IAS Institute of Advanced Studies

UNIVERSITY OF SURREY

Social Cognition: Origins, Mechanisms and Disorders

28-29 August 2014

University of Surrey, UK

Programme and Abstracts

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Welcome

Welcome to the University of Surrey for this ESRC- and IAS-sponsored workshop on Social Cognition.

The aim of this workshop is to encourage an interdisciplinary approach to social cognition, and we are delighted to be welcoming participants from disciplines including anthropology, biology, education, and psychiatry, as well as all areas of psychology. We hope the workshop will provide you with the chance to reflect on how your work relates to other academic and applied disciplines. We are very pleased to have such a variety of international and national speakers and poster presenters from a wide range of disciplines and we have made room in the programme for plenty of discussion time both during and around our paper sessions.

We are very grateful to the Economic and Social Research Council and the Institute of Advanced Studies for supporting this event and to the Faculty of Arts and Human Sciences Events team for their invaluable help with the organisation. We hope you enjoy workshop and look forward to meeting you all.

Organisers:
Caroline Catmur and Lauren Marsh, University of Surrey
Emily Cross and Richard Ramsey, Bangor University
Harriet Over, University of York

Programme

Venue: Oak Suite, University of Surrey

Day 1, Thursday 28th August: Origins of Social Cognition

0900-0945	Registration and Coffee
0945-1000	Welcome and Introduction: Caroline Catmur, School of Psychology, University of Surrey
1000-1100	**PAPER SESSION 1**
	1.1 **Susanne Shultz**, *Faculty of Life Sciences, University of Manchester:* The evolution of prosocial intelligence in primates
	1.2 **Thom Scott-Phillips,** *Department of Anthropology, Durham University:* The ease, extent, and evolution of recursive mindreading
1100-1130	Coffee
1130-1230	**Keynote Speaker: Professor Josep Call,** *Max Planck Institute for Evolutionary Anthropology, Leipzig, and School of Psychology and Neuroscience, University of St Andrews:* Cooperation, competition, and primate social cognition
1230-1330	Lunch and Posters (group A)
1330-1500	**PAPER SESSION 2**
	2.1 **Harriet Over**, Department of Psychology, University of York: Young children's commitments to their social groups
	2.2 **Emily Cross**, School of Psychology, Bangor University, and Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen: The impact of experience on social action perception
	2.3 **Caroline Catmur,** School of Psychology, University of Surrey: Effects of sensorimotor training on social cognition
1500-1530	Tea
1530-1630	**Keynote Speaker: Professor Cecilia Heyes**, *All Souls College and Department of Experimental Psychology, University of Oxford:* The cultural evolution of cultural learning
1630-1730	**POSTER SESSION (GROUP A)**
1900	Workshop Dinner, Lakeside Restaurant, School of Management (Rik Medlik building)

Venue: Oak Suite, University of Surrey

Day 2, Friday 29th August: Mechanisms and Disorders of Social Cognition

0900-0930	Coffee
0930-1030	**PAPER SESSION 3**
	3.1 **Richard Ramsey**, *School of Psychology, Bangor University:* Perceiving and interacting with social agents: insights from human neuroimaging
	3.2 **Michael Banissy**, *Department of Psychology, Goldsmiths, University of London:* Mechanisms of self-other representation in mirror-touch synaesthesia
1030-1130	**POSTER SESSION (GROUP B)**
1130-1230	**Keynote Speaker: Professor Marcel Brass**, *Department of Experimental Psychology,* Ghent University: The effect of action observation on action execution: relevant findings and new developments
1230-1330	Lunch and Posters (group B)
1330-1500	**PAPER SESSION 4**
	4.1 **Richard Cook**, Department of *Psychology, City University London:* Face perception in Autism Spectrum Disorder
	4.2 **Geoff Bird**, MRC Social, *Genetic and Developmental Psychiatry Centre, Institute of Psychiatry, King's College London:* De-muddying the water: How alexithymia can clear up clinical heterogeneity
	4.3 **Catherine Sebastian**, *Department of Psychology, Royal Holloway, University of London:* Social emotion processing in adolescents with and without conduct problems
1500-1530	Tea
1530-1630	**Keynote Speaker: Professor Sue Leekam**, *School of Psychology and Wales Autism Research Centre, Cardiff University:* Social cognitive impairment in autism: What are we trying to explain?
1630-1700	General Discussion and Future Directions

Keynote Speakers

Professor Josep Call, *Max Planck Institute for Evolutionary Anthropology, Leipzig, and School of Psychology and Neuroscience, University of St Andrews:* Cooperation, competition, and primate social cognition

Social life is shaped by the interplay between cooperation and competition for limited resources among individuals. Several theories have highlighted the importance of social problems in the evolution of cognition, and much research has been devoted to investigate the cognitive processes underlying social strategies in primates and other animals. In this talk I will focus on two areas of social cognition: mindreading and cooperative problem solving. I will provide an overview of the progress that has been taken place in each of these two areas, highlight some aspects that require further investigation, and propose a way for how these two largely unrelated areas can be combined to advance our knowledge in the field.

Professor Cecilia Heyes, *All Souls College and Department of Experimental Psychology, University of Oxford:* The cultural evolution of cultural learning

'Cultural learning' is the subset of social cognitive processes that enable cumulative cultural evolution; they allow humans to pass information from one generation to the next, and thereby to invent artefacts, develop institutions, and accumulate bodies of knowledge that go well beyond the cognitive capacities of individuals or temporally isolated groups. In common with 'high church' evolutionary psychologists, cultural evolutionists typically assume that the mechanisms underlying cultural learning are 'innate modules'; that they evolved by genetic means as adaptations for cultural inheritance. In contrast, I will suggest in this talk that some of the most important mechanisms of cultural learning – for example, those involved in imitation, mindreading, and 'social learning strategies' – are themselves products of cultural evolution. Examining evidence from comparative and developmental psychology, and from cognitive neuroscience, I will argue that we learn from others how to learn from others.

Professor Marcel Brass, *Department of Experimental Psychology, Ghent University: The effect of action observation on action execution:* Relevant findings and new developments

Almost 15 years ago first behavioural studies demonstrated that the observation of an action leads to an activation of a corresponding motor representation in the observer. Ever since, numerous behavioural studies have investigated 'automatic imitation' phenomena using interference paradigms. I will first outline different theoretical accounts of automatic imitation. Then I will report research investigating the conditions under which automatic imitation occurs. Finally, I will report some recent studies addressing the question whether we can represent multiple actions/agents in parallel and whether automatic imitation is anticipatory by nature.

Professor Sue Leekam, *School of Psychology and Wales Autism Research Centre, Cardiff University:*
Social cognitive impairment in autism: What are we trying to explain?

Early psychological theories of autism explained the clinical features of this condition in terms of perceptual and sensory processing impairments. The arrival of domain-specific social cognitive theories changed this focus, postulating a 'primary' and specific psychological impairment of social cognition. In our own work we have found evidence for social cognitive and social attention impairments in autism. We have also found evidence for general non-social cognitive impairments in representational understanding, attention allocation and sensory processing which support different explanations. In this talk, I review these findings and consider the case for the specificity and primacy of the social cognitive impairment. Given the return in recent years towards general perceptual and attention explanations of autism, I argue that we must pay greater attention to the diverse clinical features that we are trying to explain. I also suggest that we focus on clinically valid features, such as the sensory symptoms and the imagination impairment in autism, for new insights on the distinction between 'social' and 'non-social' cognition.

Paper Session Abstracts

1.1 **Susanne Shultz,** *Faculty of Life Sciences, University of Manchester:* The evolution of prosocial intelligence in primates

In primates, group structure evolves in step-wise fashion from solitary foragers to unstable aggregations and finally to stable structured groups; these incremental changes in structuring provide a test of cooperation under different contexts of relatedness and structuring. We evaluated the evolution of prosocial behaviour under contexts of kin selection and population structuring. We demonstrate that multi-level population structuring, rather than stability and kin structuring, is a precursor to prosocial behaviour. Stability and kin structuring do, however, precede the appearance of more complex forms of prosociality such as intra-group coalitions. This incremental increase in prosocial behaviour from collective action to coalitions represents a continuum of cooperative complexity, where high levels of cooperative behaviours are strongly associated with stable group structure and with both brain size and brain architecture. These models suggest that multi-level structuring kick starts cooperation, but that stable networks and kin-bonding open up further opportunities for complex cooperation between group members. Together, these models provide a framework for the evolution of complex cooperation and intelligence in primates and ultimately humans.

1.2 **Thom Scott-Phillips,** *Department of Anthropology, Durham University:* The ease, extent, and evolution of recursive mindreading

Recursive mindreading is the ability to embed mental representations inside other mental representations e.g. to hold beliefs about beliefs about beliefs. An advanced ability to entertain recursively embedded mental states is consistent with evolutionary perspectives that emphasise the importance of sociality and social cognition for humans. Correspondingly, high levels of recursive mindreading are argued to be involved in several distinctive human behaviours and institutions, such as communication, religion, story-telling, and culture. However, despite a wealth of research on first-level mindreading under the term Theory of Mind, the human ability for recursive mindreading is little studied, and existing research on the topic has significant methodological flaws. Here we show experimentally that human recursive mindreading abilities are far more advanced than has previously been shown. Specifically, we show that humans are able to mindread to at least seven levels of embedding, both explicitly, through linguistic description, and implicitly, through reading social interactions. However, our data also tentatively suggest that mindreading may be easier when stimuli are presently implicitly rather than explicitly. We argue that humans are such adept mindreaders because as an extremely social species the ability to reason about others' motives, desires, intentions and other mental states is an essential, ubiquitous and adaptive component of everyday life.

2.1 **Harriet Over,** *Department of Psychology, University of York:* Young children's commitments to their social groups

As adults, loyalty to the group is very important to us. We stick with our group even when it costs us to do so and, at times, we punish individuals who leave the group very harshly. However, little is known about the origins of loyalty in young children. I will report data from two experiments investigating when children first demonstrate loyalty to the group and when they first value loyalty in others. I will discuss how this emerging commitment to the group enables children to become reliable collaborators and how, in doing so, it facilitates successful group cooperation.

2.2 **Emily Cross,** *School of Psychology, Bangor University, and Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen:* The impact of experience on social action perception

How we perceive others in action is biased by one's prior experience with an observed action. For example, whether watching others tango dancing, rock climbing, or cooking a gourmet meal, the degree to which the observer has prior visual or physical experience with dancing, climbing, or cooking can profoundly impact how he or she perceives these actions, as measured by brain and behavioural responses. This talk highlights research demonstrating how sensorimotor experience (or lack thereof) with complex actions, such as dancing, shapes subsequent action perception. The impact and importance of experiential shaping of action resonance processes is considered as well.

2.3 **Caroline Catmur,** *School of Psychology, University of Surrey:* Effects of sensorimotor training on social cognition

Sensorimotor experience – experience during which actions are both performed and perceived – has been shown to modulate both imitation and the functioning of the human mirror neuron system. It is thought that this modulation is due to the creation of new associations between representations of perceived and performed actions. In addition, recent research has suggested that sensorimotor training may also affect social cognition by altering the extent to which participants are able to control representations of self- or other-relevant attributes. I will present recent data suggesting that the control of self- and other-relevant representations is a process contributing to multiple social cognitive domains, and discuss how the effects of experience on sensorimotor associations can be dissociated from the effects of training on self-other control processes.

Papers

3.1 **Richard Ramsey,** *School of Psychology, Bangor University:* Perceiving and interacting with social agents: insights from human neuroimaging

A dominant view maintains that we understand other people's actions through directly matching observed actions onto one's own motor system. It has further been argued that the neural basis of this direct-matching or motor simulation mechanism is a mirror neuron system, primarily based within the inferior frontal gyrus and inferior parietal lobule of the human brain. Here I examine this proposal in two ways. First, I argue that the functionality of the mirror system extends well beyond direct matching. Second, I show that brain regions beyond the traditional mirror system are biologically tuned to control interactions with other human agents. Based on these findings, it is proposed that direct matching theories of action understanding need revision for two reasons: 1) The mirror system does not only respond preferentially to actions that are in one's own motor repertoire or "like me"; these brain regions are also sensitive to non-human agents and actions; and 2) An extended brain network that includes regions beyond the mirror system is required for understanding and interacting with other social agents.

3.2 **Michael Banissy,** *Department of Psychology, Goldsmiths, University of London:* Mechanisms of self-other representation in mirror-touch synaesthesia

In recent years several studies have documented the tendency for us to vicariously represent the actions and sensations of others. For most of us, these representations are implicit and do not lead to overt sensations of the observed events (e.g., we do not feel pain when observing pain to others). There are, however, a small number of individuals who do experience overt somatic sensations when observing others' tactile experiences. For example, in mirror-touch synaesthesia observing touch or pain to others evokes a conscious tactile sensation on the synaesthete's own body. Prior brain imaging suggests that mirror-touch synaesthesia may be a function of over-activity within neural regions supporting normal somatosensory mirroring. More recently, we have suggested that faulty self-other monitoring mechanisms may contribute to this process by disinhibiting normal somatosensory mirror mechanisms in individuals with mirror-touch synaesthesia. In this talk, I will describe a series of studies examining self-other representations in mirror-touch synaesthesia and discuss the ways in which research on mirror-touch synaesthesia may help to aid our understanding of the neurocognitive basis of self-other processing.

4.1 **Richard Cook,** *Department of Psychology, City University London:* Face perception in Autism Spectrum Disorder

Faces are a rich source of information about others, providing cues to identity, gender, age and mood. Interpreting this information accurately helps individuals navigate their social environment, and deficits of face perception may have adverse consequences for wider socio-cognitive development. The utility of facial information has stimulated considerable interest in the face perception abilities of individuals with neurodevelopmental disorders. In particular, face perception has been studied extensively in Autism Spectrum Disorder, a condition associated with characteristic deficits of social communication and interaction. The resulting literature is however strikingly inconsistent. In this talk I will present recent findings from our lab that shed light on face perception in this population, including questions of adaptive recalibration, orienting and holistic representation.

4.2 **Geoff Bird,** *MRC Social, Genetic and Developmental Psychiatry Centre, Institute of Psychiatry, King's College London:* De-muddying the water: How alexithymia can clear up clinical heterogeneity

Substantial heterogeneity is an accepted feature of several clinical conditions. This heterogeneity comes at a cost – resulting in inconsistent diagnoses, substantial variance in treatment response, and ineffective support for some individuals. I will present our work on emotional processing in autism spectrum disorders and eating disorders which suggests that co-occurring alexithymia likely explains heterogeneity in the affective domain within these groups. I will present our work on emotion recognition and empathy, and 'downstream' effects on moral reasoning and trait judgements.

4.3 **Catherine Sebastian,** *Department of Psychology, Royal Holloway, University of London:* Social emotion processing in adolescents with and without conduct problems

Neuroimaging studies have shown continued structural and functional development in neural circuitry underlying social and emotional behaviour during adolescence. My talk will first discuss studies investigating neural processing during Theory of Mind and emotion processing/regulation in adolescents with conduct problems, or behavioural, emotional and social difficulties (BESD). The data suggest that socioemotional processing in this group is heterogeneous, and in particular that it varies with differing levels of callous-unemotional (CU) traits. These findings highlight the importance of considering heterogeneity within diagnostic categories. I will also discuss preliminary data looking at emotion processing and regulation in typical adolescence, and will consider relationships between these processes and internalising and externalizing symptoms.

Posters

Thursday 28th August: Group A

Monica Berntsen	*University of Essex, UK*	Relating sensorimotor reactivity to a moving hand with behavioural performance
Emily Butler	*Bangor University, UK*	Individual differences in automatic imitation
Michael Dalili	*Bristol University, UK*	Meta-Analysis of Emotion Recognition Deficits in Major Depressive Disorder
Diana Dongo Miletich	*Universite Catholique de Louvain, Belgium*	Information about Hierarchical Social Relations Affects Intentional Attribution during Moral Judgments
Katherine Ellis	*University of Birmingham, UK*	The developmental trajectory of early social cognition skills
Lucy Foulkes	*University College London, UK*	Social Reward Questionnaire (SRQ): Development and validation
Alexandra Georgescu	*University Hospital of Cologne, Germany*	Neural Correlates of Processing Nonverbal Social Interactions: The Role of Movement Fluency and Contingency
Lai-San Iao	*Nottingham Trent University, UK; University of Hong Kong, Hong Kong*	Talking While Thinking About Another's Mind in Preschoolers: Evidence of Getting Vygotskian About Social Cognition
Dimitrios Kourtis	*Ghent University, Belgium*	Predictive representation of others' actions in a synchronous joint task: An EEG study
Patricia Lockwood	*University College London, UK*	Dissecting empathy: high levels of psychopathic and autistic traits are related to difficulties in different social processing domains
Gaelle Meert	*Universite Catholique de Louvain, Belgium*	Limits of belief tracking in adults: An eye-tracking study
Garret O'Connell	*University of Reading, UK*	Core components of empathy are inversely related across individuals
Birgit Rauchbauer	*University of Vienna, Austria*	The effect of emotional in- and outgroup context on automatic imitation. Implicit affiliation and appeasement?
Eva Reindl	*University of Birmingham, UK*	On the spontaneous ability of humans to use and make great ape tools
Idalmis Santiesteban	*Birkbeck, University of London, UK*	Mirror-Touch Synaesthesia: Blurring the Boundary Between Self and Others

Punit Shah	*MRC SGDP, Institute of Psychiatry, Kings College London, UK*	Diagnosing 'Face-Blindness': The 20-Item Prosopagnosia Index (PI-20)
Sophie Sowden	*MRC SGDP, Institute of Psychiatry, Kings College London, UK*	Intact Automatic Imitation in Autism: Challenging the Broken Mirror Theory
Jessica Wang	*University of Birmingham, UK*	Theory of Mind-use in the Director task: factors affecting the level of egocentrism observed in behavioural responses and eye movements
Lin Zhao	*University of Birmingham, UK*	Whether change of communicational partners disrupts people's memory: exploring a memory-based mechanism of common ground inference

Posters

Friday 29th August: Group B

Saz Ahmed	*Royal Holloway, University of London, UK*	Attentional Capture by Emotional Expressions Varies with Psychopathic Traits
Henryk Bukowski	*Universite Catholique de Louvain, Belgium*	What boosts attention orienting in reponse to other people's gaze direction?
Jen Cook	*City University, London, UK; Radboud University, Nijmegen, Netherlands*	Social status predicts the influence of social information on decisions
Bonni Crawford	*Cardiff University, UK*	Autism-like social traits and motivation are linked with BOLD activation in response to social feedback
John Dewey	*Central European University, Hungary*	Do implicit and explicit measures of the sense of agency measure the same thing?
Rosy Edey	*Birkbeck, University of London, UK*	Perception of action: Are typical actions just atypical to individuals with autism?
Anne-Kathrin Fett	*VU University Amsterdam, Netherlands*	Trust and attachment in early psychosis
Tom Gardner	*Bangor University, UK*	The dynamic modulation of the Action Observation Network by familiarity
Inez Greven	*Bangor University, UK*	Linking person perception and person knowledge in the human brain
Louise Kirsch	*Bangor University, UK*	Investigating the relationship between implicit and explicit affective responses with facial electromyography when watching action
Clement Letesson	*Universite Catholique de Louvain, Belgium*	Eye contact during action observation triggers allocentric action representation
Lara Maister	*Royal Holloway, University of London, UK*	It feels worse when you look like me: Implicit self-esteem decreases when self-similar faces send deceptive social signals
Lauren Marsh	*University of Surrey, UK*	The effects of group membership and eye contact on automatic imitation and spatial compatibility
Katherine Naish	*Wilfrid Laurier University, Canada; McMaster University, Canada*	Are you going to eat that? Action prediction by the mirror system is not based on the detection of kinematic differences
Janine Oostenbroek	*University of York, UK*	The cultural transmission of intergroup bias

Arran Reader	*University of Reading, UK*	The effects of face-to-face versus video feedback on imitation
Alex Sel	*Royal Holloway, University of London, UK*	Unveiling self-face recognition: ERP evidence for the unique cortical dynamics of the predictive self
Galit Shaham	*Hebrew University of Jerusalem, Israel*	Your body moves me: Non-mirror motor involvement in the perception of emotional body postures
Rebecca Sperotto	*Cardiff University, UK*	Exploring language in a preterm sample: responding to joint attention influences the relation between gestational age and expressive vocabulary
Daniel Yon	*Birkbeck, University of London, UK*	Anticipating others' reactions: Viewpoint and temporal specificity of sensory prediction during action

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