding. Sleep has been well established to play a role in the consolidation of newly learned information and schema-based information but has yet to be explored within mathematical cognition. Across 3 experiments participants (N = 150) participants were assigned to a sleep or wake condition then viewed lectures on either p-values, t-test, or z-scores. The sleep group watched the lecture at 9pm, completed an immediate recall task then a second recall task 12h later at 9am. The wake group watched the lecture at 9am, completed an immediate recall task then a second recall task 12h later at 9pm. Written responses were then ranked using a comparative judgment task by subject experts. Across all 3 experiments there was a significant interaction of Group by Session, with the sleep group retaining similar ranking from session 1, while the wake group significantly declined in rank in session 2. These results suggest that sleep may be involved in an important process of maintenance of learned information of mathematical concepts.
Foveal vs. extrafoveal processing of facial features for emotion recognition: A data-driven approach, introducing 'foveal-advantage statistical parametric maps'.

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At normal interpersonal distances all features of a face cannot fall within one’s fovea simultaneously. Does the ability to identify emotions expressed on such faces vary according to the feature fixated? To answer this question, previous studies have presented faces for a brief time, insufficient for a saccade, at a position that guaranteed that a specific feature falls at the fovea. Here we take a more data-driven approach. On each trial, participants fixated a point randomly selected from anywhere on the face. To visualize and quantify the results, statistical parametric maps (SPMs) of the face images were generated, like the statistical parametric mapping used in functional neuroimaging. Here, SPMs were calculated pixel-wise to quantify where in the face images foveal visual processing led to greater emotion classification accuracy. These ‘foveal advantage’ SPMs were then overlaid on morphed average faces for each emotion. Features highlighted included the central brow, eyebrows, and mouth for anger and around the mouth and lower nose for disgust, consistent with the results of studies using the Bubbles technique (e.g., Smith et al., 2005), as well as the previously identified optimal first fixation location that reflects the integration of task-relevant information across the face constrained by the varying spatial resolution of visual processing across the retina (Peterson & Eckstein, 2012).

TMS demonstration of the importance and differential contribution of the right and left posterior superior temporal sulci to facial expression recognition.

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People recognise facial expressions using a distributed network of interacting brain regions. One of these regions is located in the posterior superior temporal sulcus (pSTS). This region is involved in recognition of facial expressions, more than facial identities. We will present a set of our recent transcranial magnetic stimulation (TMS) studies which enhance our understanding of the pSTS involvement in facial expression recognition. The first study demonstrated that apart from the dominant right pSTS, the non-dominant left pSTS is also causally important for facial expression recognition and its role in our understanding of this process should not be ignored. The second study provided evidence for a causal functional interaction between the right and left pSTS during expression recognition. Finally, the third study showed that the left and right pSTS tune to different neural networks (ventral attention network or fronto-parietal language network, respectively) as evidenced by our complementary resting-state functional magnetic resonance imaging (fMRI) analysis. In addition, TMS revealed that the right pSTS is more involved in processing information from lips of emotional faces while the right pSTS is involved in processing information from eyes of emotional faces, particularly their eye-gaze.
Dynamic approach-avoidance behaviours affect first impressions from faces: Evidence from Virtual Reality.

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First impressions from faces have been associated with rapid approach-avoidance decisions during social interactions. However, the effects of dynamic behaviours on first impressions have remained unclear, possibly due to the predominant use of static photographic images in this field. Here we show that virtual reality (VR) technology retains the representations of social attributes acquired from photographic images: Judgments of trustworthiness and dominance correlated highly between photos and avatars of the same people (Experiment 1). We then demonstrate that movement affects first impression judgements. Avatars within a VR environment were rated as more dominant and more trustworthy when walking towards the viewer than when stationary (Experiment 2), with strongest effects for dominance ratings. In Experiment 3 avatars approaching the viewer were rated as more dominant than those avoiding (walking past) the viewer, or those remaining stationary. Trustworthiness ratings were increased by movement, but not affected differently by approaching/avoiding paths. These results show that dynamic contextual factors affect first impressions and dominance judgment is closely related to approach behaviour. This demonstrates that VR could successfully be used for exploring effects of dynamic contextual features on face perception, thus addressing existing methodological limitations.

Prediction and prediction error in natural reading.

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Eye-movements in reading are strongly influenced by a word’s predictability in context. However, there is debate about the extent to which these effects reflect prediction of specific words. We computed predictability metrics for every word in the Provo Corpus (Luke & Christianson, 2018) using a modern natural language model (GPT-2). We then studied the relationship between these metrics and fixation behaviour in the corpus. Validity checks indicated that the language model provided superior estimates of predictability than human cloze data. Analysis of the eye-movement data revealed a significant prediction error cost on first fixation durations: the impact of an unexpected target was particularly high when there was a strong prediction that it would be something else. This prediction error cost was mitigated on measures of gaze duration and total reading time when targets had greater semantic similarity to predictions. These findings suggest that readers’ fixation behaviour is guided by predictions about specific, upcoming words, and they reveal the potential of natural language models in studies of human language comprehension.

Opening the closed mind? Effects of reading literary fiction on the need for closure and creativity.

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Although philosophers have long claimed that reading fiction has the potential to improve imaginative capacities, empirical evidence on this topic is limited. We report an experiment that builds on previous work by Djikic and colleagues (2013) by testing whether reading literary fiction reduces the need for closure, and tests for the first time whether it enhances openness to experience, cognitive complexity, imaginability, and divergent thinking. We also examined whether a potential fiction-based impact depends on previous exposure to print fiction or non-fiction. In a between-subjects design, N=111 higher education students were randomly assigned to read either two literary fiction short stories or two non-fictional essays. Outcome variables were assessed after the reading assignments using a battery of questionnaire-based and behavioural indicators. The two groups of readers did not differ on any outcome measure, and results were not influenced by lifetime exposure to written fiction or non-fiction. Taken together, the current findings do not support the assumption that reading literary fiction increases imaginative capacities or related outcomes.

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Immediate (but not delayed) production hurts word learning.

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An intuitive idea is that producing a new word should facilitate its integration into the mental lexicon. However, a growing body of work suggests that production can interfere with word learning (Kapnoula & Samuel, under review; Leach & Samuel, 2007; Zamuner et al., 2018). Here we examined the source of this detrimental effect. We hypothesized that production is detrimental because it coincides with the perceptual processing of the word-form, thus disrupting its integration, and we predicted that temporally separating production from perceptual processing should alleviate its negative effect. Participants learned 12 new words, each containing an /f/ or /s/ (e.g., ranpofita). Then, learning was assessed based on the ability of new words to drive perceptual recalibration of ambiguous f/s speech sounds (Kraljic & Samuel, 2005, 2006, 2011; Norris et al., 2003; Samuel & Kraljic, 2009). Crucially, each participant was assigned to one of four training conditions: Perception-Only, Immediate-Production, Short-Delay(2secs)-Production, and Long-Delay(4secs)-Production. The results showed that immediate production had a detrimental effect on word learning, but adding a delay alleviated this effect. This pattern is in line with the hypothesis that producing a new word immediately after hearing it disrupts its integration into the mental lexicon.
Kapnoula, E. C., & Samuel, A. G. (under review). Reconciling the contradictory effects of production on word learning: Production helps at first, but hurts later.


Gesture as a stepping stone into rapid second language acquisition.

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Learning a second language is very challenging, but gesture and bilingual memory research suggests that the use of gestures during L2 learning, with limited access to the first language (L1), can fast track deep semantic encoding. To test this, 43 participants were taught Chinese action words, half through traditional L1 to L2 translations and the other half using just gestures as a cue to the meaning of an L2 word. Learning was assessed 1 day later and then again 7 days later. We used both an explicit learning assessment, in the form of an L2 to L1 translation task as well as an implicit assessment, in the form of a video reaction time task measuring the automatic semantic integration of the Chinese words. For day 1, the reaction time data showed a significant interaction between learning method and semantic congruency, with words taught through gestures showing a larger semantic congruency effect than those taught through translations. This suggests that the gesture-aided method of learning is more effective at eliciting the deep semantic encoding of the Chinese words, thus more effective learning, than translation taught words. Additionally, this advantage of the gesture supported learning method was also evident in the explicit translation assessment task. There was a significant effect of learning method, with more words being correctly translated from the gesture condition than from the translation condition.
A cross-cultural cooperative marshmallow test and its novel online testing approach.

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To cooperate effectively, both in small-scale interactions and large-scale collective-action problems, people frequently have to delay gratification (i.e., resist short-term temptations in favour of joint long-term goals). Although delay-of-gratification skills are commonly considered critical in children’s social-cognitive development, they have rarely been studied in the context of cooperative decision-making. In the current study, we therefore presented pairs of children (N = 207 individuals) with a modified version of the famous marshmallow test, in which children’s outcomes were interdependently linked such that the children were rewarded only if both members of the pair delayed gratification. Children from two highly diverse cultures (Germany and Kenya) performed substantially better than they did on a standard version of the test, suggesting that children are more willing to delay gratification for cooperative than for individual goals. The results indicate that from early in life, human children are psychologically equipped to respond to social interdependencies in ways that facilitate cooperative success. I will discuss this study, as well as an ongoing follow-up study replicating these methods in an online testing environment, which extends the paradigm to show the effects of a confederate promising to wait to eat his marshmallow on children’s propensity to delay gratification.
Bartlett Prize Symposium – Making up the mind: Culture, imagination and the creation of conscious experience.
Organised by Stephen Fleming.

Mental quality space and the prefrontal cortex.

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The subjective characters of a conscious experience can be understood in terms of how similar it is to all other possible experiences. In this view, scarlet looks the way it does because it is somewhat similar to crimson, a bit less so to pink, nothing like blue, and so on. It is ‘redder’ than everything else. It has been argued that this kind of relational information is encoded within the sensory circuits. However, activity within these circuits does not always lead to subjective experience. By decoding the spontaneous hemodynamic activity within the visual cortex - rapidly 'online' during closed-loop neuroimaging - we can pair these representations with reward, and thereby re-wire participants' physiological responses to threatening stimuli, all without their conscious awareness. Further, in these experiments we found that across participants, there is a highly consistent relational structure for the coding of different stimuli. While this informational structure could in part account for the subjective characters of perceptual experiences, I argue that higher-order monitoring mechanisms in the prefrontal cortex are also needed for consciousness to arise.

Computational determinants of conscious awareness: mental strength, mental contents and higher-order state spaces.

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A fundamental question concerns why we are conscious of, and able to communicate, some aspects of our mental life and not others. This question becomes all the more puzzling in light of successful computational frameworks that cast perception as an unconscious inference. In my talk I will describe one theoretical solution to this puzzle– the higher-order state space (HOSS) model (Fleming, 2020). HOSS predicts that the subjective intensity of conscious experience is supported by a domain-general magnitude code that tracks the strength or intensity of first-order perceptual representations (Morales, 2021) – a suggestion that dates back to Hume, but which has been largely overlooked in the cognitive neuroscience of consciousness. I will present data from recent behavioural and neuroimaging experiments that find signatures of this content-invariant magnitude code in near-threshold perceptual tasks. These findings are consistent with awareness judgments being supported by an abstract, low-dimensional inference on the presence or absence of perceptual content. A neural code for mental strength is presumably central to communicating and sharing awareness of all types of content with others.
Fundamental constraints on distinguishing reality from imagination.

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Conscious sensory experience can be externally triggered by objects appearing in the outside world, creating our everyday perception. But we can also generate sensory experience internally in the absence of any external stimuli, such as during memory, dreaming and mental imagery. Various lines of research have shown that the neural mechanisms used for internally generating sensory experience overlap strongly with those supporting perception of the external world. This overlap poses a challenge for perceptual reality monitoring: if the neural substrates of perception and imagination are so similar, how can we generally tell them apart? During this talk, I will discuss which neural mechanisms are shared by visual imagination and perception and which could be used to tell them apart. I will present the findings of a series of recent studies that we did which suggest that sensory strength, rather than control, seems to be a key factor in dissociating visual imagery and perception. I will end by discussing the implications of these findings for our understanding of reality monitoring errors in both health and disease.

Explicit metacognition – for and from social interaction.

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In explicit metacognition, properties of cognitive processes – such as their reliability - are represented in a way that places demand on working memory and is typically subject to verbal report. This talk will focus on the social functions and social origins of explicit metacognition. Drawing on collaborative work with Chris Frith, I will argue that explicit metacognition is for supra-personal cognitive control. It allows metacognitive information to be broadcast, and thereby coordination of the sensorimotor systems of two or more agents involved in a shared task. In relation to evolutionary-developmental origins, I will present a model suggesting that children learn through social interaction to discriminate metacognitive feelings, such as experiences of processing fluency, from emotional, sensory, and motor feelings; the significance of metacognitive feelings (for example, whether they should increase or decrease confidence); and how metacognitive feelings can be communicated to others in their social group. This suggests that explicit metacognition is a ‘cognitive gadget’, that it has been made fit for purpose primarily by cultural selection. Important components are genetically inherited, but the primary architect of explicit metacognition is a Darwinian process operating on socially inherited variants.
Hallucinations and delusions as aberrations of belief.

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Hallucinations and delusions are viewed as aberrations of perception and belief respectively. However, the distinction between perception and belief and their alignment with hallucination versus delusion may not be clear cut. I will show the impact of beliefs on perception through a laboratory task that encourages hallucinations. These conditioned hallucinations are driven by strong prior perceptual beliefs, and they are more likely in people who hallucinate outside of the lab. On the other hand, paranoid persecutory delusions seem related to more promiscuous beliefs. This instability can be recreated in experimental animals treated with methamphetamine, and it has been fomented in the general population by the evolving pandemic and attendant challenges to conditional cooperation. Hallucinations then appear to entail stronger prior beliefs, and delusions, weaker ones. We reconcile these differences by focusing on symptom contents. In a large scale phenomenological study we found certain delusions (passivity) travel with hallucinations, whereas others (persecution, grandiosity) do not. These finer grained distinctions may better illuminate the links between psychosis, perception, and belief.

Private-public mappings in brain and behaviour.

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A key aspect of healthy social function is an ability to map our private states of mind – what we think or feel – onto public actions – what we say or do – in a context-appropriate manner. For example, it may be socially appropriate to express gratitude for a gift we do not want, or remorse for an action we do not regret. In this talk, I will present our behavioural and neuroimaging work on how people solve this ubiquitous mapping problem. In a series of studies, we used decision confidence as a laboratory system for quantifying how private states are formed and how these are mapped onto public actions according to the social context. Using univariate and multivariate techniques, we found that a private-public distinction is reflected in a medial-lateral division of prefrontal cortex: medial areas supported the formation of a private sense of confidence, whereas the lateral frontal pole (FPl) – a brain region with no direct homologue in the monkey brain – supported the context-dependent transformation of this variable into a public confidence report. I will discuss the wider role of private-public mappings in human social function and dysfunction.

End of Symposium
EPS Bartlett Prize Lecture.

Consciousness, (meta)Cognition, Culture.

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How is it possible to perceive things that are not there and believe things that are not true? These are examples of symptoms associated with schizophrenia. In contrast to deficit disorders such as visual agnosia, these positive symptoms reflect creative disorders of consciousness. Such creative experiences imply excessive dependence on top-down processes (e.g. prior beliefs), at the expense of bottom-up processes (e.g. sensations). At this top level of our brain’s hierarchy, estimates of parameters (such as the precision of our prior expectations) become increasingly difficult to compute and can become decoupled from reality. However, this decoupling has advantages. By sharing our subjective experiences of confidence, superior group decision-making becomes possible. For these advantages to be achieved we need to align our confidence reports with others. This requires decoupling them from our estimates of objective reality. Confidence is one of many subjective experiences that can be modified through interactions with others. In this way we acquire shared views of the world which are crucial for successful communication and for the emergence of culture. In schizophrenia, this high-level decoupling is no longer constrained by interactions with others.
Lost (and found) in pronunciation.

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Non-native speech may present challenges to native listeners as it contains phonetic irregularities. For example, Spanish speakers pronounce English /p/ without aspiration which makes it confusible with a /b/ for a native English listener. How can English listeners adapt to this and other idiosyncratic non-native features? In 2 online experiments, we exposed 320 English listeners to the speech of a Chilean speaker of English. The listeners’ general comprehension was tested using a transcription task repeated at several timepoints corresponding to increasing exposure to the non-native speech. The listeners’ adaptation to non-native phonetic irregularities (e.g. unaspirated /p/) was tested using a sound classification task. Consistent with previous research [1], experiment 1 showed that comprehension accuracy increased over time. In addition to general factors contributing to the listeners’ comprehension improvement (e.g. lexical cues), the listeners demonstrated specific contributions of their adaptation to non-native accent phonetic irregularities. Experiment 2 extended these findings in a version of the sound classification task based on pseudowords. The findings from Experiment 2 enable us to discuss an interplay of acoustic, lexical, and sentential cues contributing to adaptation to non-native speech.


The Jena Voice Learning and Memory Test (JVLMT): A standardized tool for assessing the ability to learn and recognize voices.

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The ability to recognize someone’s voice exists on a spectrum with phonagnosia and super recognition at its ends. Yet there is no standardized test to measure an individual’s ability of learning and recognizing voices with samples of speech-like phonetic variability. We developed the Jena Voice Learning and Memory Test (JVLMT), a 22min test based on item response theory. The JVLMT consists of three phases in which participants become familiarized with eight speakers, revise the learned voices, and then perform a 3AFC recognition task, using pseudo-sentences devoid of semantic content. Acoustic (dis)similarity analyses were used to create items with various levels of difficulty. Test scores are based on 22 Rasch-conform items which were validated based on two online studies with 232 and 454 participants, respectively. Correlational analyses showed high and moderate convergent validity with the Bangor Voice Matching Test (BVMT) and Glasgow Voice Memory Test (GVMT), respectively, and high discriminant validity with a digit span test. Four participants with super recognition abilities and 7 participants with phonagnosia were identified who performed at least 2 SDs above or below the mean, respectively. The JVLMT is a promising research and screening tool for impairments in voice recognition as well as super-recognition abilities.
The impact of the COVID-19 pandemic on socialisation, cognition, and hearing in younger and older adults in the UK.

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During Covid-19, social lives have transformed dramatically; these changes may have disproportionately affected older adults. Outside a pandemic, socialisation may mediate the known relationship between hearing loss and cognitive health in ageing. The ongoing, online Covid-19 Social Hearing Study investigates how isolation impacts mental health, cognition, and hearing in younger and older adults, over a year. We present initial findings from the collected data (n=194), over 8-months. Analyses indicate significantly decreased engagement in recreational lifestyle activities, and increases in self-reported social isolation over time in both age groups (ps < .05). Despite experiences of social deprivation, we find no significant increases in depression, or changes to self-reported hearing ability over time (p > 0.5). Although there is a significant Time x Age effect on speech perception ability (p < .001), this is likely driven by performance fluctuations in younger adults only (p < .001), potentially due to motivational factors. Moreover, we find significant increases in short-term and working memory, indexed by a forward and backward digit span, over time in both age groups (p < .001). These data present encouraging indications of resilience throughout the pandemic, and represent opportunities for successful online auditory and cognitive assessments in multiple age groups.

Suboptimal reliance on incongruent evidence for the computation of confidence.

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Evaluating one's own decisions is a key feature of cognition, as it allows to dynamically adapt behaviour. Normative models argue that the brain makes optimal use of the available evidence in order to make such evaluations. Thus, when judging the accuracy of a decision across several samples of evidence, the normative strategy would be to equally weight each sample. Here, we present data from nine experiments in which human participants judged the average colour of eight shapes and then additionally rated their confidence in this decision. Contrary to predictions of the normative model, in all datasets participants excessively relied on evidence that was incongruent with the choice made. This suggests that, rather than using an optimal strategy, participants use heuristics when evaluating their own performance. Importantly, our results also go against recent, opposing findings which have suggested that decision-incongruent evidence tends to be ignored when reporting confidence. We show that a computational model assuming robust averaging (De Gardelle & Summerfield, 2011) can explain these data without the need to assume an additional source of 'metacognitive' noise.
Trait depersonalisation predicts increased judgements of agency in ambiguous situations.

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Depersonalisation (DP) is a form of altered subjective experience in which people feel detached from their sense of self. DP has been linked to blurred self-other boundaries during multisensory processing (Farmer et al., 2021). Another key facet of the self is agency, the attribution of a causal role for one’s actions. We investigated whether increased trait DP influences the effect of self-other primes on agency judgements. 136 participants completed an online study in which they had to complete a lexical decision task (LDT). Prior to each trial of the LDT participants were primed with a self, computer or neutral prime. After each trial they were asked to rate whether the trial had ended due to their key press or because the computer timed out. Judgments of agency were significantly lower after the computer prime but not higher after the self-prime. We also found that while trait DP predicted higher ratings of agency thought this did not interact with prime type. This finding suggests that more likely to claim ownership over ambiguously caused events as they interpret external events to be more linked to the self.

Automatic imitation: Stimulus response compatibility effects across domains are robust to cognitive load.

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Imitative behaviours are often highlighted as guiding social interactions. Whilst these behaviours are labelled “automatic imitation”, investigations into their automaticity have produced inconclusive results. A key criterion for automaticity is efficiency, where a process persists under cognitive load. In two experiments, we used the stimulus response compatibility task to index the processes associated with controlling the urge to copy others’ speech and manual motor actions. Consistent with prior work, we employed a dual-task design where concurrent load was manipulated using a sequence memory task. If the imitation of other’s actions is efficient, compatibility effects should be independent of load effects; there should be no evidence for an interaction. An interaction between load and compatibility would demonstrate that imitative tendencies are contingent on central cognitive resources. A Bayesian sequential hypothesis testing approach demonstrated substantial evidence against an interaction between load and compatibility effects in both manual (BF01 = 1808) and speech (BF01 = 4914) experiments, supporting the hypothesis that the tendency to imitate others’ actions operates independently of central cognitive resources. Therefore, automatic imitation meets the efficiency criterion for automaticity, persisting under demanding cognitive load.
Friday 7 January, am

Mid-Career Prize Symposium – Adaptive forgetting by inhibitory control: origins, neural bases, and clinical implications.
Organised by Pierre Gagnepain.

Some Symposium-Induced Remembering about Retrieval-Induced Forgetting.

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Early in his graduate career at UCLA, today’s honoree made an observation that questioned a key assumption of our “new theory of disuse” (Bjork & Bjork, 1992): Namely, our assumption that when an item in memory associated with a given cue is recalled, that item becomes more accessible in the future and competing items associated with the same cue become less accessible. Using our memories, we argued, “shapes our memories” by making what we recall more recallable in the future and competing items less recallable. What Mike noticed was that research on the “fan effect” (e.g., Anderson & Reder, 1999) suggested, instead, that activation of a given cue-target associative link spreads activation to non-target items sharing the same semantic relationship with the target. Thus, Citrus Fruit: Or**** might activate not only orange, but also, if less strongly, lemon. To explore this issue, Mike designed a retrieval-practice paradigm to led to the finding that—consistent with retrieval-induced forgetting and inconsistent with spreading activation—untested items from practiced categories were indeed recalled more poorly than were corresponding items from unpracticed categories. In this talk we comment on a few of the educational and clinical implications of retrieval-induced forgetting that have been identified across the 27 years since we first reported that “remembering can cause forgetting” (Anderson, Bjork, & Bjork, 1994).

Shaping memories by active use.

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Memories are not static, they are in constant flux and adapt to our changing goals. Mike Anderson's work has been fundamental in demonstrating that repeatedly recalling a past event can adaptively shape the underlying memory landscape. In this talk, I will present behavioural and neuroimaging work that directly builds on these ideas of retrieval-induced forgetting and enhancement. On the one hand, these studies show that each time we consciously recall a recently acquired memory, competing memories are adaptively suppressed and become less interfering in the future. On the other hand, active remembering also strengthens those features of a memory that are brought back to mind, and thereby plays an important role in long-term consolidation. Retrieval-mediated forgetting, enhancement, and qualitative memory changes can be tracked in brain patterns and behaviour, confirming Mike’s original ideas that episodic memories are adaptively shaped by active use.
Sustained consequences of retrieval suppression.

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Unpleasant experiences often turn into memories that involuntarily intrude into awareness. The work by Mike Anderson has demonstrated that we can actively suppress such unwanted retrieval. Notably, this process has lingering after effects: it weakens the avoided memory and eventually causes forgetting. In this presentation, I will further examine the sustained consequences of suppression. I will first present meta-analytical evidence that two seemingly opposite mechanisms can induce forgetting. Notably, these mechanisms are deficient in individuals with emotional disorders that are characterized by intrusive thought. I will then present evidence that suppression weakens a memory by causing a sustained reduction in the potential to reactivate its neural representation. This effect is more pronounced in individuals who experience a stronger fading of suppressed memories. Together, these data corroborate Mike’s groundbreaking observation that suppression causes forgetting, highlight its clinical relevance, and further elucidate its neural basis.

A common brain mechanism for stopping unwanted actions and memories.

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Stopping unwanted memories is essential to mental health and wellbeing, and so is the stopping of unwanted physical actions. Could there be a common mechanism that allows us to stop both unwanted memories and actions? The research on memory stopping and action stopping has primarily been independent of each other. There is a general agreement that the right prefrontal cortex (PFC) is critically involved in inhibitory control. The memory control research has highlighted the importance of the right dorsolateral PFC controlling the hippocampus. The action control research has highlighted the importance of the right ventrolateral PFC controlling the primary motor cortex (M1). Are the two PFC regions indeed controlling only a specific domain, or could they be involved in controlling both memories and actions? We integrated the separate bodies of research and examined the potential domain-general mechanisms of inhibitory control of memories and actions in the same individuals. Moreover, we investigated how a common mechanism could govern the memory and action stopping if they are mediated by distinct neural systems (hippocampus and M1, respectively)?
Is Post-Traumatic Stress Disorder an active forgetting disorder?

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The expression and persistence of vivid and distressing intrusive memories, is a central feature of Post-Traumatic Stress Disorder (PTSD). It remains largely unknown why these traumatic memories persist in some individuals, and fade away in others. Current understanding of PTSD links this persistence to the disruption of memory functions involved in the formation and updating of the memory trace. During this talk, I will present an alternative hypothesis, rooted in the idea that the variation across individuals in the response to trauma may additionally depend on the disruption of the brain system that normally allows the control over memory, a central mechanism of active forgetting. This idea originated from Mike Anderson's work on memory suppression, which has been fundamental in demonstrating that repeated inhibitory control of intrusive memories reduces their accessibility and causes forgetting. This presentation will be articulated around the findings of a recent longitudinal neuroimaging study realized in a cohort of 120 direct survivors of 11/13 Paris terrorist attacks. This research program is centered on the Think/No-Think task developed by Mike to study memory suppression, and provides a unique opportunity to observe the online and structural dysfunctions of the memory control network following a severe psychological trauma and how such process may contribute to recovery and psychopathological dynamics.

End of Symposium
EPS Mid-Career Prize Lecture.

Title of Lecture: TBC

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Abstract – TBC
‘You Game Like a Girl’: Perceptions of gender and competence in gaming.

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While there is an abundance of research concerning the gendered dimensions of video gaming and online communities, there is a limited focus on gameplay competence. This study examined the relationship between sexism and gendered perceptions of competence in gaming. Three hundred and eighty-five participants volunteered to take part. Participants were randomly allocated to one of three gendered conditions (female, male, or neutral). Participants were primed to believe that the ‘players’ being observed were male or female through the use of utterances (voiceovers). The neutral condition contained no utterance. Participants watched two video game clips within each condition (novice and expert playthroughs). Participants rated the competence and warmth of the players, estimated the number of errors made, and completed the Ambivalent Sexism Inventory. The findings indicated that female and neutral clips were perceived as less competent than male clips in both skill levels. This difference was more pronounced in the expert level. Warmth ratings varied significantly across conditions. Hostile sexism predicted lower perceptions of warmth. The study demonstrates the need for inclusive and safe online gaming environments.

The significant role of exercise on neurotransmission amino acid blood concentrations in relation to neuropsychological performance.

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Amino acid neurotransmitters, including glutamate, phenylalanine, tyrosine, alanine, and glycine, underlie the majority of the excitatory and inhibitory neurotransmission in the nervous system, and acute exercise has been shown to modulate their concentrations. We aimed to demonstrate any correlation exists between the above-mentioned amino acid blood concentrations and the cognitive performance on widely used neuropsychological assessments after an exercise intervention. Sixty basketball players were randomly assigned to one of two experimental conditions: exercise or inactive resting. All participants underwent a comprehensive neuropsychological assessment and blood samples were taken on a Guthrie card before and after the end of the experimental conditions. Amino acid blood concentrations were significantly elevated post-exercise. Additionally, cognitive performance on specific neuropsychological assessments significantly improved post-exercise and correlated with the elevated amino acid concentrations. These results suggest that elevated neurotransmission-related amino acid levels may contribute to improved neuropsychological performance after a single bout of high-intensity exercise.
Individual differences in spatial navigation: Evidence from real-world and laboratory-based tasks.

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There are large individual differences in navigational abilities, which have been linked to variability in cognitive factors such as spatial working memory and mental image manipulation. However, few insights appear to have combined real-world behaviour with controlled laboratory assays of underlying navigational function, and with standardised cognitive measures. Here, we present data from over a hundred typical adults in a comprehensive study of navigational skills and their cognitive substrates. Tasks included real-world navigation (following a map from memory; route combination; short-cut), navigational subcomponents (place and response learning; path integration; mental model construction), and neuropsychological measures (executive function; detection of embedded figures; working memory; spatial memory; mental rotation, verbal learning). K-means clustering analysis suggested that patterns of performance formed three distinct groups – one of the groups had high ability across tasks, while the other two groups struggled with different aspects of navigation: one with small-scale navigational abilities and processes and the other with larger-scale spatial tasks and working memory. Additional analyses grouped participants on their ability to take a shortcut, which was predicted by the judgement of allocentric spatial relations, and by spatial anxiety. Together, these data point to a potential typology for navigational difference, and highlight the influence of affect.

Changes in self-other boundaries modulate children’s body image attitudes.

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One’s own face is a key distinctive feature of our physical appearance, yet multisensory visuo-tactile stimulation can alter self-other boundaries, eliciting changes in adult’s self-face representation and social cognition processes such as body image attitudes. This study (N = 51) tested whether changing self-face representation by altering self-other boundaries modulates body image attitudes towards others during childhood. Using the enfacement illusion with 6-to-11-year-old children, we measured the subjective experience of self-identification with the other person’s face and body size attitudes. Across all ages, congruent multisensory information led to stronger enfacement and increased positive body size attitudes. The latter effect was stronger in 6–7-year-olds compared to 8–9-year-olds. Thus, blurring self-other boundaries successfully alters self-face representation and body image attitudes in children.
Active touch sensing is modulated by the cardiac cycle.

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Cognition varies with phasic bodily signals such as heartbeat. Yet, these results have been shown by locking the brief presentation of stimuli to distinct cardiac phases. However, in everyday life, information is not presented in such a phase-locked and passive manner, but actively sensed at one’s pace. In this context, whether active touch is modulated by the cardiac cycle remains unknown. Here, we recorded the ECGs of forty-six participants while they had to discriminate the orientation of gratings across different difficulty levels. Importantly, the participants were able to freely initiate, hold, and end the sensing of these gratings. Across several analyses, the results show that the duration of participants’ touch varied as a function of the phase of the cardiac cycle in which they initiated the touch. When participants initiated touching in the systolic phase, they significantly held for longer periods of time (vs. touches initiated in diastole). Since several physiological changes occur during systole (e.g., baroreceptors firing), we believe that they overcome a turbulent period of sensing by holding their touch for longer periods of time. These results provide evidence of a signal-to-noise ratio account between the processing of ongoing signals from the body and sensing the external world.

A neural marker of unfolding choice and urgency.

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To interact meaningfully with its environment, an agent must integrate external information with its own internal states. A particularly striking example of this flexible interaction is the ability to adjust how much time to allocate to a given decision depending on one’s internal priorities. Here, we set out to investigate how different urgency constraints influence how people accumulate sequential evidence and make decisions. In two EEG studies, we identified a neural correlate that tracks how categorical choice unfolds as sequential evidence is sampled in various urgency conditions. In our task, participants had to monitor long sequences of discrete visual stimuli and decide which out of two sets of stimuli was most frequent. We found that the classic P3 event-related potential evoked by sequential items tracked decision formation during evidence accumulation and predicted participants’ choices on a single trial level, both when evidence was strong and when it was ambiguous. The P3 reflects not only linear increases in urgency over time, but also sudden changes in urgency during the progression of a single decision. Our findings identify a valuable neural marker that reflects the cognitive interaction between external (evidence) and internal (urgency) sources of information during evidence accumulation.
Mutualistic coupling of vocabulary and non-verbal reasoning in children with and without language disorder.

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Mutualism is a developmental theory that posits positive reciprocal relationships between distinct cognitive abilities during development. It predicts that abilities such as language and reasoning will influence each other’s rates of growth. The current study tests whether language and non-verbal reasoning show mutualistic coupling in children with and without language disorder using three waves of data from a longitudinal cohort study that over-sampled children with poor language at school entry (N = 501, 7-13 years). Bivariate Latent Change Score models were used to determine whether early receptive vocabulary predicted change in non-verbal reasoning and vice versa. Models that included mutualistic coupling parameters between vocabulary and non-verbal reasoning showed superior fit to models without these parameters, replicating previous findings. Specifically, children with higher initial language abilities showed greater growth in non-verbal ability and vice versa. Multi-group models suggested that coupling between language and non-verbal reasoning was equally strong in children with language disorder and those without. This indicates that language has downstream effects on other cognitive abilities, challenging the existence of selective language impairments.

The role of language in mental health during the transition from primary to secondary education.

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Early adolescence, coincident with the transition to secondary education, is a time of particular susceptibility to mental health difficulties. This is especially true for children with language disorders, who may be genetically predisposed to heightened internalising symptoms (Toseeb et al., 2021), while also experiencing more bullying (Conti-Ramsden & Botting, 2004) and poorer quality friendships (Fujiki et al., 1996). Our study was a preregistered secondary analysis (https://osf.io/yg2wf) of data obtained from SCALES (Norbury et al., 2016) - a longitudinal cohort study of children’s language and communication skills, which oversampled children with language difficulties. In Linear Mixed Effects modeling, we found that Year 1 language predicted parent-reported mental health in Year 6 and Year 8, but there was no evidence for an increase in symptoms. Structural Equation Modeling showed language was associated with parent-reported mental health and positive social experiences, but these positive experiences did not mediate the effect of language on Year 8 anxiety and depression. Language did not predict child-reported mental health and we found low agreement between child and parent raters overall. Parent-report measures suggest children with language difficulties may be more vulnerable to mental health difficulties in early adolescence.


Syllable processing during reading development.

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Ehri’s (2005) model of reading development proposes that children progress from making grapheme-phoneme connections to making grapho-syllabic connections. We explored the trajectory of syllable use in an eye movement experiment with simultaneous voice recording. Developing readers in grades three, four and five read sentences with an embedded target word. Targets contained six-letter and either one or two syllables. If reading instruction and greater exposure to words increases the likelihood that word recognition processes recruit larger units (i.e., morphemes or words), there should be an interaction between grade and syllable number, where the effect of syllable number reduces with higher grades for gaze duration and eye-voice span (EVS). Successive difference contrast shows that children in grade five had shorter gaze durations, longer offset EVS and wider spatial EVS than children in grade four. Children in grades three and four did not significantly differ on these measures. A syllable number effect was found for gaze but not for the EVS measures. One-syllable words took longer to process compared to two-syllable words. Importantly, we found no evidence of change in the use of syllable units across the three grades. The findings suggest that syllable representations are relatively stable from grades three to five.

An empirical assessment of how readers value text: an adaption of the willingness-to-wait paradigm.

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Print experience is critical when becoming a fluent reader, with large-scale studies demonstrating that leisure reading results in large differences in print exposure. Understanding how people make decisions about whether to read is important. Existing measures of reading motivation are trait-based and involve self-reported ratings, for instance, “I enjoy reading.” These do not capture the dynamic, moment-to-moment changes in motivation that may occur due to reading context, or the text readers encounter. The willingness-to-wait paradigm is one way to assess the value of a stimulus; people only spend time waiting for information they find valuable. Here, we adapt the willingness-to-wait paradigm to empirically measure dynamic changes in motivation for reading. We asked participants (N=40) to read book synopses and rate how much they enjoyed each synopsis. We then assessed whether participants would spend time (3-6 seconds) waiting to learn more information about the book. Adults were more likely to spend time waiting for book information when they found a synopsis enjoyable. In contrast, a traditional reading motivation questionnaire (ARMQ) was not a good predictor of waiting decisions. This paradigm allows us to sensitively investigate the decisions people make about reading and opens up avenues to investigate the factors affecting their choices.

Understanding language comprehension: the challenge of measuring individual differences within experimental designs.

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Investigating individual differences in language comprehension is important for the development of complete models of language processing. Translating approaches focussing on group-level differences between experimental conditions to paradigms that can reliably detect individual differences is not straightforward (1,2). We present pilot data from a paradigm measuring adult listeners’ sensitivity to lexical-semantic ambiguities. Fifty participants listened to narratives ending in an ambiguous word that was disambiguated towards its subordinate meaning, or an unambiguous control word, and selected between two picture probes to go with the narrative. We found ambiguity costs in accuracy and response times at the group-level, replicating earlier work (3). We also present data investigating potential drivers of condition differences other than ambiguity itself. Crucially, we found evidence that individual differences exist in the size of ambiguity costs to response accuracy. We compare the reliability of three approaches to using this kind of data to investigate individual differences: (I) traditional difference scores between conditions, (II) slope scores based on estimates from mixed models, and (III) an approach based on mixed models taking advantage of the trial-level data. Finally, we discuss more general design, analysis and reporting considerations, providing a starting point for researchers interested in exploring individual differences in experimental tasks.


**Transitional probability, cortical tracking:** The role of transitional probabilities in cortical tracking of hierarchical linguistic structures: *Withdrawn*

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A fundamental question in speech perception is how continuous speech signals are segmented by the brain. A study by Ding et al. (2016) suggested that the rhythm of hierarchical structures in speech can be reflected in the neural activities at the corresponding frequencies. The authors explained the phenomenon as the cortical tracking of linguistic units by top-down grammatical chunking. However, online chunking clearly benefits from the transitional probability (TP) between linguistic units. Saffran et al. (1996) found that infants could extract ‘words’ from fluent ‘speech’ after a two-minute exposure, in which TPs were considered as a key in the speech segmentation. A natural question raised by comparing the conclusion of these two studies is whether the cortical tracking effect could be driven by the TPs. We conducted a six-session Magnetoencephalography (MEG) experiment with Dutch native speakers (who do not know Chinese) to investigate the role of TPs in the cortical tracking effect. Using Discrete-Time Fourier Transform (DFT) with Generalized Eigen-Decomposition (GED), our analysis indicated that cortical tracking could be introduced solely by TPs. Our results supported the conclusion that was drawn by Saffran et al. (1996), and provide neural evidence for the role of TPs in speech segmentation.

References:


Language comprehension: How are healthy ageing adults affected by sentence contexts and task demands?

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Word retrieval can deteriorate with ageing, which can influence language comprehension. Since words are not used in isolation, it is important to study how age influences word processing within sentence contexts. Previously, research in this area produced mixed outcomes. The purpose of this study was to examine how contexts that either predicted (matched) or mismatched a target word modulate age effects and to explore the role of task demands (reading for comprehension versus reading to answer questions). This examined whether older adults’ intact semantic knowledge helps language processing in matched contexts and whether interfering information hinders processing in mismatched contexts. 40 younger (18-35 years old) and 40 older (65-80 years old) adults completed a self-paced reading task. Participants read sentences of varying contexts (matched/mismatched/neutral) for comprehension only or to answer questions. Older adults showed slower reading times than younger adults. Matched contexts facilitated reading times, which did not differ for the age groups (“match effect”). However, mismatched contexts neither facilitated nor hindered reading times for either age group. Task demand did not modulate the match effect. This suggests that older adults, similarly to younger adults, can use their semantic knowledge to facilitate language comprehension regardless of task demand.

Lexical retrieval in healthy ageing: An exploration of context effects.

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Word retrieval in healthy ageing is often studied using picture naming. Older adults typically exhibit longer naming times than younger adults. In contrast to picture naming in isolation, natural language is produced within conversation. In this study, younger (n=48) and older (n=48) adults named pictures in isolation and in response to questions. Question context was manipulated such that questions were Matched (predicting the target word), Mismatched (predicting a different word), or Neutral (not predictive). We examined whether naming latencies were influenced by context (compared to isolation) and by the type of context. We also explored whether older adults could benefit from intact semantic knowledge in Matching contexts and whether they have greater difficulty suppressing interference in Mismatched contexts. Results showed faster naming latencies in neutral sentence contexts compared to isolation. This facilitating effect of context did not differ between younger and older adults. Furthermore, a ‘Match-effect’ but no ‘Mismatch-effect’ was observed in both age groups. The facilitation experienced in matching contexts did not differ for the younger and older groups. This suggests that both younger and older adults’ language production can benefit from context, especially when that context predicts upcoming words.
Cultural background predicts sarcasm interpretation and use: Evidence from the UK and China.

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The present study investigated individual differences in sarcasm interpretation and use in participants in the UK and China. In Experiment 1 (with UK participants), we manipulated the perspective from which the comment should be judged (speaker vs. recipient vs. reader), and examined effects of theory of mind ability, empathy, and the usual role that the participant might take in sarcastic conversation (i.e., whether they are more typically the speaker or recipient of a sarcastic comment) in sarcasm interpretation and use. Key results showed that participants rated sarcasm as being more amusing and polite than literal criticism, supporting the Tinge hypothesis (Dews & Winner, 1995), which suggests that sarcasm mutes the negativity of criticism. Experiment 2 was a replication of Experiment 1, but with Chinese participants. In contrast to Experiment 1, key results showed that participants rated sarcasm as being more sarcastic and aggressive than literal language. Theory of mind ability positively predicted sarcasm use and interpretation in both experiments. From this, we propose that cultural background may modulate sarcasm interpretation: whereas Western participants tend to consider sarcasm as amusing, participants from Eastern cultures tend to view sarcasm as aggressive, which in turn affects their interpretation and use of sarcastic comments.


Bilingual Number Processing: does frequent use of a second language affect number comparison performance?

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Number processing is influenced by the language background of participants. The Unit-Decade Compatibility Effect is the finding that participants are faster to compare the overall magnitude of a pair of two-digit numbers when both unit and decade comparison lead to the same decision (e.g., 24 vs 68, congruent) than when they lead to opposite decisions (e.g., 28 vs 64, incongruent). This effect is typically stronger in German- than English-speakers, driven by number word inversion in German (i.e., the unit comes first in spoken number words – 25 = ‘five-and-twenty’). Past research has mainly focused on comparing this effect across different monolingual groups. We investigated whether the presence of a second language affects the unit-decade compatibility effect by comparing monolingual German speakers to German-English bilinguals. Overall, there was a significant unit-decade compatibility effect, with longer reaction times for incongruent than congruent trials. The effect, however, did not differ significantly between groups. It is possible that bilinguals did not activate their second language strongly enough in this experiment. We will conduct a further experiment on number comparison with bilingual participants directly after they had to use their second language to investigate whether their second language then shows a significant effect on number processing.
Comprehension of sentences with ambiguous words is predicted by language-specific and domain-general abilities.

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During comprehension, listeners must use context to interpret semantically ambiguous words correctly, particularly when words refer to a non-dominant meaning. We investigated whether individual differences in comprehension success are driven by linguistic-specific and/or domain-general abilities. In a behavioural online study, volunteers (n=71, 19-59 years) listened to 122 sentences containing an AMBIGUOUS word that was disambiguated by later context to an unexpected meaning (Sally worried that the BALL was going to be too crowded). After each sentence, listeners heard the ambiguous word in isolation and defined the word as it had been used in the sentence. Response accuracy gave a measure of comprehension success (mean = .84, SD = .12, split-half reliability = .82, p < .001). Volunteers also completed the Mill Hill Vocabulary Test (mean accuracy = .57, SD = .11, positive correlation with age p < .001), Spot the Word Task (mean = .79, SD = .10) and the four-part Cattell 2a Culture Fair Test (mean = .72, SD = .14). A PCA (varimax-rotated) revealed two components reflecting language-specific and domain-general abilities, each predicting comprehension accuracy, together explaining 44% of its variance (p < .001). Independent contributions of language-specific and domain-general functioning to semantic ambiguity resolution will be discussed.

The impact of spatial and verbal working memory load on semantic relatedness judgements.

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There is an ongoing discussion about the role of working memory (WM) in semantic processing. Heyman et al. (2015) demonstrated that semantic priming can be affected by WM load; however, these findings were not replicated (Heyman et al. 2017). The present study investigated the influence of WM load (low vs. high) and WM task (verbal vs. spatial) on semantic relatedness judgements with strongly related (e.g. thigh–KNEE), weakly related (e.g. fist–KNEE) and unrelated (e.g. office–KNEE) Polish word pairs. The data from native Polish speakers (N=66) revealed that WM load did not interact with task and relatedness, consistent with Heyman et al. (2017). However, compared to the spatial WM task, the verbal WM task decreased the facilitation for strongly related, but increased the inhibition for weakly related pairs. This inhibition effect was significant in both WM tasks; however, it disappeared in a control experiment without a WM task (N=52), whereas the facilitation effect for strongly related pairs remained. The overall results indicate that the type of WM task influences relatedness judgements and that weakly related pairs are in particular affected by the WM task because these pairs require more extensive semantic and decision processes in the semantic relatedness task.


**Language, Learning, Memory**

Forgetting of newly learned words: Fragmented or holistic depending on retrieval practice.

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The cognitive mechanisms that integrate newly learned words with existing words and existing semantic knowledge in the mental lexicon have been intensely researched. Much less is known about how distinct elements of a new lexical representation, such as the word form and aspects of its meaning, become integrated with each other. Taking inspiration from episodic memory research into multi-element event memories (e.g., Joensen et al., 2019), we sought to establish whether there is a statistical association between retrieval successes of different lexical elements of the same new word (i.e., retrieval dependency). Across two pre-registered experiments, participants encoded new words made from an orthographic word form (e.g., “flimir”) presented alongside pictorial (e.g., picture of a balloon) and auditory (e.g., sound of a baby crying) elements representing semantic word context. Retrieval dependency emerged immediately after encoding, showing that elements of a new lexical representation, like those of event memories, become rapidly bound together in memory. However, retrieval dependency disappeared after one week, showing that new lexical representations, unlike event memories, are forgotten in a fragmented manner. Exploratory analyses however suggested that this fragmentation can be prevented through retrieval practice taking place immediately after encoding.

**Counterfactual imagination as a source of memory distortion: cognitive and brain mechanisms.**

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Imagined events can be misremembered as experienced, leading to memory distortions. However, less is known regarding how imagining counterfactual versions of past events impairs memories for the original event. We used EEG to investigate the neurocognitive processes associated with counterfactual imagination effects on memories of self-performed actions. Participants first enacted simple actions with everyday objects (e.g. rolling dice). A week later, they were shown pictures of
some of the objects and either imagined the same action they had originally performed, or imagined a counterfactual action (e.g. stacking the dice). Subsequent tests showed that memory accuracy was reduced after counterfactual imagination when compared to both veridical imagination and a baseline condition that had not been imagined at all, showing an impairment beyond simple forgetting over time. EEG recorded during the recall test revealed separate neural markers of memory reactivation versus executive control processes that were recruited to support recall in challenging circumstances. The study shows that sensory-motor rich, autobiographical memories of actions performed with real objects can be distorted by counterfactual imagination, and provides new insight into the neurocognitive mechanisms that are recruited when people need to distinguish memories of imagined versus true actions.

**A meta-analysis of episodic and semantic feeling-of-knowing in aging.**

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Previous research shows a complex pattern of preservation and deterioration in metacognition in aging. One contested area is in older adults’ performance on feeling-of-knowing (FOK) tasks. While semantic FOK (sFOK) is preserved with age, studies on episodic tasks (eFOK) produce equivocal findings. To address this issue, we present a meta-analysis evaluating the age-related performance in the FOK paradigm. We included data taken from 18 published papers dealing with eFOK or sFOK in aging. We analysed the difference in metacognitive performance between younger and older adults, taking into account the major confound in this domain, the difference in performance levels, as a moderator. Across 22 reported effects we find a reliable age difference on eFOK accuracy, although this is somewhat moderated when taking into account final recognition differences between groups. The published sFOK studies yield no age effect (9 comparisons). We highlight several methodological issues inherent in such research (e.g. the over-reliance on non-parametric correlations to assess metacognitive sensitivity which can be influenced by differences in performance levels). However, one possibility aside of such concerns is that the eFOK deficit in aging is a consequence of a memory decline (also known as the Memory Constraint Hypothesis, Hertzog et al., 2010).

Effects of glycaemic control on memory performance, hippocampal volumes and depressive symptomology.

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Diabetes and poor glycaemic control have been shown to negatively impact cognitive abilities, while also raising risk of both mood disorders and brain structural atrophy. Sites of atrophy include the hippocampus, which has been implicated in both memory performance and depression. The current study set out to better characterise the associations between poor glycaemic control (indexed by higher HbA1c blood plasma levels), memory performance and depression symptoms, and investigate whether loss of hippocampal volume could represent a neuropathological mechanism underlying these. 1322 participants (60.7 % female, aged between 18 and 88 (M = 43.97, SD = 15.17)) provided HbA1c data, completed a word list learning task and a validated depression scale. A subsample of 392 participants underwent structural MRI; hippocampal volumes were extracted using Freesurfer. After adjusting for age, gender, and education, partial correlation analyses showed that poorer glycaemic control was related to worse word list memory performance and higher depressive symptoms, and lower hippocampal volumes. Effects were more pronounced amongst participants aged 50+. Results suggest hippocampal volume loss could be a pathophysiological mechanism underlying the impact of poor glycaemic control on memory performance and depression risk; inflammatory and stress-hormone related processes might have a role in this.

Voluntary social trait expression in voices.

Stella Guldner¹, Clare Lally², Nadine Lavan³, Lisa Wittman⁴, Frauke Nees⁵ and Carolyn McGettigan²

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The voice is a dynamic social tool, which can influence how the talker is perceived (Hellbernd & Sammler, 2016). For example, talkers can use their voice to express confidence in a job interview or hostility during an unwanted interaction. We investigated whether talkers can intentionally modulate their voice to successfully convey an intended social trait, and whether conscious voice modulation increases the likelihood of achieving relevant social goals. We recorded 40 speakers, who read sentences aloud in their neutral voice or whilst expressing six different social traits. Ratings from 40 naïve listeners demonstrated that vocal modulations typically evoked higher ratings for intended traits relative to neutral voices. We then investigated whether modulations were encoded with sufficient sensitivity and specificity to be distinguished from modulations expressing other social traits. We recruited two new samples of 40 naïve listeners to complete a forced-choice task. One group identified voices that best matched specific trait labels (confident/likeable/hostile). The other group selected the most suitable voice for related scenarios (e.g. negotiating a job promotion). In both experiments, listeners were significantly more likely to select the relevant modulation over
others. Overall, our findings demonstrate the efficacy of voluntary voice modulation for self-presentation and navigating social outcomes.

Investigating neural representations of talker identities using representational similarity analysis.

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A voice is a unique part of someone’s identity, but as a signal it’s highly variable (Lavan et al., 2018). Accurate voice recognition requires listeners to discriminate between talkers, but also to recognise the same voice across different encounters (Burton, 2013; Lavan et al., 2019). To support this, listeners likely draw upon identity information to overcome variability and form stable voice representations (Maguinness et al., 2018). We used representational similarity analysis to investigate whether listeners form distinct neural representations for talker identities. We analysed fMRI data from the Naturalistic Neuroimaging Database (Aliko et al., 2020), an open-access dataset of 84 participants watching feature-length movies. This enabled us to compare neural responses to naturalistic speech both across and within talkers. We hypothesised that regions sensitive to talker identity would elicit similar neural responses to speech uttered by the same talker, and dissimilar responses to speech uttered by different talkers. Using a searchlight-within-an-ROI-approach, we characterised neural sensitivity to talker identity in two right hemisphere regions: the posterior superior temporal sulcus and posterior occipital gyrus. Our findings provide powerful evidence for neural representations of talker identities in response to rich naturalistic stimuli. Critically, comparisons across movies demonstrate generalisability across different listeners and talkers.

Can speech perception deficits cause phonological impairments? Evidence from short-term memory for ambiguous speech sounds.

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Perceptual deficit accounts of neurodevelopmental language disorders link phonological dysfunction to lower-level deficits in speech-sound processing. However, a causal pathway from speech perception to phonological performance has not been established. We assessed this relationship in typical adults by experimentally disrupting speech-sound discrimination in a phonological short-term memory (pSTM) task. We used an automated audio-morphing method (Rogers and Davis, 2017) to create ambiguous spoken syllables between 16 letter-letter (“B”-“P”) and letter-word (“B”-“we”) pairs. High and low ambiguity syllables were used in a pSTM task in which participants (N=36) recalled 6- and 8-letter sequences with varying phonological ambiguity. Low-ambiguity sequences were better recalled than high-ambiguity sequences, for letter-letter but not letter-word morphed syllables. A further experiment replicated this ambiguity cost (N = 26), and failed to show retroactive effects for mixed high- and low-ambiguity sequences, in contrast to pSTM findings for speech-in-noise (Rabbitt, 1986; Guang, 2020). A further experiment is investigating the relative contributions of pSTM and speech perception to individual differences in the ambiguity cost (N = 77).
These experiments show reduced pSTM for ambiguous speech sounds, and suggest a distinct mechanism from effects shown for speech-in-noise. We highlight disrupted speech-sound discrimination as a potential pathway to poor phonological task performance.


Robust perceptual learning of noise-vocoded speech under divided attention: A dual-task paradigm.

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Despite current theories suggesting a key role of attention in supporting perceptual adaptation to degraded speech, if and how such plasticity depends on available attentional resources remains unsettled. Here, we discuss results of an online dual-task paradigm in which participants recognized noise-vocoded sentences while performing a concurrent visuospatial task. Participants in a between-group design heard the same forty sentences but performed the visuospatial task at one of three difficulty levels. The design also included a baseline group who completed the primary speech task only. We first found that the performance of the visuospatial task varied depending on task difficulty, yet sentence recognition performance under dual-task conditions was similar to that of the single task. We also observed perceptual adaptation across all groups. In addition, adaptation was intact under the easiest and the intermediate visual conditions but was more pronounced in the most challenging dual-task condition, as demonstrated by lower performance and more adaptation in early trials. These results show that perceptual adaptation to speech is resilient to divided attention, thus full attention is not required for rapid adaptation to speech.

Research Plan – Learning about similarity between self and other.

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We will use reinforcement learning (RL) to investigate self/other similarity. In two studies participants will learn the aesthetic preferences of targets who have similar or different preferences. RL models will determine the participants’ learning rates for each target. 1) Learning rates will be
greater for similar as opposed to different targets. 2) Learning rates will be greater for individuals whose group membership relates to the participants in a consistent way to their aesthetic preferences. Participants will complete a preference learning task where, in each trial, they will see a target person and a painting and must predict whether that target liked or disliked the painting. We will measure: explicit ratings of similarity and affiliation; learning rate parameters for each target. Experiment one will test whether participants learn faster about the preferences of similar or different targets as well as exploring the relationship between learning rates and affiliation ratings.

Experiment two will use a minimal group intervention to see how group membership affects similarity learning. We will run BIC tests to identify the optimal RL mode. Linear models will compare learning rates for similar and different targets and in and outgroup targets.

Social cue integration in perception of social interactions.

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Although humans spend a large proportion of time participating in social interactions, little is known about the processes underlying visual recognition of social interactions. Directional information from a person’s eyes, head, and body are integrated to inform where another person is looking and who they are interacting with. To date, social cue integration research has focused on the perception of isolated individuals. This study investigated how observers integrate directional cues from the eyes, head, and body when determining whether two people are interacting, and manipulated eye visibility and viewing perspective (dyad facing observer vs. facing away from observer). Results demonstrate that individuals integrate information from the eyes, head, and body when perceiving interactions, but that cue integration is influenced by viewing perspective and eye visibility. Additionally, individuals reporting more autistic traits relied more on body direction when perceiving interaction in a dyad, particularly when the dyad was facing the observer and their eyes were visible. This is the first study to investigate recognition of social interaction using whole-body stimuli while manipulating eye visibility and viewing perspectives. The results provide crucial insights into social cue integration, and how autistic traits affect cue integration during perception of social interaction.

Mindreading quality versus quantity: a theoretically and empirically motivated two-factor structure for individual differences in adults’ mindreading.

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Existing methods for studying individual differences in adults’ mindreading often lack coherence, specificity and criterion validity. Moreover, it remains unclear, even in theory, how mindreading varies in adults who already possess core mental state concepts. We hypothesised that adults might vary independently in their motivation for mindreading and in the appropriateness of their answers. These factors are confounded in existing measures that do not differentiate between the quantity of mental state terms (MST) and the quality of explanation in their coding schemes. We examined whether individual differences in adults’ (N = 128) response appropriateness and / or frequencies of
MST on two mindreading tasks were (a) separable constructs, (b) accounted for by differences in mindreading motivation and (c) related differentially to outcome measures that had previously been linked with mindreading (e.g., religiosity, authoritarianism, loneliness, etc.). Results indicated that whilst response appropriateness and frequencies of MST were statistically related, the best fit for the data was a two-factor model. Frequencies of MST uniquely predicted religiosity positively whilst response appropriateness was a negative predictor of religiosity. This highlights a potential distinctiveness of a quantitative (e.g., MST) versus qualitative (e.g., appropriateness) assessment tool to measure an individual’s mindreading.

How do people respond to similar or different choices from another person? An online study of art preferences.

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It is widely believed that when someone copies you, you will like that person more. Is this also true for copying choices? Here, we used an online interactive art preference task to examine how participants respond to confederates who do or do not copy their art choices. To implement this study, we used Zoom to have live conversations between participants (N=40) and trained confederates, QuickTime Player to capture video footage of the conversations and Gorilla to obtain outcome measures of participant impressions. The results showed that participants liked the confederates who mimicked their art preferences more than the ones who had dissimilar choices. We showed that the online interactive art preference task works as manipulation and the consequences are comparable to the physical form of mimicry (e.g., motor and verbal mimicry). Thus, this experiment is a starting point for future studies on choice mimicry.

The Sense of Agency: Choice, Outcome Valence, and the Mental Health Continuum.

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Our actions and their subsequent outcomes are accompanied by a feeling of control or agency. This Sense of Agency (SoA) is dependent on predictive factors (e.g., action choice) and postdictive factors (e.g., outcome valence). Across three studies, we assessed the influence of choice and outcome valence, and the relationship with sub-clinical psychosis and depression. In the first study (N=150), participants completed a Libet Clock task and questionnaires on depressive and psychosis-like traits. SoA was assessed through intentional binding (perceived temporal compression between an action and outcome). We identified greater intentional binding for positive outcomes, but no overall effect of choice. Moreover, higher depressive traits were associated with reduced binding when having freedom of choice. Across two further studies, we explored the predictive effect of choice on SoA. In study two (N=54), we increased the number of action choices, and in study three (N=77), we increased the meaningfulness of the choice. In both studies, we replicated the effect of outcome valence, but did not observe an effect of choice. We therefore demonstrate a consistent effect of outcome valence on SoA. These findings provide important insight into the factors that influence our SoA, and how it might differ across the depression continuum.
Research Plan – Autistic children understanding of nonverbal gestured directed to a first and third person.

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Introduction: Autistic children experience difficulties in joint attention. However, the literature has shown that joint attention can be either direct or overhearing and that autistic children may benefit more from overhearing than direct joint attention. The study will investigate whether autistic children benefit more in terms of joint attention from an overhearing than a direct communication.

Method: Based on a-priori power analysis, 60 six-to-eight-year-old autistic children with and without intellectual disabilities, 30 six-to-eight-year-old neurotypical children and 30 six-to-eight-year-old children with intellectual disabilities will be recruited. Participants will be given a direct two-choice task, wherein the experimenter points at an object to inform the child the hidden sticker’s location and an overhearing variant, wherein the experimenter addresses the actor, not the child, to locate the hidden sticker, with the child using the cues provided between experimenter-actor.

Approach for Statistical Analysis: The primary outcomes are the total number of correct choices for direct and overhearing object choice task, the data will be analysed as a 2 (condition: direct, overhearing) x 2 autistic (autistic, non-autistic) x 2 ID (ID, not ID) Mixed ANOVA. Condition factor will be a within-subjects factor; Autism and ID factors will be independent between-subject’s factors.

Autism Imagining fictitious events among people with and without Autism.

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People with autism spectrum conditions (ASC) are thought to have difficulty mentally simulating (i.e., imagine) events that are different from direct (perceptual) experience (Schacter et al., 2012). This difficulty is thought to result from impaired “scene construction” – the ability to mentally generate and maintain a coherent spatial scene in mind. The current study used Hassabis et al.’s (2007) scene construction task, in which participants were asked to vividly imagine and describe three fictitious scenes, to compare scene construction ability in adult participants with ASC (N=55; 37 male, 18 female) and matched neurotypical participants (N=63; 41 male, 22 female). We further coded descriptions for frequency of self-reference and sensory experiences in each of the five sensory modalities (sound, smell, sight, touch, taste). Results showed that scene construction ability was impaired in ASC compared to neurotypical participants and was negatively associated with ASC traits: participants with fewer autistic traits had higher scene construction ability. Contrary to our predictions, neither diagnosis or gender influenced the frequency of self-reference. Finally, the frequency of sensory references for each sensory modality followed the pattern of taste < smell = touch < sound < sight, which did not differ according to diagnosis or gender.
Research Plan – Elucidating the genetic underpinnings of the increased prevalence of Parkinson’s Disease diagnosis in the autistic population.

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Recent reports have highlighted an increased prevalence of Parkinson’s diagnosis in the autistic population. It may be that autistic individuals have a higher genetic risk of developing Parkinson’s. However, it is also possible that behavioural similarities between the two conditions mean that autistic individuals are more likely to reach the threshold of Parkinson’s diagnostic criteria, even if they do not exhibit parkinsonian biological markers. Indeed, Parkinson’s assessments primarily relate to motor function and similarities between autistic and parkinsonian movement have been noted. Similarities extend further than movement profiles; both autism and Parkinson’s are characterised by co-occurring social and motor differences. The current study will first use GWAS data to uncover the genetic correlation between autism and Parkinson’s. Subsequently, polygenic risk scores will be calculated for 5000 participants, alongside measures of motor function, social cognition, and diagnostic questionnaires. Regression analyses will be employed to assess the relative predictive strengths of autism and Parkinson’s genetic profiles to these measures. The study will provide crucial early insight into whether the increased prevalence of Parkinson’s diagnosis in the autistic population is attributable to increased genetic risk. Further, it will elucidate the genetic basis of the social and motor overlap observed between autism and Parkinson’s.

Dopaminergic modulation of dynamic emotion perception.

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Emotion recognition abilities are fundamental to everyday social interactions. A large group of clinical populations show impairments in this domain, with emotion recognition atypicalities being particularly prevalent among disorders exhibiting a dopamine system disruption - such as Parkinson’s disease or schizophrenia. While this suggests a role for dopamine in emotion recognition processes, studies employing dopamine manipulation in healthy volunteers have resulted in mixed neural findings and an absence of behavioural effects. Whilst a dependence of dopaminergic drug effects on individual baseline dopamine function has been well established in other cognitive domains, the emotion recognition literature so far has failed to account for these possible interindividual differences. The present within-subjects study therefore tested the effects of the dopamine D2 antagonist haloperidol on emotion recognition from dynamic, whole-body stimuli while accounting for interindividual differences in baseline dopamine. 32 healthy participants viewed and rated emotional point-light walkers (PLWs) once after ingestion of 2.5 mg haloperidol and once after placebo. Confirming our hypotheses, effects of haloperidol on emotion recognition were dependent on baseline dopamine function, where individuals with low baseline dopamine showed an improvement, and those with higher baseline dopamine exhibited a decrease in performance. Results are discussed considering putative underlying mechanistic pathways.
Identifying the contribution of internal representations of emotion to facial expression recognition.

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To date, little research has investigated the link between emotion representations and emotion recognition. Here we tested the hypothesis that individuals with highly variable and overlapping internal visual representations of emotion would have low emotion recognition accuracy. In the current study, 45 autistic and 45 non-autistic participants completed two tasks that employed point light displays of angry, happy and sad facial expressions (PLFs). In the first task, participants rated how angry, happy and sad the PLFs appeared. Emotion recognition accuracy was calculated as the correct emotion rating minus the mean of the two incorrect emotion ratings. In the second task, on each trial, participants moved a slider to manipulate the speed of a PLF until it moved at the speed of a typical angry, happy or sad expression. ‘Variability’ was calculated as the standard deviation of the speeds attributed to the PLFs. ‘Distance’ was calculated by subtracting the mean speed attributed to one emotion from the mean speed attributed to another. Our linear mixed effects model revealed that higher variability \( F(1,86.55)= -7.09, p<.01 \) and smaller distances \( F(1,73.10)=7.06, p < .01 \) predicted lower emotion recognition accuracy. These findings highlight factors which may explain emotion recognition difficulties in various clinical groups.

Spatial and kinematic influences on arousal and valence judgments from dynamic facial emotion expressions.

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There is now a wealth of research regarding the role of the dynamic features of facial expressions in emotion recognition. However, whilst much focus is on whether dynamic vs. static expressions promote discrete facial emotion judgements, little research has investigated the role of temporal and spatial features of facial emotion expressions on two key dimensions of emotion: arousal and valence. The current study extends a pre-existing paradigm, whereby dynamic point light displays of facial emotion expressions are experimentally manipulated for both their spatial and kinematic (speed) properties, to investigate their roles in judgments of arousal and valence. 58 adults participated in the current study to reveal the importance of kinematic and spatial facial emotion cues in perceived arousal and valence levels. Regardless of emotion, as spatial and kinematic (speed) exaggeration increases, arousal ratings increase linearly. However, spatial and kinematic cues differentially impact judgements of valence and their influence is dependent on the emotion being expressed. We also demonstrate the relative contribution of arousal and valence judgments to emotion recognition accuracy. This has potential to inform the way we understand both typical and atypical dynamic facial emotion expression recognition and the contribution of emotional dimensions of arousal and valence.
Task measures of empathy and their relationship with trait emotion dysregulation.

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Empathy (the ability to understand/share others’ emotions) and emotion regulation (the ability to manage one’s emotions) are vital for effective social functioning. Despite increasing awareness that empathy and emotion regulation may be closely related, relatively few studies have examined this relationship, and the association between the component processes that comprise empathy and emotion regulation is not well characterised. This study examined the relationship between trait emotion dysregulation and task measures of the two core dimensions of empathy: cognitive empathy (the capacity to understand others’ emotions) and affective empathy (the capacity to share others’ emotions). Cognitive empathy was assessed using an eye-tracking based perspective-taking task; affective empathy was assessed using electromyographic (EMG) measures of spontaneous facial mimicry, providing a proxy index of an individual’s propensity to resonate with others’ emotions. The results demonstrate that trait emotion dysregulation was negatively related to cognitive empathy. While trait emotion dysregulation was not significantly related to the magnitude of happy face mimicry, it showed a negative relationship with mimicry of angry faces. This study builds upon prior work which has examined this relationship using self-report measures of both constructs, by using more objective task-based measures of processes related to cognitive and affective empathy.

Accurate perception of emotions from images of isolated body parts.

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Bodies convey emotions as accurately as faces; moreover, information provided by the body informs facial expression judgments (Aviezer et al., 2012). While neutral bodies are processed as configural wholes, emotion recognition from bodies may depend on different mechanisms. Certain body parts, such as the hands, may be especially important for emotion recognition. This study therefore compared participants’ (N = 100) emotion recognition performance when shown images of either full bodies, or of isolated hands, arms, heads and torsos. Emotion recognition accuracy for all body parts was better than chance. Importantly, while emotions were recognized most accurately from full bodies, recognition performance from the hands was more accurate than for the arms, heads and torsos. Representational similarity analysis further showed that the pattern of errors for the hands was related to those of the full bodies. These results provide critical insights into the perceptual mechanisms underlying emotion recognition; the novel finding that emotions were accurately recognised from images of body parts suggests that featural processing mechanisms are involved in the perception of emotional bodies. Furthermore, differences in emotion recognition accuracy between body parts indicates that certain features, such as the hands, play a more important role in emotion perception than others.

Social and motor functions in Parkinson’s Disease.

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Parkinson’s Disease (PD) is associated with dopamine neuron degradation. PD is thought of as a “motor disorder” but the literature documents socio-cognitive difficulties in individuals with PD, which raises questions about the mechanistic role that dopamine plays in social cognition. Few studies have explored dopamine’s involvement in social cognition. A key question is whether dopamine is directly implicated in social cognition, or whether its impact on socio-cognitive function is driven by dopaminergic involvement in other processes such as motor-function. Genome-Wide Association Study data will be used to pinpoint genetic variation that is correlated with variation in social and/or motor behaviour. 5050 participants will complete motor function and social cognition tasks. Genome-wide complex trait analysis will be employed to ascertain the amount of variation in social and/or motor function that is accounted for by genetic variation within the dopamine pathway. Control analyses will ascertain whether variation accounted for by the dopamine pathway exceeds variation account for by a) random selections of genetic variants, b) other biological pathways. Results will shed light on the biological mechanisms underlying socio-cognitive ability. This will enable us to see whether variations in genes that affect the function of the dopamine system, affect social and/or motor function.

Reducing Cybersickness in 360-Degree Virtual Reality.

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Despite the technological advancements in Virtual Reality (VR), users are constantly combating feelings of nausea and disorientation, the so called cybersickness. Triggered by a sensory conflict between the visual and vestibular systems, cybersickness symptoms cause discomfort and hinder the immersive VR experience. Here we investigated cybersickness in 360-degree VR. In traditional 360-degree VR experiences, translational movement in the real world is not reflected in the virtual world, and therefore self-motion information is not corroborated by matching visual and vestibular cues, which may potentially trigger cybersickness symptoms. We have evaluated whether an Artificial Intelligence (AI) software designed to supplement the VR experience with artificial 6-degrees-of-freedom motion may reduce sensory conflict, and therefore cybersickness. Explicit (simulator sickness questionnaire and fast motion sickness rating) and implicit (heart rate variability) measurements were used to evaluate cybersickness symptoms during and after VR exposure. Simulator sickness scores showed a significant reduction in feelings of nausea during the AI supplemented 6-degrees-of-freedom motion VR. No changes have been observed in the other measures. Through improving the congruency between visual and vestibular cues, users can experience more engaging, immersive and safe VR, which is critical for the application of VR in educational, medical, cultural and entertainment settings.
Using immersive virtual reality to examine how visual and tactile cues drive the material-weight illusion.

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The material-weight illusion (MWI) demonstrates how our past experience with material and weight can create expectations that influence the perceived heaviness of an object. Here we used mixed-reality to place touch and vision in conflict, to investigate whether the modality through which materials are presented to a lifter could influence the top-down perceptual processes driving the MWI. University students lifted equally-weighted polystyrene, cork and granite cubes whilst viewing computer-generated images of the cubes in virtual reality (VR). This allowed the visual and tactile material cues to be altered, whilst all other object properties were kept constant. Representation of the objects’ material in VR was manipulated to create four sensory conditions: visual-tactile matched, visual-tactile mismatched, visual differences only and tactile differences only. A robust MWI was induced across all sensory conditions, whereby the polystyrene object felt heavier than the granite object. The strength of the MWI differed across conditions, with tactile material cues having a stronger influence on perceived heaviness than visual material cues. We discuss how these results suggest a mechanism whereby multisensory integration directly impacts how top-down processes shape perception.

The long sixth finger illusion: The representation of the supernumerary finger is not a copy and can be felt with varying lengths.

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We can have an altered perception of our body, instantly induced with multisensory illusions, anaesthesia, or Virtual Reality. Recent studies show we can also feel extra body parts, such as a sixth finger (Newport et al., 2016). By changing the paradigm, we were able to extend the duration of this illusion (Cadete & Longo, 2020), which allowed us to manipulate other bodily properties. In this study we manipulated length. It is unclear from existing studies whether an illusory supernumerary body-part is represented as a copy of the existing limb or independently, with its own features. To investigate this, we tested whether we can embody a sixth finger with altered lengths. The self-report scores show that participants successfully embodied a long and a short sixth finger, and the visual judgements demonstrate the length of the sixth finger was felt as double or half the length of the little finger. Overall, our results show we can easily feel a sixth finger with varied lengths. This suggests that the supernumerary finger is not a mere copy of the little finger but is represented independently.
Research Plan - Expected precision and perceptual confidence.

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Cognitive scientists think that metacognitive mechanisms estimate the reliability or ‘precision’ of incoming sensory signals. However, little is known about how these estimates are formed. Bayesian models suggest that observers form meta-level beliefs about the precision of their percepts and that these expectations about the reliability of sensory signals bias perceptual confidence. Here we will test this possibility. Participants will discriminate patterns of left- or rightward moving dots while also rating confidence in their decisions. Across trials, stimuli will vary in signal strength; sometimes motion signals will be stronger (higher coherence), sometimes weaker (lower coherence). Crucially, probabilistic cues will manipulate expectations about signal strength for each trial, and we will investigate how these expectations bias perceptual confidence. If Bayesian models are correct, observers will be biased towards higher confidence on trials when they expect strong signals, even if actual sensory signals are objectively weak and noisy. However, an alternative possibility is that metacognition may strongly shaped by unexpected prediction errors, with participants reporting feeling more confident when they expect a weak signal but instead experience a strong one.

Visual perceptual learning near and far.

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Objects’ shape discrimination is faster for objects closer to the body (peripersonal space, PP) compared to objects far from the body. The PP processing enhancement occurs also when the perceived depth is based on 2D pictorial cues. This advantage has been seen for both low-level (size, orientation) and high-level (face identification) visual features. However, it is unclear how PP influence visual learning. Here, we aim to investigate whether visual perceptual learning has different effects based on the spatial position of stimuli (near or far from the observer). The perspective was created using the “Ponzo Illusion”, the effect of the illusion on learning was also examined. Eye tracker was used to control for gaze direction. Participants performed a visual search task in which they reported whether a specific target object orientation (e.g., triangle pointing downward) was present amongst distractors. The task was performed before and after a training phase. This phase consisted in a visual search task in the near (half of the participants) or far space and lasted about 3 hours. Results showed that the learning was specific for the orientation of the target and position (near or far) in space with a more prominent improvement for the far space.
Statistical learning at a cocktail party.

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Statistical learning – the ability to extract distributional regularities from input – is suggested to play a key role in language acquisition. Yet, evidence for this comes mainly from studies where learning occurs without distractions from competing talkers, thus not reflecting naturalistic settings. Here, we examine how statistical language learning proceeds in a virtual cocktail party environment, where learning occurs in the presence of a competing speech stream. During exposure, participants concurrently heard two novel languages, one produced by a female and one by a male talker (sex and language counterbalanced), with each talker virtually positioned at opposite sides (left/right) using binaural ITD and ILD manipulations. Group 1 was asked to closely attend to the male and Group 2 to the female talker. At test (2AFC), participants showed learning for both languages (word vs. part-word), but accuracy was significantly higher for trials from the attended (AL) vs. the unattended language (UL). Moreover, performance on AL trials by the dual-talker groups was similar to control groups who heard just one language from a single talker. These findings suggest that statistical learning is strongly modulated by selective attention.
**Local Information**

**London Accommodation**

Below is a selection of London hotels, some of which are close to the venue. However, these are *not* recommendations, and you should check the website and prices before making your booking, especially if you are booking accommodation and plan to apply for a Grindley Grant.

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<td>Arosfa Hotel</td>
<td><a href="http://www.arosfalondon.com/">http://www.arosfalondon.com/</a></td>
<td>0207 636 2115</td>
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<tr>
<td>83 Gower Street</td>
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<tr>
<td>Avonmore Hotel</td>
<td><a href="http://www.avonmorehotel.net/">http://www.avonmorehotel.net/</a></td>
<td>0207 387 1939</td>
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<tr>
<td>57 Cartwright Gardens</td>
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<tr>
<td>Chester Hotel Victoria</td>
<td><a href="http://www.chesterhotelvictoria.com/">http://www.chesterhotelvictoria.com/</a></td>
<td>0207 834 3791</td>
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<tr>
<td>27-29 Longmoore Street</td>
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<tr>
<td>Double Tree by Hilton</td>
<td><a href="https://tinyurl.com/y7cbyrwy">https://tinyurl.com/y7cbyrwy</a></td>
<td>0207 242 2828</td>
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<tr>
<td>92 Southampton Row</td>
<td></td>
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<tr>
<td>Fitzroy Hotel</td>
<td><a href="https://tinyurl.com/yyfgq94u">https://tinyurl.com/yyfgq94u</a></td>
<td>0207 387 7919</td>
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<tr>
<td>41 Fitzroy Street</td>
<td></td>
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</tr>
<tr>
<td>Grange Hotels</td>
<td><a href="https://www.grangehotels.com/hotels-london/">https://www.grangehotels.com/hotels-london/</a></td>
<td>0207 233 7888</td>
</tr>
<tr>
<td>Various locations</td>
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<tr>
<td>Harlingford Hotel</td>
<td><a href="http://www.harlingfordhotel.com/">http://www.harlingfordhotel.com/</a></td>
<td>0207 387 1551</td>
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<tr>
<td>61-63 Cartwright Gardens</td>
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<tr>
<td>Kimpton Fitzroy</td>
<td><a href="https://tinyurl.com/yxl5sfvh">https://tinyurl.com/yxl5sfvh</a></td>
<td>0207 837 6470</td>
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<tr>
<td>1-8 Russell Square</td>
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<tr>
<td>Ibis London Euston</td>
<td><a href="https://tinyurl.com/y3a5aa69">https://tinyurl.com/y3a5aa69</a></td>
<td>0207 304 7712</td>
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<tr>
<td>3 Cardington Street</td>
<td></td>
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</tr>
<tr>
<td>Mentone Hotel</td>
<td><a href="http://www.mentonehotel.com/">http://www.mentonehotel.com/</a></td>
<td>0207 387 3927</td>
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<tr>
<td>54-56 Cartwright Gardens</td>
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<td>Mercure London</td>
<td><a href="https://tinyurl.com/vxnyw88d">https://tinyurl.com/vxnyw88d</a></td>
<td>0207 833 3691</td>
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<tr>
<td>130-134 Southampton Row</td>
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<tr>
<td>St Athans Hotel</td>
<td><a href="https://www.stathanshotel.com/">https://www.stathanshotel.com/</a></td>
<td>0207 837 9140</td>
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<tr>
<td>20 Tavistock Place</td>
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71
<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Website</th>
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<tbody>
<tr>
<td>The Academy Hotel</td>
<td><a href="http://www.theacademyhotel.co.uk/">http://www.theacademyhotel.co.uk/</a></td>
<td>0207 631 4115</td>
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<tr>
<td>Hotel 21 Gower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The George Hotel</td>
<td><a href="http://www.georgehotels.co.uk/">http://www.georgehotels.co.uk/</a></td>
<td>0207 387 8777</td>
</tr>
<tr>
<td>58-60 Cartwright Gardens</td>
<td></td>
<td></td>
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<tr>
<td>The Wesley Euston Hotel</td>
<td><a href="http://www.thewesley.co.uk/">http://www.thewesley.co.uk/</a></td>
<td>0207 380 0001</td>
</tr>
<tr>
<td>Hotel 81-103 Euston</td>
<td></td>
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<tr>
<td>Hotel Park Hotel</td>
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<td></td>
</tr>
<tr>
<td>126 Southampton Row</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travelodge Various</td>
<td><a href="https://www.travelodge.co.uk/">https://www.travelodge.co.uk/</a></td>
<td>08719 848484</td>
</tr>
</tbody>
</table>

See also dedicated hotel booking websites, e.g.

[http://www.trivago.co.uk/](http://www.trivago.co.uk/)

[http://www.booking.com/hotels](http://www.booking.com/hotels)

[https://www.expedia.co.uk/Hotels](https://www.expedia.co.uk/Hotels)

**Travel**

London is well served by transport links, both for travelling to and from London from the UK, Europe and the wider world, and for getting round the city.

Full details of travel to UCL can be found at:

[http://www.ucl.ac.uk/maps/public-transport/](http://www.ucl.ac.uk/maps/public-transport/)

UCL campus map: [http://www.ucl.ac.uk/maps/26-bedford-way-fountains](http://www.ucl.ac.uk/maps/26-bedford-way-fountains)
28th Bartlett Prize Lecture

will be delivered by

Dr Sarah Lloyd-Fox

University of Cambridge

How can neurocognitive measures of development help us to tackle the consequences of poverty?

4.00pm, Wednesday 5th January 2022

Zoom Link to be provided soon.

Lower Ground Floor Lecture Theatre
University College London
26 Bedford Way
London
WC1H 0AP

Registration is required to attend in person.
49th Bartlett Prize Lecture

will be delivered by

Professor Chris Frith

University College London

Consciousness, (meta)Cognition, Culture.

5.15pm, Thursday 6th January 2022

Zoom Link to be provided soon.

Lower Ground Floor Lecture Theatre
University College London
26 Bedford Way
London
WC1H 0AP

Registration is required to attend in person.
19th Mid-Career Prize Lecture

will be delivered by
Professor Michael Anderson
University of Cambridge.

Title TBC

1.00pm, Friday 7th January 2022
Zoom Link to be provided soon.

Lower Ground Floor Lecture Theatre
University College London
26 Bedford Way
London
WC1H 0AP

Registration is required to attend in person.
To apply for membership to the Experimental Psychology Society please go to the EPS website: https://eps.ac.uk/applying-for-membership/ and fill in the form, ensuring all boxes are completed (Entries should be made in clear black type) before signing and returning to the EPS Administrator: expsychsoc@kent.ac.uk or sending to:

Sam Hurn
EPS Administrator
School of Psychology
Keynes College
University of Kent
Canterbury
CT2 7NP

All information should be included on the form, not on additional sheets.

Under "Publications", only articles that have appeared in print by the time of nomination, in peer-reviewed psychological or cognate journals, should be listed. Because of space limitations, a complete publication list is not required; two recent examples, where the nominee is in a prominent authorship position (e.g. sole, first or last), are sufficient.

Applicants must be nominated by two EPS members.

These forms should be returned by 1st September.

See Criteria and Procedures on following page.
CRITERIA AND PROCEDURES TO JOIN

Soon after the closing date of 1st September, brief details of all candidates will be circulated to members of the Society, who may request further information if they wish. The nomination forms will be considered by the Committee at their Spring and Autumn meetings. The EPS Administrator will check whether each candidate is eligible for admission to Ordinary Membership, i.e. those candidates who have:

a) secured a PhD
b) published at least two independent accounts of their work in a reputable, peer-reviewed psychological journals
c) personally delivered an oral paper or research study poster to the Society at one of the three EPS meetings held each year

Candidates who do not meet all these criteria can be considered only in exceptional circumstances. Those who are resident outside Europe will be asked for assurance that they can attend meetings reasonably often.

Any candidate not selected as eligible by the EPS Administrator will be informed of this and will be advised whether he/she may again be proposed for membership in a future year and if so subject to what conditions. The list of those selected as eligible will be put to the Annual General Meeting in January or the Summer Business meeting for approval.
Annual General Meeting

The 74th Annual General Meeting will be held on Wednesday 5th January 2022 at 3:15pm in the Lower Ground Floor Lecture Theatre, Department of Cognitive, Perceptual & Brain Sciences, University College London, 26 Bedford Way, and online – Zoom Link to be provided soon.

AGENDA

22/01 Minutes of the Annual General Meeting, held online on Wednesday 6th January 2021
22/02 Matters Arising
22/03 Secretary’s Report
   22/03.1 Annual Report of the Society
22/04 Treasurer’s Report
   22/04.1 Treasurer’s Report
22/05 QJEP Editor’s Report
   22/05.1 Editor’s Report
22/06 Confirmation of the Fifty-First Bartlett Lecturer
22/07 Confirmation of the Twenty-First EPS Mid-Career Award
22/08 Confirmation of the Thirtieth EPS Prize Lecturer
22/09 Confirmation of the joint Eleventh Frith Prize
22/10 Election of Officers and Committee Members
22/11 Admission of Ordinary Members
22/12 Arrangements for Future Meetings
22/13 Any Other Business
22/14 Date, Time and Place of Next Meeting
Confirmation of Fifty-first Bartlett Lecturer
The Committee seeks approval for the following nomination:

Professor Robert Logie

Confirmation of Twenty-first EPS Mid-Career Award Lecturer
The Committee seeks approval for the following nomination:

Professor Gareth Gaskell

Confirmation of Thirtieth EPS Prize Lecturer
The Committee seeks approval for the following nomination:

Dr Clare Sutherland

Confirmation of Joint eleventh Frith Prize Award Lecturers
The Committee seeks approval for the following nomination:

Moataz Assem and Matthew Mak

Election of Officers and Committee Members 2022
The Committee submits the following nominations:

- **Early Career Representative** Dr Emma James
- **Ordinary Committee Member** Dr Jennifer Cook
- **Ordinary Committee Member** Dr Nura Sidarus

Admission of Ordinary Members
Under Rule 7 the list of applicants for Ordinary Membership was earlier circulated electronically. These applications were provisionally approved at the Autumn Committee meeting.

Professor Heather Ferguson, Hon. Secretary
Minutes of 2021 Annual General Meeting

The 73rd Annual General Meeting was held on Wednesday 6th January 2021 at 3:30pm via Zoom.

There were over 70 members in attendance.

MINUTES

21/01 Minutes of the last Annual General Meeting were approved without change.

21/02 Matters Arising

EPS President, John Duncan, gave a brief update on Plan S and the implication for EPS funding. There is unlikely to be much change in the next couple of years, but SAGE has come to an agreement that papers from the UK can publish open access, free of charge for the next three years. UKRI have conducted a consultation on Plan S and the committee submitted its response, which UKRI are still considering along with other responses.

21/03 Secretary’s Report

21/03.1 Annual Report of the Society

The Hon. Secretary outlined some of the achievements of the EPS during 2020.

- Highly successful meetings in London (January) and online (July)
- Awarded numerous research grants (N=39), student bursaries (N=13) and travel awards (N=29), recognized scientific excellence through prizes
- Launched new Postgraduate EPS membership (70 members to date)
- Improved accessibility of EPS content through recorded talks
- Introduced Research Plan poster submissions
- New Equality and Diversity committee member
- Launched new Kuppuraj-Bishop Global South Study Visit Grant
- Continued social media engagement @ExpPsychSoc

The proposal to increase members’ fees has been paused in light of the pandemic and its effect on the finances of members and Society activities.

21/04 Treasurer’s Report

21/04.1 Treasurer’s Report

Accounts are in very good health, with increased income and reduced outgoings between 2019 and 2020 caused by Covid-19 pandemic, most notably the cancellation of in-person meetings, though more grants have been awarded. This has resulted in expenditure remaining constant from last year.
Society reserves are slightly higher than last year. The Charity Commission suggest charities such as the EPS should hold in reserve 1-2x annual expenditure, the EPS holds slightly more than this but has plans to use this to fund the proposed new Fellowship Scheme, Final Year Undergraduate Research Bursary and update the levels on current schemes. The EPS has not invested in the stock market because of the wider economic landscape caused by the pandemic.

The Hon. Treasurer announced the proposed creation of an EPS Fellowship Scheme and Final Year Undergraduate Research Bursary, with the documents having been circulated to members before and during the meeting. As there were no objections raised, the new schemes were approved by a Zoom poll. Proposed changes to current funding schemes were also discussed and approved by a Zoom poll.

21/05 QJEP Editor's Report

21/05.1 Editor’s Report

Professor Antonia Hamilton has formally taken over as Editor and has installed a new team of 16 Assistant Editors. 479 papers were submitted in 2019, a 12% increase from 2018, and QJEP is on track to receive more than this in 2020. The impact factor of QJEP for 2019 was 2.07, which is down from 2.48 in 2018. The long-term stability of the impact factor is very good in the last 4 years.

QJEP will welcome submissions for special issues and review papers and any proposals should be emailed to Antonia. UK authors can now publish open access with no fees in QJEP. Double blind review, data for analysis code for example, are currently flexible options and are down to individual authors, but these will not become mandatory requirements.

The Committee sought and received approval for the following nominations:

21/06 Confirmation of the Fiftieth Bartlett Lecturer
Professor Melvyn Goodale (University of Western Ontario, Canada)

21/07 Confirmation of the Twentieth EPS Mid–Career Award
Professor Kate Nation (University of Oxford)

21/08 Confirmation of the Twenty Ninth EPS Prize Lecturer
Dr Catherine Manning (University of Oxford)

21/09 Confirmation of the Tenth Frith Prize
Dr Jennifer Murphy (Royal Holloway, University of London)

The Committee sought and received approval for the following nominations:

21/10 Election of Officers and Committee Members
President Elect: Professor Kathy Rastle (Royal Holloway)

Ordinary Committee Members:
Dr Brianna Beck (University of Kent; EDI Representative)
Dr Joseph Brooks (Keele University; Data Protection Representative)
Dr Gavin Buckingham (University of Exeter)
Dr Joni Holmes (Cambridge University)
Dr David Sanderson (Durham University)

21/11  **Admission of Ordinary Members**
All applications for ordinary membership of the Society were approved.

21/12  **Arrangements for future meetings**

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Organisers</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-15 April 2021</td>
<td>Online</td>
<td>Organisers: Andy Johnson</td>
</tr>
<tr>
<td>July 2021</td>
<td>Nottingham Trent University</td>
<td>Local organiser: Duncan Guest</td>
</tr>
<tr>
<td>January 2022</td>
<td>UCL</td>
<td>Local organiser: Jo Taylor</td>
</tr>
<tr>
<td>April 2022</td>
<td>Keele University</td>
<td>Local organiser: Jim Grange</td>
</tr>
<tr>
<td>July 2022</td>
<td>University of Stirling</td>
<td>Local organiser: Peter Hancock</td>
</tr>
</tbody>
</table>

21/13  **Any Other Business**

The Hon Sec expressed considerable thanks to the three outgoing ordinary committee members; Gareth Gaskell, Mark Haselgrove, Elisa Ferre, Jim Grange, Matt Longo and Alastair Smith, for all of their work whilst on the committee.

Many thanks were given to outgoing Conference Secretary, Ruth Filik, for all of her work during her tenure.

21/14  **Date, time and place of next meeting**

Next meeting will be the business meeting at the July meeting.
Next Meeting: Keele University. 30 March – 1 April 2022.

This meeting is scheduled to include the 20th Mid-Career Lecture by Kate Nation (with an accompanying symposium organised by Jo Taylor) and the 10th Frith Prize Lecture by Jennifer Murphy. In addition, we will be opening a portal for members and their guests to submit abstracts for oral and poster presentations.

Local Organiser: Jim Grange