



XXIII Biennial Congress

**International Society for Human
Ethology**

1 - 5 August 2016

**University of Stirling
Scotland**

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Organising Team

Organiser

S. Craig Roberts
Division of Psychology, University of Stirling

Local Organising Committee

Caroline Allen
Christine Caldwell
Paxton Culpepper
Anthony Little

Programme Committee

Chair: Jan Havlíček (Charles University, Prague)

Tom Alley (Clemson University, USA)
Christine Caldwell (University of Stirling, UK)
Amanda Hahn (University of Glasgow, UK)
Michal Kandrik (University of Glasgow, UK)
Dan Kruger (University of Michigan, USA)
Anthony Little (University of Stirling, UK)
William McGrew (University of Cambridge, UK)
Craig Roberts (University of Stirling, UK)
Gert Stulp (London School of Hygiene & Tropical Medicine, UK)

On-site Helpers

Theresa Grod	Faize Eryaman	Vicky Mileva
Joshua March	Jim Swaffield	Louise Heron
Julia Baumann	Sophia Daoudi	

We thank Sophia Daoudi for design of the Stirling 2016 logo

Conference Venue

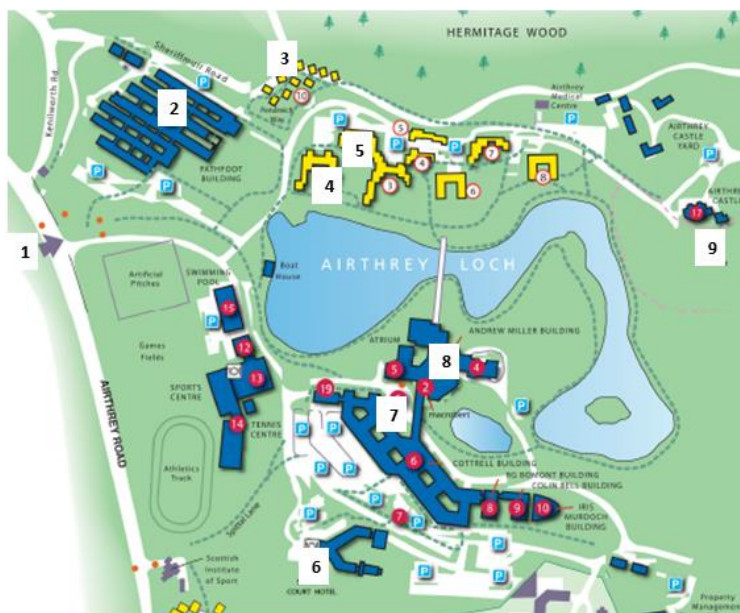
Stirling is a historic city in Scotland's central belt. It has been said that whoever controlled Stirling held the key to Scotland, in view of its easily defensible topography and the first fordable crossing over the river Forth west of Edinburgh. It has been a strategically important military centre since at least the Roman occupation, with a fortress in place since the Iron Age. Stirling saw two famous Scottish victories over the English, led by William Wallace at the Battle of Stirling Bridge in 1297 and by Robert the Bruce at Bannockburn in 1314. Stirling Castle was the main residence of the Stuart monarchy and the setting, in 1543, for the coronation of Mary, Queen of Scots.

The University of Stirling is located 2 miles outside Stirling, in the nearby spa town of Bridge of Allan. The university campus is considered to be one of the most picturesque in Europe, occupying a 330 acre parkland estate centred around its own large loch (lake) and the 18th Century Airthrey Castle, with magnificent views of the Ochil Hills and the Wallace Monument.

The University of Stirling was the first genuinely new University in Scotland for over 400 years when it was founded by Royal Charter in 1967 and celebrates its 50th anniversary in 2017. It is home to almost 13,000 students across 3 campuses, including its Highland campus in Inverness and its Western Isles campus at Stornaway of the Isle of Lewis.

The conference will be based in the Pathfoot Building at the University of Stirling.

University of Stirling Campus Map



Key

- 1 University Main Entrance
- 2 Pathfoot Building
- 3 Pendreich Way Chalets
- 4 Fraser House
- 5 Willow Court
- 6 Stirling Court Hotel
- 7 Main Bus Stop
- 8 Andrew Miller Building (contains the Atrium shops, MacRobert Arts Centre, and Haldanes)
- 9 Airthrey Castle

Campus Facilities

Cash Machines

Two machines are available in the Atrium – in front of Santander, and to its right.

Eat and Drink

There are several places to eat and drink on campus, though some have restricted opening times during summer holidays. During the conference, they are open as follows:

Market Street (in Atrium)	0800-1430 hrs
Stir Café (in Atrium)	0830-1630 hrs
Refresh (Willow Court ground floor)	0700-2200 hrs

Shops

The Atrium is also home to a pharmacy, the University bookstore (also sells postcards, stamps and stationary), and the University shop (for Stirling branded merchandise etc). There is a small supermarket (behind Santander) which is open from 8am until 10.00pm.

Post Office

The bookstore sells stamps, but otherwise the nearest post office is in Bridge of Allan. There is a post-box outside the Atrium, as you head for the bridge over the loch.

Useful Numbers & Information

Emergency contact	07855 996834
Stirling Taxis*	01786 343434 stirlingtaxi.com
Rab's Taxis*	01786 812909 rabstaxis.com
Braehead Taxis*	01786 445544
Stirling Court Hotel	01786 466000
Stirling Tourist Information	01786 432003

**All the taxi firms do airport transfers*



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Programme: at a Glance

	Mon 1 Aug	Tues 2 Aug	Wed 3 Aug
9.00		<i>Coffee</i>	<i>Coffee</i>
9.20		Plenary II: Perrett	Plenary III: Carpenter
10.20		<i>Coffee</i>	<i>Coffee</i>
10.50		Cooperation / Symposium I (Faces)	Attractiveness I/ Symposium II (Developmental approaches)
11.10			
11.30			
11.50		<i>Lunch</i>	<i>Lunch</i>
12.30			
14.00	Officer's Meeting	Mate Choice/ Competition I	Competition II/ Vocal Perception
15.20		<i>Tea</i>	<i>Tea</i>
15.50	Registration	Poster session	Romantic Relationships/ Environment & Behaviour
18.00	Wine reception	<i>Eat in Bridge of Allan</i>	Lochside Buffet Dinner Mini Highland Games
19.00	Opening Ceremony & Plenary I: Segal		
20.30	Dinner		
until 01.00	<i>Late Bar at Oscars</i>	<i>Late Bar at MacRobert</i>	<i>Late Bar at MacRobert</i>

	Thur 4 Aug	Fri 5 Aug
9.00	<i>Coffee</i>	<i>Coffee</i>
9.20	Plenary IV: Schaal	Plenary V: Dunbar
10.20	<i>Coffee</i>	<i>Coffee</i>
10.50	Attractiveness II /Social Cognition I	Roots of human nature/ Social Cognition II
11.10		
11.30		
11.50		
12.30	<i>Lunch</i>	<i>Lunch</i>
14.00	Social afternoon	Applications/ Competition III
15.20		<i>Tea</i>
15.50		General Assembly
18.00	<i>Eat in Stirling</i>	Banquet & Ceilidh at Stirling Court Hotel
19.00		
20.30		
until		
01.00		

Programme

Monday 1st August

16.00 – 18.00	
Registration	Crush Hall
18.00 – 19.00	
Wine Reception	Crush Hall
19.00 – 19.20	
Opening Ceremony	Pathfoot Lecture Theatre
Plenary Pathfoot Lecture Theatre	
Nancy Segal Twin Research Meets Ethology and Evolutionary Psychology	19.20 – 20.20 <i>Chair: Tom Alley</i>
20.30 – 01.00	
Dinner, with Highland Dancing and Late Bar	Pathfoot Eatery

Tuesday 2nd August

08.30	
Registration opens	Crush Hall

0900 – 09.20	
Coffee	Crush Hall

Plenary Pathfoot Lecture Theatre	
David Perrett In Good Shape and Colour: Cues Affecting Facial Attractiveness	09.20 – 10.20 <i>Chair: Ian Stephen</i>

10.20 – 10.50	
Coffee	Crush Hall

Cooperation Pathfoot Lecture Theatre <i>Chair: Moritz Köster</i>		Symposium: Evolution and Human Face Perception Wallace Room <i>Chair: Anthony Little</i>
Moritz Köster Cognitive and motivational underpinnings of early helping behavior (SFA)	10.50	Anthony Little Variable voting: Exposure to different environmental cues influences hypothetical voting decisions based on facial cues

Amy Munro-Faure Human cooperation: observations and experiments on games in the wild (SFA, LMA)	11.10	Amanda Hahn Hormonal and personality correlates of women's responses to infant facial cues
Elena Zwirner Does city living shape our pro-social tendency? (SFA)	11.30	Sean Talamas Eyelid-Openness and Mouth Curvature Influence Perceived Intelligence Beyond Attractiveness (SFA)
Eveline Seghers Joint observation of visual arts facilitates within- group cooperation	11.50	Martha Lucia Borrás Domestic violence lowers masculinity preference in Colombian women (SFA)
Arnaud Tognetti Are cooperative men showing off? Contributions to a public good are larger under sexual competition	12.10	Michal Kandrik The relationship between men's hormones and facial appearance (SFA)

12.30 – 14.00

Lunch	Pathfoot Eatery
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Mate Choice Pathfoot Lecture Theatre <i>Chair: Tamas David-Barrett</i>		Competition I Wallace Room <i>Chair: Maryanne Fisher</i>
Edward Morrison I know what I like...or do I? Illusory preference in mate choice	14.00	Martin Sharp Female Status, Gaze Behaviour and Menstrual Phase

Rick O’Gorman The Westermarck effect: Measuring incest aversion by pupil dilation	14.20	Viktoria Mileva Sex differences in the perceived dominance and prestige of women with and without cosmetics (SFA)
Petr Tureček Complementarity or Homogamy? Positive assortative mating in sibling constellations (SFA)	14.40	Martin Aranguren A pilot study in the Paris metro on the (nonverbal) discrimination of the Roma
Tamas David-Barrett Network effects in human mate choice	15.00	Maryanne Fisher Explorations into Competitive Mothering

15.20 – 18.00 Crush Hall	
Tea	15.20 – 15.40
Posters and wine	15.40 – 18.00

Evening	
Foraging in Groups	Suggested venues in Bridge of Allan

Wednesday 3rd August

09.00 – 09.20	
Coffee and Pastries	Crush Hall

Plenary Pathfoot Lecture Theatre	
Malinda Carpenter Social affiliation and alignment with others in infancy and early childhood	09.20 – 10.20 <i>Chair: Amanda Hahn</i>

10.20 – 10.50	
Coffee	Crush Hall

Attractiveness I		Symposium: Developmental approaches to understanding human social learning
Pathfoot Lecture Theatre		Wallace Room
<i>Chair: Karel Kleisner</i>		<i>Chair: Christine Caldwell</i>
Jeanne Bovet Preferred Women's Waist- to-Hip Ratio Variation over the Last 2,500 Years	10.50	Eoin O'Sullivan Automatic imitation effects are influenced by experience of synchronous action in children
Jan Havlíček Men's preferences for women's breast size and shape in four cultures	11.10	Eva Reindl Human children spontaneously invent great ape tool-use behaviours (SFA, LMA)

Agnieszka Żelaźniewicz Breast size in pregnancy and a woman's breastmilk composition and volume	11.30	Elizabeth Renner Do children and orangutans learn differently in individual, social, and "ghost" conditions?
Lynda Boothroyd Male facial appearance and offspring mortality in two traditional societies	11.50	Joshua March Faithful imitation is based on different mechanisms throughout childhood (SFA)
Karel Kleisner African and European perception of African female attractiveness		Emily Messer The role of social experience on young children's donating behaviour

12.30 – 14.00

Lunch	Pathfoot Eatery
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Competition II		Vocal Perception
Pathfoot Lecture Theatre		Wallace Room
<i>Chair: Marc Mehu</i>		<i>Chair: Tamsin Saxton</i>
Jakub Binter Hormonal and behavioral changes in young adult heterosexual men during competition for a female partner (SFA, LMA)	14.00	Tamsin Saxton A lover or a fighter? Opposing sexual selection pressures on men's vocal pitch and facial hair
Daniel Kruger Divided loyalties: Assessing coalitional behaviors in an American college football rivalry	14.20	Juan David Leongómez Perceived differences in social status between speaker and listener affect the speaker's vocal characteristics

Daniel Redhead The Dyadic effects of Prestige and Dominance within Social Networks: A longitudinal study of social status in the classroom (SFA, LMA)	14.40	Katarzyna Pisanski Changes in voice pitch across a lifetime: a longitudinal within-individual study
Marc Mehu Testosterone, dominance, and communicative behavior in face-to-face dyadic negotiations	15.00	Irena Pavela Vocal changes across the menstrual cycle: Are we there yet? (SFA, LMA)

15.20 – 15.50

Tea	Crush Hall
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Romantic Relationships Pathfoot Lecture Theatre <i>Chair: Ana Maria Fernandez</i>		Environmental influence on behaviour Wallace Room <i>Chair: Thomas Pollet</i>
Ana Maria Fernandez The reciprocal nature of romantic relationships	15.50	Jiřina Bouřov Tell me baby, does your heart beat faster? Autonomic Response in Newborns to Relatively Strong and Mild Trigeminal Odorants (SFA, LMA)
Piotr Sorokowski Meaning of love - a study among hunter-gatherers	16.10	Jim Swaffield Assessing the relative impact of physical safety, social support and poor economic conditions on food preference (SFA)

Tara DeLecce Psychological Sperm Competition Mechanisms and the Moderating Effect of Romantic Attachment Style (SFA, LMA)	16.30	Michał Misiak Prenatal exposure to sex hormones predicts gratitude intervention use. Examination of digit ratio, motivational beliefs, and online activities (SFA)
Denisa Průšová Manipulative strategies in conflict interactions: The privilege of low powered submissive romantic partners? (SFA)	16.50	Jean-Luc Jucker Television consumption is the strongest predictor of female body size ideals in populations recently exposed to the media
Naomi Muggleton Unrestricted sexuality promotes greater distinction in women's short- and long-term mate preferences (SFA, LMA)	17.10	Cristina Acedo Carmona Culture or trust as human tools to face environmental changes? The VyeGwa-Gika Pygmies from Burundi

18.30 - late	
Buffet Dinner	Haldanes and Loch-side
Mini Highland Games	

Thursday 4th August

09.00 – 09.20	
Coffee and Pastries	Crush Hall

Plenary Pathfoot Lecture Theatre	
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Benoist Schaal Coevolutionary adjustment of olfactory communication between mammalian – including human – females and their neonates	09.20 – 10.20 <i>Chair: Jan Havlíček</i>
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10.20 – 10.50	
Coffee	Crush Hall

Attractiveness II Pathfoot Lecture Theatre <i>Chair: Michal Kandrik</i>		Social Cognition I Wallace Room <i>Chair: Agnieszka Sorokowska</i>
Ian Stephen The body and the beautiful: Health, attractiveness and body composition in men's and women's bodies	10.50	Anna Oleszkiewicz Voice-based assessments of trustworthiness, competence and warmth in blind and sighted adults (SFA, LMA)
Anthony Lee Facial averageness and genetic quality: testing heritability, genetic correlation with attractiveness, and the paternal age effect	11.10	Niklas Dworazik It's not too much about the „Who“ but rather about the „How“. Early parental investment in two cultural contexts (SFA, LMA)

Jitka Lindová Blinded by attractiveness? Dance and gait provide numerous reliable cues to female personality, but raters fail to use them accurately	11.30	Caroline Allen Perfumers' perceptions of body odours: Towards a new scale for odour description (SFA, LMA)
Barbara Borkowska Men's attractiveness and health – declared health versus real immune status (SFA, LMA)	11.50	Hermann Prossinger Comparing assessments of facial features by participants using various continuous slider scores
Colin Hendrie Women's manipulation of ornament display intensity is situation dependent	12.10	Agnieszka Sorokowska Olfactory performance in 84 early-blind and late- blind individuals

12.30 – 14.00

Lunch	Pathfoot Eatery
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14.00 – late

Social programme	Visit to Stirling Castle
Foraging in groups II	Suggested locations in Stirling

Friday 5th August

09.00 – 09.20	
Coffee and Pastries	Crush Hall

Plenary Pathfoot Lecture Theatre	
Robin Dunbar Using Big Data to study human sociality	09.20 – 10.20 <i>Chair: Craig Roberts</i>

10.20 – 10.50	
Coffee	Crush Hall

Roots of Human Nature Pathfoot Lecture Theatre <i>Chair: Wulf Schiefenhövel</i>		Social Cognition II Wallace Room <i>Chair: Elisabeth Oberzaucher</i>
Marian Vanhaeren Dead things, living people: On the interface between ethnology and archaeology	10.50	David Moulds Exploring the dynamic relationship between emotion and referential communication (SFA)
Trevor Case The animal origins of disgust	11.10	Romana Žihlavičková The reputation beneath the morality (SFA, LMA)
Rick Goldberg The Darwinian Expression of Human Hair	11.30	Edit Szabó Who knows who is being manipulated? Mindreading ability & the Dark Triad (SFA, LMA)

Felix Schoeller Aesthetic chills and humans' vital need for cognition (SFA, LMA)	11.50	Gregory Carter The Dark Triad in women: Bad girls, femme fatales, and anti-heroines
Wulf Schiefenhoewel From Benjamin Whorf to Margaret Mead et al. Why are ideas about the power of culture so attractive?	12.10	Elisabeth Oberzaucher The Ontogeny of the Sexual Dimorphism in Error Management

12.50 – 14.00

Lunch	Pathfoot Eatery
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Applications & Healthy Behaviour Pathfoot Lecture Theatre <i>Chair: John Richer</i>		Competition III Wallace Room <i>Chair: Michael Stirrat</i>
Susanne Schmehl Can Ethology Inform FDM Diagnosis and Therapy? (SFA)	14.00	Michael Stirrat Perceived fighting ability in female UFC fighters
Thomas Pollet 'Automatic for the people' – The strengths and weaknesses of Machine Learning for analyzing various types of data in the field of human ethology	14.20	Vít Třebický Reckless thugs and mindful wimps: Negative correlation between perception of fighting success and self-rated formidability (SFA)
Kraig Shattuck Using Life-History Theory to predict Aggression and Mate Guarding in Adolescent Males (SFA)	14.40	Jitka Fialová What makes a fighter successful? Relationship between physical and psychological traits and fighting success in MMA fighters (SFA)

John Richer Ethology steps outside psychiatry	15.00	Jordan Raine Upper-body strength is encoded and perceived in human agonistic nonverbal vocalisations (SFA, LMA)
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15.20 – 15.50	
Tea	Crush Hall

15.50 – 17.00	
General Assembly	Pathfoot Lecture Theatre

19.30 – 01.00	
Congress Banquet & Ceilidh	Stirling Court Hotel

Abstracts

Monday 1st August

16.00 – 18.00h	
Registration	Crush Hall, Pathfoot Building
18.00 – 19.00h	
Wine Reception	Crush Hall, Pathfoot Building
19.00 – 19.20h	
Opening Ceremony	Pathfoot Lecture Theatre
Plenary Pathfoot Lecture Theatre	
Nancy Segal Twin Research Meets Ethology and Evolutionary Psychology	19.20 – 20.20h <i>Chair: Tom Alley</i>
20.30 – 01.00h	
Dinner, with Highland Dancing and Late Bar	Pathfoot Eatery and Oscars

PLENARY

Twin Research Meets Ethology and Evolutionary Psychology

Nancy Segal

Dept of Psychology, California State University, Fullerton, USA

Scientific studies using twins offer unique insights into the origins of, and individual differences in, human behavioral and physical characteristics. The classic twin design compares phenotypic resemblance between monozygotic (MZ) and dizygotic (DZ) twin pairs to estimate the genetic and environmental contributions to measured traits. There are also approximately ten variants of the classic twin method (e.g., twin family design and twins reared apart) that can address the same class of questions. A 2015 summary of findings from 2,748 publications, based on 17,804 traits and 14,558,903 twin pairs, found that the degree of genetic influence (heritability) is, on average, 49 percent across all traits. However, in addition to twin designs, there now exist some novel twin-like sibling pairs and other curious couples generated by adoption, assisted reproductive technologies and/or other means (e.g., virtual twins and unrelated look-alikes). These interesting pairs lend themselves well to exploring a range of behavioral questions from the perspectives of ethology and evolutionary psychology. This plenary address will describe a variety of twin research methods that have been used to address ethological and evolutionary based issues and questions. The behavioral domains to be covered include cooperation, competition, altruism, tacit coordination, bereavement, social attraction and parenting. New topics that would benefit from applying twin research methods to questions and hypotheses generated by human ethological and evolutionary psychological reasoning will be suggested.

Tuesday 2nd August

08.30	
Registration	Crush Hall
09.20 – 10.20	
David Perrett In Good Shape and Colour: Cues Affecting Facial Attractiveness	Pathfoot Lecture Theatre <i>Chair: Ian Stephen</i>
10.50 – 12.30	
Cooperation	Pathfoot Lecture Theatre
Symposium: Evolution and Human Face Perception	Wallace Room
14.00 – 15.20	
Mate Choice	Pathfoot Lecture Theatre
Competition I	Wallace Room
15.40 – 18.00 Crush Hall	
Posters and wine	15.40 – 18.00

PLENARY

In Good Shape and Colour: Cues Affecting Facial Attractiveness

David Perrett, Carlota Batres, Audrey Henderson, Iris Holzleitner & Martha Boras

School of Psychology and Neuroscience, University of St Andrews, UK

We have studied how skin colour and face shape (a) relate to health and physical status and (b) affect attraction in different populations and environments. Carotenoids are antioxidant plant pigments that increase skin yellowness. We find that skin yellowness relates to several aspects of health. Skin yellowness is higher with a diet rich in fruits and vegetables; lower with high BMI (Body Mass Index) and higher when VO₂max estimates of fitness increase. At the perceptual level, an increase in skin yellowness is seen as more attractive and associated with higher fitness particularly those who are fit themselves. Previous research suggests impressions of power are based on facial cues to masculinity and strength. We analysed the shape of faces in relation to their owners' body physique and actual upper-body strength. We found that body height, muscle and fat mass are all perceivable from faces, while judgments of strength show limited accuracy. Judgments of strength appear to reflect strong generalization from cues to body size rather than musculature. We examined individual differences in reactions to facial cues of power. We find that concern over domestic violence decreases women's perceptions of attractiveness of masculine-faced, (powerful) men. Hence, our findings demonstrate limited accuracy in judgments of power but show pervasive social influences of facial cues to power. Facial preferences are thought to depend on the environment. We explored preferences during 9 days of intensive army training and found that when the environment became harsher, men's attraction to cues of higher BMI in women's faces increased. These results demonstrate the flexibility of interpersonal attraction. Rural

populations prefer heavier women than urban populations. We found that weight preferences aligned with population differences in facial appearance. This suggests that environmental pressures may affect appearance and that familiarity could contribute to population differences in interpersonal attraction.

Cooperation

Chair: Moritz Köster

Pathfoot Lecture Theatre	
10.50	Moritz Köster Cognitive and motivational underpinnings of early helping behavior (SFA)
11.10	Amy Munro-Faure Human cooperation: observations and experiments on games in the wild (SFA, LMA)
11.30	Elena Zwirner Does city living shape our pro-social tendency? (SFA)
11.50	Eveline Seghers Joint observation of visual arts facilitates within-group cooperation
12.10	Arnaud Tognetti Are cooperative men showing off? Contributions to a public good are larger under sexual competition

Joint observation of visual arts facilitates within-group cooperation

Eveline Seghers¹ & Delphine De Smet²

¹ Descartes Centre for the History and Philosophy of the Sciences and the Humanities, Utrecht University, The Netherlands

² Dept of Interdisciplinary Study of Law, Private Law and Business Law, Ghent, Belgium

Humans possess an elaborate set of cognitive and behavioural mechanisms in order to establish and maintain social bonds in groups of various sizes. Until now, attention has mainly focused on topics such as language and ritual, but little is known about the role of material artefacts in these processes. In this experiment, we use a 2x2 between-subjects design to test whether the joint observation of non-aesthetic utility objects versus intentional art objects alters within-group cooperation in previously established groups, depending on whether the artefacts in question are markers of ingroup or outgroup identity. The results show that the observation of art objects leads to significantly higher within-group cooperation compared with non-aesthetic utility objects. In addition, a trend suggests that within-group cooperation is positively affected if the objects refer to ingroup identity. These effects do not appear to be influenced by other variables such as personality traits like agreeableness, degree of familiarity between group members, or individual religious conviction. In sum, this study indicates that social bonding is enhanced by material references to the ingroup, and by the aesthetic nature of these objects. This provides insight into both the evolution of visual art, as well as into the mechanisms and processes at work in the establishment and maintenance of prehistoric social groups.

Human cooperation: observations and experiments on games in the wild (SFA, LMA)

Amy Munro-Faure & Matt Bell

Institute of Evolutionary Biology, University of Edinburgh, UK

Contrary to much evolutionary theory, human populations are unusually cooperative. Laboratory studies of human cooperative behaviour have generally found high levels of pro-sociality. We used wild analogues of the pay-off structures commonly found in laboratory games commonly used to study cooperation to test whether these results are replicated when human behaviour is studied in naturalistic contexts. We carried out observational studies and experimentally manipulated the systems. For example, we replicated the structure of a laboratory dictator game by observing pedestrians donation behaviour towards homeless individuals. We then manipulated this system by, for example, changing the pay-offs by leaving money in the street that pedestrians could use to make donations. We went on to play traditional dictator games with passers-by in the street on an Ipad to make a direct comparison between laboratory and wild studies. We also investigated whether giving behaviour can be induced by shifting a social norm, this was achieved by having a stooge buy a homeless individual coffee and observing if this changed subsequent donation behaviour. We have found that people tend to behave less pro-socially in wild systems but that factors such as size of pay-off and degree of observation can have an effect on cooperative decision-making.

Does city living shape our pro-social tendency? (SFA)

Elena Zwirner¹ & Nichola Raihani²

¹ *Dept of Genetics, Evolution and Environment, University College London, UK*

² *Dept of Experimental Psychology, University College London, UK*

Cooperation is relatively widespread among species; however, humans extensively and regularly cooperate with genetically unrelated individuals at a unique level. Previous studies have demonstrated remarkable variation in human cooperation depending on the environmental context. In particular, city-dwellers are reportedly less cooperative than their rural-dwelling counterparts. These findings raise the possibility that differences in pro-social tendencies may be affected by the environmental features people experience in their every-day life. With over half of the world's population living in cities, it is of primary importance to understand how city-life may influence our behaviour. Here I will present results from a set of real-world experiments conducted in 12 cities and 12 towns across the UK. We used measures such as willingness to return a 'lost letter', to donate to a charity collection, and to return a 'dropped item' to test: i) whether city-dwellers are less pro-social than town-dwellers across different forms of helping; ii) whether urban-rural variation in pro-sociality can be explained by "diffusion of responsibility" or iii) by "perceived anonymity" often experienced in cities. I will show that urban-rural differences in pro-social tendencies are not as clearly defined as previously believed, and I will discuss the influence of socio-economical factors, rather than urbanicity per se, in shaping our cooperative tendency.

Are cooperative men showing off? Contributions to a public good are larger under sexual competition

Arnaud Tognetti¹, Dimitri Dubois², Charlotte Faurie^{3,4} & Marc Willinger^{3,5}

¹*Institute for Advanced Study in Toulouse, Toulouse, France*

²*CNRS, Montpellier, France*

³*University of Montpellier, France*

⁴*CNRS Institute of Evolutionary Sciences, Montpellier, France*

⁵*Institut Universitaire de France*

Why humans cooperate in large groups and with non-kin remains a puzzle for researchers across the natural and social sciences. Despite a large amount of theoretical and experimental investigations of cooperation, the potential role of sexual selection has been overlooked. Yet, competition for access to mates could induce positive selection for cooperation. Using controlled laboratory experiments, we analyse whether and how the sex composition of a social environment, testosterone level, and relationship status affect contributions to a public good. The results show that variation in sex composition alters the amount of money that men (but not women) contribute to a public good. Notably, in line with the competitive helping hypothesis, the information on a woman's presence leads to larger contributions by men, most likely by inducing competition between them. Furthermore, this tendency is exacerbated in single men compared to men in a couple. However, we find no link between basal testosterone level and cooperativeness. We argue that men adopt cooperative behaviours as a signalling strategy in the context of mate choice and hence that cooperation is partly sexually selected. Our findings highlight the need to consider sexual selection as an additional mechanism for cooperation.

OWEN ALDIS AWARD WINNER

Cognitive and motivational underpinnings of early helping behavior (SFA)

Moritz Köster¹, Shoji Itakura² & Joscha Kärtner¹

¹ *Dept of Developmental Psychology, University of Münster, Germany*

² *Graduate School of Letters, Kyoto University, Japan*

Infants begin to help others in their second year of life. For example, they pass objects to other individuals who cannot reach the objects. In previous studies we have shown that infants understand another's need for help even before they begin to help others and that helping behavior is guided by culture-specific early socialization experiences. These findings suggest that toddlers possess putatively natural prosocial tendencies. In the present cross-cultural study, we tested about 180 mother-child dyads at 10 and 16 months of age, in Germany and Japan, to investigate how different developmental attainments interplay in the early ontogeny of helping behavior. Infants' understanding of others' needs was assessed in an eye-tracking paradigm to test if infants expect a helper to help a needy character, not being able to achieve a goal on their own, in contrast to character who is able to achieve a goal unaided. We further tested how mothers motivate their children to pick up and bring objects to a certain place, and measured toddlers' motor abilities (using Bayley Scales of Infant Development) and social interaction skills (using Mundy Early Social Communication Scales). To test the influence of these variables on toddlers' prosocial development, their prosocial behavior was assessed in two out of reach tasks. We aim to replicate former findings on cognitive and motivational underpinnings of early helping behavior and analyze the interplay of these factors with more general developmental attainments around this age, namely their motor and socio-cognitive development.

Symposium I. Evolution and Human Face Perception

Chair: Anthony Little

Wallace Room	
10.50	Anthony Little Variable voting: Exposure to different environmental cues influences hypothetical voting decisions based on facial cues
11.10	Amanda Hahn Hormonal and personality correlates of women's responses to infant facial cues
11.30	Sean Talamas Eyelid-Openness and Mouth Curvature Influence Perceived Intelligence Beyond Attractiveness (SFA)
11.50	Martha Lucia Borras Domestic violence lowers masculinity preference in Colombian women (SFA)
12.10	Michal Kandrik The relationship between men's hormones and facial appearance (SFA)

Symposium overview

There has been much interest in how evolution may have shaped how we perceive faces and why we react the way we do to certain facial characteristics such as attractiveness. This symposium brings together a number of researchers interested in the psychology of facial appearance to cover a broad range of current issues in the evolution of face perception including the perception of leadership, beauty, and intelligence from adult faces as well as the perception of infant faces and how hormones impact on facial appearance.

Variable voting: Exposure to different environmental cues influences hypothetical voting decisions based on facial cues

Anthony C. Little

Division of Psychology, University of Stirling, UK

Previous studies suggest that people vote based on appearing to have traits that are well suited to lead under different contexts. This study examined if visual cues to disease, violence, and wealth impacted on voting for people who appear trustworthy and attractive. A between-subjects experimental design was used to determine the effects of exposure on voting preferences. A total of 260 participants were split across three online tests and were exposed to images in one of two conditions: 1. High vs. low pathogens, 2. High vs. low violence, and 3. High vs. low value items. Preferences for voting for trustworthy/attractive faces were measured after exposure by showing pairs of images capturing low and high perceived trust and attractiveness and asking participants to select who they would vote for. Participants exposed to high pathogens had stronger preferences for attractive faces compared to low pathogens. Participants exposed to high violence had stronger preferences for attractive faces compared to low violence, although not significantly. Participants exposed to low value items had stronger preferences for trustworthy faces compared to high value items. No other effects were significant. These experiments demonstrate that environmental cues can impact on voting preferences based on physical traits. Voters selected leaders that may have advantages in particular environments, such as attractive/healthy leaders in environments with disease risk.

The relationship between men's hormones and facial appearance (SFA)

Michal Kandrik, Amanda C Hahn, Chengyang Han, Joanna Wincenciak, Lisa M Debruine, & Benedict C Jones
Institute of Neuroscience and Psychology, University of Glasgow, UK

Men's testosterone and cortisol levels are associated with their immunocompetence, such that men with high testosterone and low cortisol show the strongest physiological immune responses to a vaccine. Further studies have shown that men with high testosterone have faces that women judge to be more attractive, healthy, and dominant, and that these effects are moderated by men's cortisol levels. In the current study we tested for relationships between perceptions of men's attractiveness, health and dominance (assessed by both male and female raters) and their testosterone and cortisol using robust measurements of men's hormone levels and facial appearance. Consistent with previous research, we found a significant relationship between men's dominance and the interaction between their testosterone and cortisol such that men with low testosterone and high cortisol were judged as less dominant. However, we found no significant relationships between men's hormones and their attractiveness. We also found no significant relationships between men's hormones and their perceived health. Our results highlight that the effects of men's hormone levels on appearance might be very subtle.

Eyelid-openness and mouth curvature influence perceived intelligence beyond attractiveness (SFA)

Sean N. Talamas¹, Kenneth I. Mavor¹, John Axelsson², Tina Sundelin³ & David I. Perrett¹

¹ *School of Psychology and Neuroscience, University of St Andrews, UK*

² *Dept of Clinical Neuroscience, Division for Psychology & Osher Center for Integrative Medicine, Karolinska Institute, Sweden*

³ *Dept of Psychology, Stockholm University, Sweden*

Impression formation is profoundly influenced by fixed cues such as sexual dimorphism and averageness, but the existence of malleable facial cues may be underestimated. Since depression and tiredness adversely affect cognitive capacity, we reasoned that facial cues to mood (mouth curvature) and alertness (eyelid-openness) affect impressions of intellectual capacity. Over four studies we investigated the influence of these malleable facial cues on first impressions of intelligence independent of their influence on attractiveness. In Studies 1 and 2 we scrutinize the perceived intelligence and attractiveness ratings of images of 100 adults (aged 18-33) and 90 school-aged children (aged 5-17) respectively. Intelligence impression was partially mediated by attractiveness, but independent effects of eyelid-openness and subtle smiling were found that enhanced intelligence ratings independent of attractiveness. In Study 3 we digitally manipulated stimuli to have altered eyelid-openness or mouth curvature and found that each independent manipulation had an influence on perceptions of intelligence. In a final set of stimuli (Study 4) we explored changes in these cues before and after sleep restriction, to examine whether natural variations in these cues according to sleep condition can influence perceptions. In Studies 3 and 4 variations with increased eyelid-openness and upturned mouth curvature were found to relate positively to intelligence ratings. These findings suggest potential overgeneralizations based on subtle facial cues that indicate mood and tiredness, both of which alter cognitive ability. These findings also have important

implications for future research investigating the role of facial cues in 'neutral' expression facial stimuli, as other social judgments (i.e. trustworthiness, leadership) may be influenced by overgeneralizations and subtle differences in mouth curvature and eyelid openness.

Domestic violence lowers masculinity preference in Colombian women (SFA)

Martha Lucia Borrás, David I. Perrett & Carlota Batres
School of Psychology & Neuroscience, University of St Andrews, UK

Debate surrounds the causes of women's preference for masculine male partners. This preference has been often explained in terms of heritable health, although alternative explanations have been proposed, for example gaining a strong partner for protection against violence from others. This study explores the effect of both public and domestic violence on individual preferences in women from both rural and urban areas in Colombia. A sample of 48 women were shown pairs of male faces (10 European and 10 Hispanic face pairs), each pair consisting of a masculine and feminine shaped version of the same face. For each pair of faces women were asked to choose the face they considered most attractive. Subsequently, participants answered a survey inquiring about their health (frequency of sickness, number of doctor visits during last year and childhood illnesses frequency), education (highest level accomplished), media use (frequency of internet use, time spent watching national and cable TV) and perceptions of violence (e.g. vulnerability to public violence, likelihood of men/women being the subject of domestic violence). Results indicated that when women thought there was a higher likelihood of men being the subject of domestic violence, women preferred less masculine male faces. Likelihood of men being subjected to domestic violence was the only variable accounting for variation in masculinity preference. These results demonstrate that context of violence influences women's interpersonal attraction. Colombian women may prefer low masculine men to avoid vulnerability in domestic violence.

Hormonal and personality correlates of women's responses to infant facial cues

Amanda Hahn¹, Lisa DeBruine¹, David Perrett² & Benedict Jones¹

¹*Institute of Neuroscience & Psychology, University of Glasgow, UK*

²*School of Psychology & Neuroscience, University of St Andrews, UK*

Infant facial cuteness can play an important role in aspects of adult-child interaction, such as caregiving behaviors. The mechanisms through which these links emerge are currently poorly understood, however. Here I will discuss research that uses a behavioral key-press task to demonstrate that women generally find high-cuteness versions of infant faces to be more rewarding than low-cuteness versions. I will also present evidence that differences in the reward value of infant facial cuteness occur both between and within women as a function of their self-reported maternal tendencies and salivary hormone levels, respectively. Collectively, these results suggest that differences in the reward value of infant facial cuteness may shape generalized motivational dispositions relating to infants and contribute to differences in caregiving behavior.

Mate Choice

Chair: Tamas David-Barrett

Pathfoot Lecture Theatre	
14.00	Edward Morrison I know what I like...or do I? Illusory preference in mate choice
14.20	Rick O’Gorman The Westermarck effect: Measuring incest aversion by pupil dilation
14.40	Petr Tureček Complementarity or Homogamy? Positive assortative mating in sibling constellations (SFA)
15.00	Tamas David-Barrett Network effects in human mate choice

I know what I like...or do I? Illusory preference in mate choice

Edward Morrison

Dept of Psychology, University of Portsmouth, UK

Measuring preferences can be done in several ways: by asking people what they prefer; by giving them a choice in a lab task; and seeing what they actually choose in real life. But does one type of preference always predict another? This study looked at the relationship between what women reported finding attractive in men's faces, and what they actually liked when given a series of faces to rate. 47 women rated the attractiveness of 50 male faces. They then stated their preferences for men's hair colour, hair length, eye colour, race, and facial hair, or whether they had no preference compared to other women. The average ratings they gave to faces of each category were then compared against the average ratings of the other raters to reveal their actual preferences. Participants were generally highly inaccurate. Stated preferences did not predict actual preferences for hair colour, hair length or eye colour. Stated preferences for race and facial hair were not statistically significant, but were at least in the right direction. These data suggest that some of people's explicit preferences are illusory and do not relate to their implicit preferences. This may be a kind of cognitive bias, similar to "choice blindness" where people confabulate false reasons for their preferences. Further research should explore whether this cognitive bias may extend beyond mate choice into more general domains.

Complementarity or Homogamy? Positive assortative mating in sibling constellations (SFA)

Petr Tureček^{1,2} & Jan Havlíček^{1,2}

¹ *Faculty of Science, Charles University, Prague, Czech Republic*

² *National Institute of Mental Health, Klecany, Czech Republic*

Duplication theorem, proposed by Walter Toman, states that couples whose birth order duplicates interpersonal patterns of the families from which spouses come (e.g. a couple consisting of older brother of a sister and younger sister of a brother - “complementary” sibling constellations) are formed more frequently and show a higher degree of stability and satisfaction than couples with non-complementary sibling constellations. However, empirical support for this hypothesis is rather ambiguous. Here we tested the frequency of complementary and non-complementary couples using three datasets. Further, we tested whether the frequency of the couples’ dissolution depends on sibling constellations of the partners. We focused on heterosexual couples where both partners had only one sibling (N=601, 309 and 3212) to avoid potentially confounding variables such as family-size and classification of middleborns. We found that complementary couples are not more frequent as compared to non-complementary couples. In contrast, in two of the datasets, we found couples sharing the same birth order (i.e., homogamous couples) were significantly more frequent than non-homogamous couples. Pairs where partners shared some characteristics of their sibling constellation (birth rank and sex of the sibling) tended to be more frequent in the population. However, the homogamous couples did not show lower levels of dissolution compared to the non-homogamous couples. Our results do not support Duplication theorem, and call into question its relevance for populations with low fertility rates.

The Westermarck effect: Measuring incest aversion by pupil dilation

Rick O’Gorman, Gerulf Rieger, Katherine McCulloch & Lydia Whitaker

Dept of Psychology, University of Essex, UK

The incest taboo has received empirical focus within evolutionary psychology as an example of an evolved adaptation for avoiding selectively disadvantageous behaviour, given the biological costs of reproduction with close relatives. Findings include that exposure to younger siblings being cared for extensively by participants mothers, and extensively co-residence (for those with older siblings) relate to heightened incest aversion and disgust. This work has been predominantly based on self-report questionnaire methodology, although recently a study found a psychophysiological indicator of aversion, muscular facial activity which is associated with expressions of disgust, related to established cues for incest avoidance. However, this finding is subject to conscious awareness of the hypothesis by participants and possible impression management given the extent of control over facial expressions. In the studies presented here, recent methodology using pupil dilation as a means to capture unfiltered attentional preferences is used to examine whether participants show incest aversion in theoretically predictable patterns, particularly in line with variables found previously (e.g., lengthy exposure to opposite-sex siblings). We recorded pupil dilation using eye-tracker equipment, and presented participants with a series of visual and auditory stimuli. The salient stimuli consisted of a well-known research-based incest scenario presented aurally, with modified versions for a non-incest but sexual scenario and a non-sexual sibling scenario. Findings show relationships between previously established incest avoidance cues and pupil dilation, although the relational direction is inconsistent within and between the two studies. Discussion will focus on reasons why findings are inconsistent but meaningful.

Network effects in human mate choice

Tamas David-Barrett

Dept of Experimental Psychology, University of Oxford, UK

While mate choice has been extensively studied in evolutionary psychology, the role of social networks for short- and long-term mating has been surprisingly little explored. A year-long online survey was conducted in 2015 in order to investigate how physical, physiological and social attributes and social networks affect human pair choice. The survey ran in 7 languages, allowing for testing the effect of culture. The dataset contains 7340 participants, with a 71:29 female:male gender ratio. The average participant age is 29 years, and ranges from 18 to 98. Participants come from 126 countries and speak 114 mother tongues. Three hypothesis were tested: First, whether people recognise affinal kin as kin, and allocate resources accordingly, based on Hughes theory of indirect relatedness through affines. Second, the compatibility of kin groups of an individual and a potential mating partner is taken into account when choosing a mate, but only in a long-term mating framework. Third, that people actively test whether the two kin groups are compatible during long-term mate choice. Results confirm all three hypotheses at a high level of significance and across cultures, and suggest the existence of a new universal feature of human mate-choice, the network effect.

Competition I

Chair: Maryanne Fisher

Wallace Room	
14.00	Martin Sharp Female Status, Gaze Behaviour and Menstrual Phase
14.20	Viktoria Mileva Sex differences in the perceived dominance and prestige of women with and without cosmetics (SFA)
14.40	Martin Aranguren A pilot study in the Paris metro on the (nonverbal) discrimination of the Roma
15.00	Maryanne Fisher Explorations into Competitive Mothering

Female status, gaze behaviour and menstrual phase

Martin Sharp & Geordan Hamilton

*School of Health and Life Sciences, Glasgow Caledonian University,
Glasgow, UK*

Whilst not explaining all social behaviour and organisation, dominance is nevertheless an important dimension of human social interaction. It has been hypothesized that gaze behaviour reflects the dominance hierarchy of primate groups and a number of studies have demonstrated that cues associated with social status also influence human gaze. These studies overwhelmingly involve male participants and sex differences in coalition formation, status seeking, risk taking and dominance-related behaviour have all been explained by the fact that males needed to compete for mates while females supposedly did not. Indeed, until comparatively recently it was thought that dominance contests were of little consequence for females. However, there is growing evidence to suggest that competitiveness is useful and there are attendant benefits conferred upon females with high status. Thus, it is important to understand these status-gaze behaviour relationships in women, whilst taking into account menstrual effects. Sixty heterosexual, Caucasian female participants competed in a dyadic non-physical status encounter (woodblock game Jenga). Dyads were unknown to each other and matched by menstrual phase (follicular/luteal) or contraceptive use. Winners were congratulated and received £5 to accentuate status disparity. In the two minutes following competition, participants sat apart but in sight of each other. The investigator left the room and gaze behaviour was recorded by video camera. We found that losers spent significantly longer looking at their opponent compared to winners. The effect of menstrual phase on gaze behaviour was also significant. Our results support the hypothesis that, similar to males, female gaze behaviour is responsive to the outcome of status encounters and will be discussed within the framework of the challenge hypothesis.

A pilot study in the Paris metro on the (nonverbal) discrimination of the Roma

Martin Aranguren

Unité de Recherches Migrations et Sociétés, CNRS, France

I will present results of a pilot field experiment (spring 2015) on discrimination of the Roma from Eastern Europe in the Paris metro. A confederate actor approaches randomly chosen passengers on a metro platform and asks for help following a standardized scenario. Unbeknown to the passenger, an experimenter (pretending to wait for a train) videotapes the interaction with a discreet portable camera. The actor requests directions to a station and duration of the trip, and after explaining that she will be late to a job interview, asks for the passenger's mobile phone to tell the recruiter of the delay. After the interaction, the experimenter discloses the plot and, if consent to participate is then given, the passenger completes a questionnaire on socio-demographic characteristics and attitudinal measures. The manipulation is the actor's appearance: in the control condition, the actress (a Romanian citizen self-identifying as Rom) wears an unobtrusive middle-class style; in the treatment condition, she wears a glaring Romani skirt (in both samples $n > 40$). We recorded two kinds of response: (i) the amount of 'explicit' help that the passenger provides, per stage of the scenario, (ii) the 'implicit' message that the passenger conveys, or more specifically the affectively connoted nonverbal behaviors that the passenger produces (including rates of eye contact and self-manipulation, and number of steps toward or away from the actor during the interaction). We predicted that the actress would receive less explicit help and more implicit signs of rejection when she is publicly recognizable as Rom. The conclusion discusses some shortcomings of this pilot study but also the added value of combining questions and techniques from sociology, social psychology, and ethology.

Divided loyalties: Assessing coalitional behaviors in an American college football rivalry

Daniel J. Kruger¹, Stephanie L. Misevich², Michele M. Day², Camille V. Phaneuf², Claire M. Saunders², Dora Juhasz², Anna M. Heyblom², Vibha Sreenivasa², Ailiya Duan², Peter A. Sonnega² & Jessica S. Kruger³

¹ *School of Public Health, University of Michigan, USA*

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³ *College of Health Sciences, University of Toledo, USA*

In-group loyalty and inter-group competition are important themes of behaviors in humans and other social species. Such behaviors, including territorial aspects, are expressed in the modern context of American college football. ESPN ranked the University of Michigan–Ohio State University football rivalry as the greatest North American sports rivalry. Toledo, Ohio is geographically closer to Ann Arbor, MI (UM), than to Columbus, OH (OSU). Conventional wisdom holds that team loyalty is divided among local residents. Merchandise featuring each school is widely available in the Toledo area and stores typically display Ohio State and Michigan items adjacently. In our first study, we assessed the level of allegiance for each school among Toledo residents during the 2013 American college football season. Observations were conducted on weekends when both Ohio State and Michigan football games were played, in public places where casual clothing would be considered appropriate attire; restaurants, department stores, the farmer's market, the zoo, and a large indoor shopping mall. We categorized individuals ($N = 4021$) into those displaying Ohio State, Michigan, some other college or university, and no college or university. Among over 4000 individuals observed, no one simultaneously wore apparel from the two competing teams. Our second study experimentally tested predictions derived from theory on evolved coalitional psychology. First, we predicted that displays of mixed loyalty by someone wearing merchandise featuring both UM and OSU would provoke visible reactions at rates higher than those for consistent displays of

loyalty. We also predicted that men, individuals in the typical undergraduate age range (18-25), and those wearing university merchandise themselves will have higher reaction rates. All hypotheses were supported by our observations of individuals (N =1327) in one of Toledo's indoor shopping malls. We discuss the utility of our experimental paradigm and its applicability to a broad range of topical content.

Explorations into competitive mothering

Maryanne L. Fisher

Dept of Psychology, St Mary's University, Canada

Within the last two decades, there have been significant strides into understanding women's competition for access to, and retention of, mates. However, given women's substantial investment in children, it is highly curious that there has been far less attention paid to women's competition for resources important for their children's fitness. I argue that mothers face a novel situation, compared to all other humans. While there are benefits to cooperating with others in the hopes of shared resources, there are simultaneously benefits to competing for one's own gains. Moreover, infants pose unique challenges to mothers, as their relative helplessness and dependency for lengthy periods require extended provisioning and protection. To meet these demands, mothers may cooperate and support each other. At the same time, however, mothers may benefit from competing for limited resources that directly impact on them and their children, and hence, engage in indirect reproductive competition. The quandary for mothers then becomes whether they should cooperate or compete with other mothers, especially when resources related to reproduction and childcare are in limited supply. Thus, the goal of this project is to explore the various ways that mothers compete for these limited assets that impact on their children, as well as their own reproductive fitness. Tangentially, I also investigate the precarious balance between cooperative and competitive relations among mothers. I begin by reviewing theories of cooperative breeders and set the stage for why women must engage in competitive mothering. Then, I discuss the results of a qualitative investigation into women's competitive mothering, and close with directions for future research.

Posters

1. Mate retention tactics decline with age of men (SFA)

Farid Pazhoohi¹, Alaeddin Sayahian Jahromi² & James Francis Doyle³

¹ *Human Cognition Lab, Dept of Basic Psychology, University of Minho, Portugal*

² *Zarghan Branch, Islamic Azad University, Zarghan, Iran*

³ *Stillwater, MN, USA*

Men undergo age-related andropause which is associated with decline in ability to attract mates or compete with conspecifics, sexual motivation, and energy availability. Both sexual activity and serum testosterone decrease with age in men. Additionally, the circadian testosterone rhythm is absent or impaired in healthy elderly men. Considering this age-dependent testosterone decrease and the association of testosterone with the intensity of mate guarding, it is posited that men show a lesser degree of mate retention behaviors as they age. To our knowledge, there has been no investigation of the relationship between frequency of mate retention tactic use by men and their age or age difference between partners. Results from 244 Iranian women's self-reports of their male partner's mate retention tactics are presented. It is shown that the reported frequency of mate retention tactics decreases as these men age. Additionally, the age difference between the respondents and their partners was not associated with more frequent use of mate retention tactics; counterintuitively, age difference was negatively correlated with mate retention tactics. This finding suggests declining testosterone, rather than women's youthfulness alone, may mediate Iranian men's mate guarding. The major limitation of the current study was the lack of direct measures of testosterone from male participants. Further investigations would be appropriate to test circulating or salivary testosterone levels and their relationship to mate retention behavior performed by men and at what age.

2. Religious veiling and hitchhiking: a field study (SFA)

Farid Pazhoohi¹ & Robert P. Burriss²

¹ *Human Cognition Lab, Dept of Basic Psychology, University of Minho, Portugal*

² *Dept of Psychology, Northumbria University, Newcastle, UK*

In the West, the style of a woman's dress is perceived as a cue to her sexual behavior and influences the likelihood that a man will initiate conversation with the woman or offer her assistance. Hijab, or Islamic veiling, varies in the extent to which it reveals skin and body shape; the style a woman adopts affects her attractiveness to men. To test whether women who wear more liberal or conservative forms of hijab are more likely to be offered help by men, we observed Iranian motorists in a "hitchhiking" situation. Here, we show that a young female confederate, standing beside a road and in view of motorists but not actively soliciting assistance, was more likely to be offered a ride when she wore a headscarf and close-fitting garments (liberal dress) rather than a full body veil (chador, conservative dress). When the woman wore liberal dress, 21.4 % of motorists offered a ride; only 3.9 % of motorists offered a ride to the woman when she wore conservative dress—a significant difference. All drivers were men. This small to medium effect is substantially larger than those reported in similar studies in Europe and extends previous research on male helping behavior and female attractiveness to Iran, a nation where courtship behavior and dress are constrained by stricter social mores and laws than apply in the West.

3. Context-contingent effects of facial cues on leadership judgments generalize to samples including diverse ages (SFA)

Vanessa Fasolt, Amanda C Hahn, Anthony J Lee, Lisa M DeBruine & Benedict C Jones

Institute of Neuroscience and Psychology, University of Glasgow, UK

Facial cues can have context-contingent effects on leadership judgments, with dominant-looking individuals judged as better leaders in wartime than peacetime contexts and trustworthy-looking individuals judged as better leaders in peacetime than wartime contexts. Such results may not necessarily generalize to samples including diverse ages, however. To explore this issue, older (40 to 70 years) and younger (18 to 30 years) participants rated male and female faces (18 to 70 years) for dominance, trustworthiness, attractiveness, and effectiveness as leader of a country during wartime or peacetime. Older and younger participants' ratings were highly correlated. Principal component analysis of potential leaders' characteristics that predicted leadership judgments in prior research produced three components, reflecting general positive regard, dominance, and height, respectively. Scores on the positive regard component were positively and significantly correlated with leadership ratings in the peacetime, but not wartime, context. By contrast, scores on the height and dominance components were positively and significantly correlated with leadership ratings in the wartime, but not peacetime, context. Together, these results present further evidence for context-contingent effects of facial cues on hypothetical leadership judgments and suggest previous results generalize to samples including diverse ages.

4. Interrelationships among men's threat potential, facial dominance, and vocal dominance (SFA)

Chengyang Han¹, Michal Kandrik¹, Amanda Hahn¹, Claire Fisher¹, David Feinberg², Lisa DeBruine¹ & Benedict Jones¹

¹ *Institute of Neuroscience and Psychology, University of Glasgow, UK*

² *Dept of Psychology, McMaster University, Canada*

The benefits of minimizing the costs of engaging in violent conflict are thought to have shaped adaptations for the rapid assessment of others' capacity to inflict physical harm. Although studies have suggested that men's faces and voices both contain information about their threat potential, one recent study suggested that men's faces are a more valid cue of their threat potential than their voices are. Consequently, the current study investigated the interrelationships among a composite measure of men's actual threat potential (derived from measures of their upper-body strength, height, and weight) and composite measures of these men's perceived facial and vocal dominance (derived from dominance, strength, and weight ratings of their faces and voices, respectively). Although men's perceived facial and vocal dominance were positively correlated, men's threat potential was related to their perceived facial, but not vocal, dominance. These results present new evidence that men's faces may be a more valid cue of their threat potential than their voices are. Indeed, our results suggest that direct (i.e., physically aggressive) male intrasexual competition may have been a more important selection pressure on ancestral males' faces than voices.

5. Do partnered women discriminate men's faces less along the attractiveness dimension? (SFA)

Hongyi Wang, Amanda C. Hahn, Lisa M. DeBruine &
Benedict C. Jones

Institute of Neuroscience & Psychology, University of Glasgow, UK

Romantic relationships can have positive effects on health and reproductive fitness. Given that attractive potential alternative mates can pose a threat to romantic relationships, some researchers have proposed that partnered individuals discriminate opposite-sex individuals less along the physical attractiveness dimension than do unpartnered individuals. This effect is proposed to devalue attractive (i.e., high quality) alternative mates and help maintain romantic relationships. Here we investigated this issue by comparing the effects of men's attractiveness on partnered and unpartnered women's performance on two response measures for which attractiveness is known to be important: memory for face photographs (Study 1) and the reward value of faces (Study 2). Consistent with previous research, women's memory was poorer for face photographs of more attractive men (Study 1) and more attractive men's faces were more rewarding (Study 2). However, the strength of these effects of attractiveness was not modulated by women's partnership status in either study. These results do not support the proposal that partnered women discriminate potential alternative mates along the physical attractiveness dimension less than do unpartnered women.

6. The effect of masculinization on the perceived trustworthiness of male faces varying in attractiveness

Ádám Putz & Tamás Bereczkei

Dept of Psychology, University of Pécs, Hungary

Facial attractiveness and masculinity are both clear signs of good genetic quality and thus health in humans. While more attractive individuals are usually considered to be more trustworthy, facial masculinity is a perceived indicator of dominance and aggression in males, and men with greater facial width are not only evaluated as being less trustworthy, but were indeed more likely to exploit the trust of their counterparts. Here I aimed to investigate the effect of masculinization on the perceived trustworthiness of male faces varying in attractiveness. In a pilot study 8 male faces (4 attractive and trustworthy; 4 unattractive and not trustworthy) were selected that did not differ in their masculinity. Using PsychoMorph, 6 variants were created from each photograph by morphing a masculine male composite picture into them (0-10-20-30-40-50%). These 48 portraits were presented to another group of participants (42 women) who evaluated them on trustworthiness. In general, attractive faces were perceived as more trustworthy than unattractive faces. The masculinization influenced only the attractive faces' trustworthiness scores showing a quadratic contrast effect (i.e. moderately masculine faces were found to be the most trustworthy). The attractiveness of the stimuli influenced the effect of the masculinization in this study. Unattractive faces were deemed to be less trustworthy regardless of their level of masculinity. This might be the result of the "what is ugly is bad" stereotype. The trustworthiness of attractive faces increased with the masculinization, but only until a certain degree (30%). Extremely masculine faces signal high level of aggression and thus evoke caution in the participants.

7. Is women's sociosexual orientation related to their physical attractiveness? (SFA)

Claire I Fisher, Amanda C Hahn, Lisa M DeBruine &
Benedict C Jones

*Institute of Neuroscience and Psychology, University of Glasgow,
UK*

Although many researchers have suggested that more physically attractive women report less restricted sociosexual orientations (i.e., report being more willing to engage in short-term, uncommitted sexual relationships), evidence for this association is equivocal. Consequently, we tested for possible relationships between women's scores on the revised version of the Sociosexual Orientation Inventory and women's body mass index (N=212), waist-hip ratio (N=213), ratings of their facial attractiveness (N=226), and a composite attractiveness measure derived from these three intercorrelated measures. Our analyses suggest that more attractive women report less restricted sociosexual orientations and that this correlation between attractiveness and sociosexual orientation is unlikely to simply be a consequence of more attractive women having more mating opportunities. Importantly, however, the correlations between measures of women's physical attractiveness and their reported sociosexual orientation were very weak, suggesting that the relationship between women's physical attractiveness and sociosexual orientation is unlikely to have great biological significance.

8. Comparison of static physical attractiveness and attractiveness of nonverbal behavior in women: creation ethogram for sexual preference research stimuli development (research proposal) (SFA)

Tomáš Hladký¹, Timothy Jason Wells², Klára Bártová^{1,2},
Kateřina Potyszová¹, Kateřina Klapilová^{1,2}, Jana
Kmoníčková^{1,2} and Jakub Binter^{1,2}

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During courtship there are three phases: 1) attractiveness (non-direct signals), 2) proceptivity (addressed signals), 3) receptivity (addressed signals, copulation). These signals are usually produced by female. If female will not produce these discrete permissive signals in two thirds of cases, the male will not initialize sexual interaction. Non-verbal behavior often plays important role in stimuli creation for research of psychophysiological response, but there is no standardized ethogram as template for sex-related stimuli. This is what we address in the proposed study. As stimuli we will use records from castings obtained from porn audition free online database picturing interaction with female and male counterparts. As part of the casting set of standardized photos of naked and dressed body as well as face were obtained. Stimuli set will consist of 90 women of which 30 women will be selected corresponding to the high attractiveness, low attractiveness and medium attractiveness as rated by respondents (N=100). Non-verbal displays in chosen videos (30) will be coded in Interact software. Then three one-minute long videos: women interacting with same-sex partner (1x non-sexual condition – interview), and opposite-sex partner (1x semi-sexual condition – interview, 1x sexual condition – sexual interaction) and five standardized photographs: face, dressed body without displayed face, dressed body with displayed face, naked body without displayed face, naked body with displayed face of these 30 women will be presented, in randomized blocks, to same raters

(N=100). The aim is to find out if attractiveness can be manipulated through non-verbal displays. Ethogram of most sexy and attractive non-verbal displays will be created to be used as template for future stimuli creation.

9. To remove or not to remove: the impact of outlier handling on significance testing in testosterone data

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Outlier removal is common in hormonal research. Here we investigated to what extent removing outliers in hormonal data will lead to differing statistical conclusions. We first show that the most common outlier detection rule is based on a number of standard deviations from the mean (SD). Next, we simulated the degree to which removal based on a 2.5 and 3 SD rule vs. inclusion of those outliers leads to diverging statistical conclusions (at $p < .05$) for independent samples t-test and repeated measures ANOVA designs. Simulations were based on real testosterone (T) data and a theoretical gamma distribution of T data, for different sample sizes (30 to 100) and rules (2.5SD vs. 3SD). Our simulations showed that for the t-test scenarios the statistical conclusions differ for between 14% to 54% of the tests. Estimates of median differences suggest median differences 3% to 6% in terms of p values. For the RM-ANOVA design, the conclusions differed in 7% to 28% of the tests, with median estimates of p value difference ranging from 1 to 3%. We suggest several potential solutions for handling outliers and we strongly recommend a careful assessment of handling outliers in hormonal data.

10. Does territoriality in women's bathroom behaviour vary by population (SFA)

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Previous research shows that people who have parked a vehicle in a public parking space become territorial when someone is waiting in a car for the spot (Ruback & Juieng, 2006). Findings indicate that people take longer to vacate the parking spot when someone is waiting, and even longer when the person waiting displays their impatience (e.g., honking). Based on these findings, we were interested in whether the results carried over to public bathroom stalls. The argument is that the parking space represents a small, temporary territory that one may feel compelled to possess and defend, which is similar to public bathroom stalls which are also temporarily occupied. Thus, the research question was do women take longer to exit a bathroom stall when there are others waiting? We conducted an observational study where women were timed for how long they spent in the bathroom stall when there was no one waiting, versus when there was a line. Our preliminary findings, based on a small university population, showed women tended to take less time when others were waiting, thus contradicting our hypothesis. We are currently collecting data using community participants from the general city population. We predict that due to the inclusive nature of the small university, women are concerned that they might be familiar with those waiting for a stall. Therefore, we expect to support our initial hypothesis in the general population.

11. A new disgust instrument: developing a new tool for studying the behavioural immune system (SFA)

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The study of the behavioural immune system (BIS) requires, among other things, the ability to elicit the disgust emotion and measure disgust sensitivity. Although a useful instrument, the most commonly used photo stimulus set (Curtis, Aunger & Rabie, 2004) has two main shortcomings: the images were not validated (1) cross-culturally, and (2) in their ability to specifically trigger the pathogen disgust domain – the “BIS proper”. These issues were addressed in the development of a new set of photo stimuli, following a similar multi-stage, item-generation procedure to those used in the development of other similar instruments (e.g., Ferdenzi et al., 2011). Men and women (n=461; age 18+) from four different cultures (UK, US, Colombia and Czech Republic), were recruited via social media to a Qualtrics online survey to list the 5 most disgusting items that came to mind, resulting in 2,310 disgust items. A series of reduction procedures and decision rules designed to remove incongruous items (e.g., duplicates, too vague or specific, etc.) and non-pathogen domain related items were performed, thus reducing the list to 68 disgust items specific to the pathogen domain). Photos designed to represent the retained items were then generated, after which another participant set rated these images for disgust. Further analysis revealed the top 10 (approximately) images rated as the most disgusting pathogen domain items. This final set of photo stimuli forms a new pathogen-domain-specific, cross-culturally validated tool for eliciting disgust and measuring disgust sensitivity to replace the previous set and further aid BIS research.

12. The development of cultural cognition: Perceptual processes and observational learning in different cultures (SFA)

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Cultural differences in attention and observational learning are documented in two independent lines of research. Nisbett & Masuda (2003) contrast analytic and holistic perceptual processes, namely a focus on focal elements or contextual details of a scene and its consequences for visual attention during scene perception (e.g., Chua et al., 2005). Rogoff and colleagues (2003) differentiate between sequential and simultaneous attention during observational learning, namely an attentional focus on one event at a time or at several events in parallel. In the present study, we assessed the development in both domains in 5-year-old children from three prototypical cultural contexts (rural Cameroon, urban Japan, and urban Germany), to investigate whether attention processes during scene perception and during observational learning are related and, possibly, share similar ontogenetic roots. To investigate the perception of focal and contextual elements, children watched and verbally described natural pictures with a clear foreground and background. Furthermore, to assess children's more general perceptual style, they watched abstract, non-semantic scenes. To assess child's attention during observational learning, we presented two action sequences simultaneously, showing two hands creating objects out of clay. We recorded children's gaze behavior and tested their ability to reproduce both action sequences. In addition, to get a first idea how parental socialization strategies may influence the behavior in both domains, we assessed how mothers describe pictures and teach action sequences to their children in two of the three contexts (Germany and Japan). We will present the results with regard to

the hypothesis that child's tendency to perceive scenes holistically is closely related to their ability to distribute attention on two events simultaneously, with higher levels of context-sensitivity and parallel observation skills in Cameroon and Japan, compared to Germany. Finally, we will report how child's behavior is related to maternal socialization strategies in both domains.

13. The relationship among voice pitch, testosterone and dominance in women (SFA)

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Being dominant is related to privileges such as better access to resources. Research has consistently shown that individual's dominance is positively related to baseline testosterone levels. At the same time, studies show that dominance is related to voice pitch: men's and women's voices with lowered pitch were perceived more dominant than those with raised pitch. Men's voice pitch correlates negatively with testosterone, but this relationship is absent in women (Dabbs, 1999). The aim of our study was to examine relationships among dominance, testosterone level and voice pitch in young women. We predicted that lower pitch will be associated with higher level of dominance, which will in turn be positively associated with testosterone. High school women (mean age = 17.7) were asked to speak into a tape recorder microphone the letters A, E, I, O, U (three times in different length). To assess baseline levels of testosterone we collected saliva samples using Salivette test tubes. Dominance was assessed by International Personality Item Pool (IPIP – short version with 11 items) and Rank Style with Peers Questionnaire (RSPQ). We found a correlation between subscale ruthless self-advancement (RSPQ) and voice pitch - higher voice pitch was associated with higher ruthless self-advancement. No relationship was found between testosterone and dominance score (IPIP). However, we found a positive correlation between voice pitch and testosterone: higher voices were associated with higher levels of testosterone. These results did not confirm our predictions. We propose that estradiol may play a key role in fundamental frequency and dominance in women.

14. Perceived vulnerability to disease moderates attraction to immunologically similar scent (SFA)

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Humans possess disease avoidance mechanisms, which promote xenophobic attitudes and attraction to kin under conditions of perceived vulnerability to disease (PVD). We investigate whether individuals who perceived themselves to be vulnerable to infection would display an increased preference for their own scent, relative to the scent of strangers. Participants donated a sample of their body odour, then completed a PVD questionnaire (subscales: germ aversion, perceived infectability; Duncan et al., 2009). Told that they were rating strangers' odours, participants rated self and non-self scent donations. Among women, preference for self (relative to others') scent was positively predicted by germ aversion (but not perceived infectability); surprisingly, men's self scent preferences were negatively associated with germ aversion. Further analysis revealed that this was driven by attraction to self scent, and not avoidance of others' scent. Potential confounds, such as outgroup dislike and women's fertility status, did not account for these findings. This suggests that mere scent exposure can inform the receiver of the immunological similarity between self and donor. This could influence social responses (i.e. attraction to vs. avoidance of scent donor). These findings have far reaching implications for the study of kin recognition and intergroup biases.

15. Looking at Facebook behaviors and mating strategies through an evolutionary lens (SFA)

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The characteristics desired in mates by one sex drive competition and display of those characteristics by members of the opposite sex. This, together with sex differences in mate preferences, leads to sex differentiated patterns of mating displays. With technological developments in the last few decades, human mediums for advertising mating-relevant attributes have moved from face-to-face interaction to online media forms. In this study, we explored how evolutionarily shaped strategies for mating displays spillover and manifest themselves on the ubiquitous online social media form Facebook. We hypothesized that gender and mating strategy would influence individuals' Facebook usage patterns and the content of their profile pictures. We assessed the relationships between individuals' mating strategy and their Facebook-related behaviors and content of their profile pictures. Results indicated that, among both men and women, individuals more oriented toward short-term mating used Facebook more frequently. Among men, an orientation toward short-term mating was positively associated with displays of cues to physical strength, ambition, social status and intelligence in their profile photographs. Among women, an orientation toward short-term mating was positively associated with displays of cues to social status and there were no relationships between mating strategy and the mating-relevant cues (ambition, intelligence and physical strength) they signaled in their profile photographs. Our discussion centers on how Facebook-usage can be revealing of individuals' mating strategy and on the sex-differentiated relationship between mating strategy and the specific features displayed in individuals' profile photographs.

16. Food neophobia and food insecurity: A community sample study (SFA)

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Food neophobia is an aversion to unfamiliar foods. This is a species-typical characteristic that is thought to help prevent ingestion of harmful substances. Nonetheless, people vary in their degree of food neophobia, with some people even attracted by unfamiliar foods. Previous studies have found a number of correlates of food neophobia including diet, several personality traits, age, and genetics. Given the origin of food neophobia as a defense against harmful substances, food neophobia may be expected to diminish as the need for food increases. Although hunger does not alter food neophobia, chronic food shortages ("food insecurity") might. Using a community sample (N=196) from a mobile food pantry in Ohio (USA), we investigated the relationship between food neophobia and food insecurity. The risk/benefit ratio for eating novel versus familiar foods declines as food scarcity increases, so we expected people in this sample to show lower food neophobia scores (FNS) than comparable adults with less food insecurity. Likewise, we predicted that participants who were more food insecure would have less neophobia. The average FNS (33.84) was significantly higher ($p < .001$) than the average value of (~ 31) found in other studies of American adults. Other results, however, were consistent with previous studies of food neophobia and short-term food shortage (hunger) in that FNS did not vary with level of food insecurity or with a scale measuring degree and frequency of insufficient food. As expected, participants with higher FNS were less likely to eat fruits or vegetables daily, despite these foods being freely available at their food pantry. There were no significant correlations of BMI with FNS, food insecurity, or inadequate food.

17. Is there really something about the outside of a horse that's good for the inside of a man? Exploring the factors influencing the human-horse relationship in a therapeutic context (SFA)

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This study seeks to examine the efficacy of human-horse interactions as a valid therapeutic intervention in the treatment of psychological disorders. It will add to growing evidence surrounding the human-animal bond and suggest that there is an evolutionary basis to these relationships. People have strong emotional reactions to horses, who instinctively respond to emotional states in humans, but there is a lack of valid, reliable data and very few studies explore the therapeutic validity of these interactions. Psychiatric patients already involved in equine therapy sessions have been attending 8 weekly sessions. At the midweek point between sessions patients were given either a clean towel or a towel containing horse smell. A control group who do not attend equine therapy were given either the clean towel or the horse smell. Cortisol from saliva is measured pre- and post-intervention, as well as self-reported wellbeing. General hospital observations and patient journals is also being collected. We hypothesise that patients who regularly attend equine therapy sessions and who are exposed to a horse smell stimulus between sessions benefit compared to equine therapy sessions alone and those not receiving equine therapy. This would support the assertion that it is the horse which is therapeutic rather than confounding variables such as environment or novelty.

18. Multiscale analysis of masculinity and sexism (SFA)

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The aim of this study was to discover the relationships between male aggression, dominance, gender role and attitude towards women. As we know, aggression and masculinity are said to be manifestations of male dominance. Masculinity and dominance perception are well known to go hand in hand, but we wanted to explore participants' own beliefs about masculine roles and how that connects to their level of aggression, their perception of their own dominance, and their level and type of sexism. Men completed a questionnaire on dominance from the International Personality Items Pool, the Ambivalent Sexism Scale (ASI), the Buss-Perry Aggression Questionnaire, the Bem Sex Role Inventory (BSRI) and the Multicultural Masculinity Ideology Scale (MMIS). Our results confirm that dominance and aggression are connected. Both also have links to identification with gender norms and sexism. The BSRI uses items that measure how well participants conform to gender stereotypes – which explains why aggression and dominance can be associated with it. This type of aggression is directed towards not only men, but women too. On the other hand, the MMIS looks into how men see their own role in society and their own masculinity which includes the role of the protector, as well. Bem's questionnaire focuses more on gender stereotypes. This might explain why it is related to hostile sexism – showing aggression towards women who do not conform to gender roles. The MMIS, on the other hand, discusses questions about how men should act around women, thus creating the image of a "hero", a strong protector of women. This line of thinking is closer to what the benevolent sexism subscale represents in the ASI, hence scoring high on the MMIS correlates to higher points of benevolent sexism.

19. Self-perceived attractiveness, immune potential against pathogens and free testosterone levels in healthy men (SFA)

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According to the good-genes hypothesis physical traits perceived as attractive are honest signals of biological condition and important cues of mate quality. It is believed that physical attractiveness is mediated by apparent health and/or reproductive potential. Previous studies show that self-perceived attractiveness (SPA) correlates negatively with frequency of declared infection or antibiotic use. We aimed to test if face and body SPA correlate with effectiveness of the immune response to flu vaccine and free testosterone (fT) level in men. For 99 healthy men (mean age 27.4, range 19-36), SPA was evaluated and participants received a seasonal flu vaccine to evaluate immune potential. Blood samples for antibody titre detection and fT level measurement were collected before and 4 weeks after vaccination. fT levels from two measurement points were averaged. The strength of immune response to vaccine injection was expressed by fold increase from pre to post-vaccination specific antibody titre. Seroconversion (positive response to vaccine) was defined as minimum 4-fold increase in antibody titre (N=72). Lack of response was defined as lower than 4-fold increase (N=27). Neither face nor body SPA were associated with age, free testosterone or the strength of immune response to vaccine. The results suggest that SPA is not correlated with immune and reproductive potential in healthy young men. Furthermore, seroconversion was positively related to fT level ($p < 0.05$), which appears to be at odds with the immunosuppressive hypothesis of testosterone.

20. Mate choice copying and perceived male attainability (SFA)

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Mate choice copying (MCC) is a cognitive bias which acts to increase judgements of a potential partners' attractiveness when same sex peers are seen to desire the potential partner. Research has shown that MCC occurs frequently in both animal species and humans. Recent research has begun to investigate factors which modulate the MCC bias. An example of this includes quality bias research which shows that the MCC effect is strongest when it is attractive peers whose choice is copied. This research aimed to understand if the MCC bias works to increase the likelihood a female would attempt to select a male. An experimental design was used to assess MCC effects. 90 female participants were shown images of attractive and less attractive male faces in one of three conditions; alone and described as single, or described as in a relationship either with a pictured female who had been pre-rated as attractive, or with a pictured female who had been pre-rated as low in attractiveness. Participants rated males on a likert scale for how attainable they were. Males, specifically less attractive males, paired with attractive females were rated significantly more attainable as mates than those paired with unattractive females or those presented as single. MCC, as well as increasing judgements of attractiveness, may also make males appear as easier to acquire than single males. This could make the MCC bias a potential driver behind mate poaching (stealing the partners of others) behaviour.

21. Romantic selfie posting behavior is a predictor of relationship quality among men (SFA)

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Ethology considers, among all, observation of human mating behavior and presently the new media makes it even easier than it was before. In a study involving a total of 593 men and women, we tested a prediction that individuals who post more romantic selfies on their Facebook profiles might be happier in their relationships, compared to the ones who post less. Firstly, all participants completed polish adaptations of Sternberg's Triangular Love Scale and The Quality of Relationship Inventory; secondly, their pictures allowed to be seen by Facebook friends were examined. We examined two categories of selfies: selfies with a romantic partner and own selfies, controlling for non-selfie photographs with a romantic partner. Women's romantic selfie posting behaviour was generally related neither to their scores on the love scale nor the quality of relationship inventory. On the contrary, men's overall love scale scores positively predicted posting romantic selfies. Additionally, men's Passion, and, to some degree, Obligation scores each independently predicted the posting of romantic selfies. Our findings provide the first evidence that the link between romantic relationship quality and romantic selfie-posting behavior is comparatively weak among women but not men. The results stay in according to the hypothesis that the motivations and functions of online mating behaviour may in part reflect their different strategy of expressing romantic involvement. Thereby, our results seem to highlight key mating behavioural differences in online social networking in both sexes.

22. Good enough for my daughter? Parental preferences for offspring partner's facial traits can enhance parental inclusive fitness

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Much literature has shown that facial appearance provides a wealth of information concerning an individual's suitability as a reproductive partner, measured by variables such as biological fitness and reproductive quality. Facial attractiveness clearly shapes individual partner choice, but we do not know whether parents also make use of facial markers of biological quality when they evaluate potential partners for their offspring. This is key because parents frequently influence their offspring's partner choice, either directly, for instance through arranged marriages, or indirectly, through manipulations such as criticism or encouragement. We created stimuli that varied in facial attractiveness, masculinity, health, and symmetry, because these represent parameters that provide information on an individual's reproductive potential, and have been extensively investigated within the literature on face preferences. We used our stimuli to assess the facial preferences of 210 parents when judging potential partners for their grown-up daughters ($n = 125$) in an opportunity sample using parametric analyses. We also assessed the preferences of those daughters. In line with our predictions, parents had clear directional preferences towards all fitness-denoting traits. Both parents and daughters adjusted their preferences in line with their perceptions of the daughter's attractiveness, although surprisingly, perceptions of higher attractiveness of daughters were negatively correlated with their preferences for partner quality. We also found some evidence that parents prioritised markers of investment over quality, compared with their daughters. Parental preferences relating to the facial appearance of their sons-in-law may be strategically designed to maximise inclusive fitness.

23. Preferred and actual relative height are related to sex, sexual orientation, and dominance: Evidence from Brazil and the Czech Republic (SFA)

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Human body height, as an evolved sexually dimorphic trait, strongly influences mate preferences and actual choices of men and women. Studies have shown that a preference for males being taller than their female partners is widespread in Western populations. Male height is associated with intra-sexual dominance, which leads to a higher resource acquisition. The aim of this study was to explore preferred relative height (PRH) among ideal partners and actual relative height (ARH) among long-term partners in heterosexual and non-heterosexual men and women from two diverse populations. Furthermore, we tested whether PRH and ARH are influenced by own height, and submissiveness-dominance in relationship and sexual activities. Total sample consisted of 1709 respondents (379 heterosexual men, 311 non-heterosexual men, 853 heterosexual women, and 166 non-heterosexual women). Participants were presented with scale drawings of nine partner pairs with varying relative height, and were asked to select the drawing that depicted PRH and ARH. By using 7-point scales (1 = very submissive and 7 = very dominant) each participant indicated his/ her ideal preference for submissive or dominant role in a relationship and in sexual activities. Univariate general linear model (GLM) revealed that heterosexual individuals showed "male-taller-pattern" preferences and choices, while non-heterosexuals preferred and chose partners of a height similar to themselves. Regression analyses further showed that own height positively predicted both PRH and ARH in all four groups of participants.

Moreover, non-heterosexual men and women who preferred to be dominant in sexual activities and heterosexual men who preferred to be dominant in relationships preferred to be taller than their partner. In summary, the current cross-cultural study found that preferences for relative height differ between heterosexual and non-heterosexual individuals, but in both cases they relate to dyadic submissiveness-dominance and participant's height. Preferences for relative height and dominance can work as a guide to actual mate choices enhancing ancestral fitness, although they differ from actual choices in modern humans.

24. Null effect of brief evaluative conditioning on odour pleasantness (SFA)

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Evaluative conditioning refers to changes in perceived pleasantness of a stimulus which occur due to pairing this stimulus with another one, positive or negative. This process appears to be involved in forming of hedonic preferences, although its effect may vary according to length of the exposure. Here we tested odour-taste conditioning under relatively brief exposure conditions. Moderately pleasant or unpleasant unconditioned stimulus coupled with neutrally valenced odour should affect subsequent hedonic rating of the odour. Within two days in a laboratory we were looking for the evidence in humans. All participants first assessed a set of odorants and flavours for their pleasantness. Subsequently, two odours rated as the most neutral were randomly paired with control (no flavour) and either pleasant or unpleasant (sweet/bitter) flavour. After 24 hours participants rated all the odorants once again. We found no significant changes in rated pleasantness of odours after appetitive or aversive conditioning. Interestingly, in the aversive and neutral conditioning the odours were rated as significantly more irritating in the second session as compared to the first session. Further, in the second session, there was a significant increase in perceived familiarity irrespective of the experimental condition. Our results indicate that short exposure to the unconditioned stimulus may not affect subsequent perception of pleasantness, however, it may change perception of irritability under aversive and neutral conditions.

25. Jealousy in homosexual men (SFA)

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Results of previous studies employing evolutionary approach favoured specific gender differences in jealousy; men generally demonstrated higher response to sexual infidelity, whereas women to emotional infidelity. Studies focusing on jealousy between homosexual partners showed that gay men tend to be more sensitive to emotional infidelity, whereas lesbians expressed more concerns regarding sexual infidelity. The aim of this study was to re-examine the experience of jealousy, and attitudes towards it from the perspective of homosexual men. We used semi-structured interviews on a sample of 15 homosexual men (age 20-35). The interviews were analysed using open coding and categorical analyses. We identified a total of 17 categories, of which the first were causes of jealousy: "Unknown Situation", "Electronic communication", "Leisure time", "Ex-partners", and "Flirting". The majority of respondents agreed that their jealousy rate varies depending on the nature and character of the partner, his attractiveness, profession, and whether he is social or prefers intimacy. As for "Definition of jealousy" each respondent varied depending on whether they perceived jealousy positively or negatively. The results of the categorical analyses further revealed that all respondents reduced their rate of jealousy with increasing age and experience, and that jealousy-inducing stimuli and responses differed depending on the sex of the partner whom they were jealous of. For respondents who described jealousy during a relationship with a woman, we have identified the anxiety associated with sexual infidelity, as opposed to when being in a

relationship with a man, they felt more sensitive to emotional infidelity. Our results together with the previous studies suggest that the type of jealousy depends more on the sex of respondent's partner, rather than sex of the respondent.

26. Neural correlates of facial attractiveness judgments (SFA)

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The work looks at the neural correlates of facial attractiveness perception. Semantic information was paired with face stimuli in order to assess whether it influences trustworthiness and attractiveness perception. It was hypothesized that the perception of attractiveness and trustworthiness of a face can be changed through beneficial or negative information about it. Verosky and Todorov (2010) showed this for trustworthiness ratings. Our study aimed at finding the same effect for attractiveness in ratings by the participants as well as specific neural responses, typically early ior negativity (EPN) after 250 msec and late parietal positivity (LPP) at 400-600 msec (Werheid et al., 2007). Participants were shown faces that were* either paired with a) positive, b) negative or c) neutral behaviours (example for positive): “lent money to a friend”. After having learned these associations, the participants are asked to rate the attractiveness and trustworthiness of the faces. A subset of participants was asked to take part in a steady-state EEG experiment as well, where they viewed the previously learned faces and novel faces whose attractiveness was be manipulated through shape alteration, in order to compare this manipulation with the semantic one. I hope to show that positive semantic association increases the perceived trustworthiness and attractiveness behaviourally as well as electrophysiologically. It will be of special interest to compare the semantically paired faces with the faces altered in attractiveness pertaining to differential activation in the EEG. The results should help us understand the importance of character information in mate selection and attractiveness perception – on a behavioural as well as a neural level.

27. Culture and food availability shape the preferences for basic tastes: A cross-cultural study among Polish, Tsimane' and Hadza societies (SFA)

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Cultural factors play an important role in diet and consequently influence individual perception of tastes. However, it is difficult to study such differences in populations where food acquirement is similar. Thus, this study looked at differences in basic taste preferences, diet similarity and wants among three types of populations: 1) a modern society (i.e. Polish, $n = 200$), 2) forager-horticulturalists from Amazonia/Bolivia with limited access to modern food (Tsimane', $n = 144$), and 3) traditional hunter-gatherers from Tanzania (Hadza, $n = 89$). Preference for sweetness was measured with three cups containing sweetened drink that differed in sugar concentration while basic tastes and related-psychophysics (e.g. overall liking, diet similarity, and diet desires) were measured with taste sprays containing sweet, sour, bitter, salty, and umami. Sweet taste at lower concentrations (from spray) was liked least in Hadza while Polish wanted and had more sweet taste in their diet than Hadza and Tsimane' tribes. However, an ordinal logistic regression (accounting for pregnancy, gender, age, and BMI) reveals population as a predictor of sweetness preference (from cups) where Hadza and Tsimane' preferred sweets at a high concentration. This sweet preference was correlated with only eating habits among Hadza and Tsimane', while Polish sweet preference was additionally correlated with sweet taste

enjoyment. For other tastes, Hadza and Tsimane' enjoyed bitter taste more than Polish while no differences in umami was present across all groups. Additionally, Polish and Hadza consumed basic tastes that they wanted in their diet more than Tsimane'. Therefore, this study shows the impact of diet and market availability on basic tastes where Western societies may eat sweets for enjoyment while traditional societies enjoy very sweet and bitter tastes that are associated with their diet.

28. Individual differences in the rating of flower beauty (SFA)

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In our previous research concerning the attractiveness of diverse floral traits for humans, we observed some general preferences: beautiful flowers were prototypical (radially symmetrical, simple), had sharp contours and blue color. Here we explore individual differences in such judgments. There is evidence that color or habitat preferences are influenced by the rater's age, sex, level of expertise, education and other individual factors. To examine if these individual preference differences also apply to flowers, we created an online survey in which residents of the Czech Republic ($n = 1650$) rated the perceived beauty of 52 flower stimuli of diverse shapes and colors. The survey also contained questions concerning basic information about the respondents (sex, age, education, profession, etc.), their knowledge of plants, attitude towards plants and some psychological characteristics. We performed an exploratory factor analysis to reduce the number of questions into several meaningful variables. We used general linear models to compare the relative importance of those variables on the general preference of flowers and the preference of flower colors and shapes. Our results suggest that several variables had a significant positive effect on general preference for flowers, notably age, level of expertise and presence of plants during childhood. Outgoing and artistic people and people who considered other senses than sight as equally important, also rated flowers as more beautiful. Sex had no effect. Sex, age or level of expertise had no effect on the preference of flower color. Men, older people and experts rated atypical flowers higher than others. This study may be useful to anyone who seeks to better understand individual differences in perception of the world around us.

29. How big is the difference? The effect of gender and age-gap between siblings on educational achievements (SFA)

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The effects of birth order on various dimensions of human personality and behaviour have been extensively studied. These effects might, however, be modulated by siblings' gender and their age-gap. It has been suggested that the greatest birth-order-related difference occurs among offspring with closer birth intervals and siblings with age-gap greater than 5 years are expected to affect each other rather negligibly. Here, we focused on the effect of siblings' gender and their age-gap on educational achievements. We collected questionnaire responses from Czech students (2011-2015). To avoid the confounding effect of family size, we selected only two-child families (N=781) and computed the proportions of firstborns while considering their gender and age-gap. On average, we found a significantly higher proportion of firstborns irrespective of their own or siblings' sex. More importantly, the proportion of firstborns was highest among those whose younger siblings were approximately 1 to 3 years apart. As the age-gap increases, the proportion of firstborns decreases in both sexes. However, the decrease is further modulated by sibling's gender and appears to be greater in men. Our results highlight the importance of controlling for gender and age-gap among siblings and indicate that the frequently used 5-years age-gap might be misleading. We further suggest to employ the above reported approach for testing other psychological characteristics where birth order effects were previously reported.

30. What's most relevant to someone's concern about infectious diseases, their early-life experience of illness or current perception of diseases?

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Individuals possess psychological mechanisms that protect the body from the potential presence of pathogens. Disgust and the perception of disease vulnerability are components of this psychology. To measure pathogen disgust sensitivity (PD), several versions of a disgust scale have been developed, as well as the perceived vulnerability of disease (PVD) scale, which is divided into two subscales, perceived infectability (PI) and germ aversion (GA). Many studies in the field have used disgust sensitivity and PVD to account for individual differences in concerns about infectious disease. Nonetheless, very little is known about the antecedents of individual differences of these traits. We examined potential determinants of these variables. The findings suggest that perceived infectability can be explained by the childhood environment, the experience of disease during childhood and at present time. On the other hand, germ aversion and pathogen disgust are mainly determined by the degree of information receiving. Three models were constructed from these results.

31. Relationship between breast shape (ptosis) and the perception of woman's attractiveness and age. Evidence from Poland and Papua (SFA)

Agata Groyecka¹, Piotr Sorokowski¹ & Agnieszka Żelaźniewicz²

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A woman's breast seems to be a sex-specific and aesthetic body attribute. It is suggested that its morphology is a signal of maturity, health and fecundity. The rating of attractiveness and the perceived age of woman both vary depending on the breast size and aureola pigmentation. The present study looks at the contribution of breast ptosis (colloquially described as a "droop") on ratings of female attractiveness and age. 57 women and 50 men (N=107) aged between 17 and 78 have been presented with sketches of breasts with different stage of ptosis based on two different classifications (Kirwan classification and LaTrenta and Hoffman classification of ptosis, both used in plastic surgery). The results for both ordinations show that the more ptotic breast is assessed as significantly less attractive and older than the less ptotic breast, with no significant difference in rating between men and women. To our knowledge, this is the first study that confirms a general tendency to equate the ptotic breast supported by the chest wall with aging and a loss of attractiveness. A replication of this study is being conducted on population of Papua and results will be presented and discussed.

32. Revisiting the ‘sweaty t-shirt’ paradigm: comparing resting body odour and exercise sweat (SFA)

Julia Baumann, Caroline Allen and S. Craig Roberts
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Numerous studies have used ‘sweaty t-shirts’ to explore the possibility that human body odour carries meaningful information about individuals that can be used in social interactions. In reality, however, they are almost always not sweaty: rather than being worn during or after strenuous exercise, they are normally worn in bed for several nights, or sometimes during the day but not during exercise. Wearers are also typically asked to wash using non-perfumed soap before wearing the shirts. This basic formula is followed by almost all t-shirt studies, as well as those that, more recently, have substituted t-shirts with more convenient cotton pads worn directly under the armpits. However, a common experience of raters who are asked to assess these odours along some indicated dimension (e.g. pleasantness or intensity of odour) is that the stimulus is almost or completely imperceptible. This raises the question of why researchers do not instead deliberately collect samples during exercise, to ensure the stimulus is sufficiently strong. There seem to be two reasons: (i) following scientific precedent, and (ii) the possibility that exercise sweat is somehow chemically and perceptually different from underlying body odour, because it contains more secretion from eccrine rather than apocrine and sebaceous glands. Here we will present results of an ongoing experiment designed to directly test this second reason: to determine whether exercise-worn and bed-worn pads smell similar. Ten men and ten women have worn cotton pads under their armpits, either overnight (about 8 hours) or during 20 min of exercise on a stationary bicycle. We will present a comparison of the ratings of these stimuli; ratings by men and women are currently being collected. Our results will inform the design of sample collection in future odour perception studies.

33. Do single and coupled individuals differ in their ideal partner preferences? (SFA)

Radka Kučerová & Jan Havlíček

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Studies testing the discrepancy between the ideal and actual partner are usually based solely on reports of the partnered participants. However, this approach was criticized as the evaluation of ideal partner preferences might be affected by characteristics of the current partner. Thus in our study, we compared ideal partner preferences between single and coupled individuals. In total, we collected data from 374 participants who were currently in a romantic relationship and 1215 participants who were not. Participants completed online questionnaires asking about their ideal partner preferences. The set of 16 individual characteristics were clustered into 4 categories: (i) Status/resources, (ii) Attractiveness, (iii) Warmth/trustworthiness, and (iv) Vitality. These categories were compared between single and coupled individuals separately for each sex using two-sample t-tests. We found no significant differences between the ratings of single and coupled participants in any of the four categories in men and women alike. Our results show that the current partner may have only a limited impact on the ideal partner preferences and thus support the validity of the cross-sectional studies on the discrepancy between the ideal and actual partner.

34. Testosterone reactivity and status: Exploring sex differences in response to physical competition

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Within the framework of the challenge hypothesis, studies exploring chronobiological changes in testosterone (T) frequently demonstrate increased T in winners of status encounters and a reduction in T following defeat. However, despite using both physical and non-physical competitive tasks in a range of settings, the findings are equivocal and the subjects are nearly always male. Given the suggestion that female T may also be responsive to social stimuli there is a pressing need to understand these effects in women. Incorporating methodological refinements in T measurement and sampling protocol, we sought to examine the dynamic relationship between T and a physical dyadic status encounter in males and females. Sixteen participants (8 males and 8 females) aged 18–23yrs competed in a dyadic knockout tournament (stationary cycle). Participants collected comprehensive salivary samples for baseline, pre- and post-competition phases. Utilizing the UWIST adjective checklist they additionally reported mood states. Following extraction with diethyl-ether, T was quantified using an indirect ‘in house’ enzyme-linked immunosorbent assay (ELISA). Assay sensitivity was <0.5pg/mL; intra and inter assay coefficients were 3.2% and 7.1% respectively; cross reactivity with related compounds was minimal. Compared against time-matched baseline levels, pre-competition T appeared un-responsive in anticipation of competition for both males and females. However, at 2 hrs post-competition, T levels had risen in winners and fallen in losers for both males and females. Changes in T were related to Hedonic tone. Our results support the hypothesis that, similar to males, women experience a dynamic endocrine response to the outcome of competition.

Moreover, they illustrate how hormonal sampling regimens used in previous studies may account for the equivocal findings in the literature. Results are discussed in relation to limitations in previous research and Mazur's biosocial theory of status.

35. Partner preferences, jealousy, satisfaction and desire while using hormonal contraception: a comparison of different hormonal methods (SFA)

Theresa Grod & S. Craig Roberts

Division of Psychology, University of Stirling, UK

Recent research has revealed that women's partner preferences change upon initiating use of oral contraceptives, and that this may have subsequent consequences for perceived relationship quality and satisfaction. Hormonal contraception has also been linked to relationship jealousy and levels of women's sexual desire. Studies to date have usually compared non-users with users of combined oral contraceptives, in which users have reduced preference for male facial masculinity, increased relationship jealousy, and (sometimes) lower sexual desire. At least in some studies, these effects are more evident in women using hormonal formulations with higher dosage of synthetic estrogen. However, studies that explicitly test the effects of other forms of hormonal contraception, which contain no synthetic estrogen and achieve contraceptive function through administration of progestin only, are currently lacking. Here we directly compare the preferences and experiences of young women who use no form of hormonal contraception, those who use combined oral contraceptives or other forms of combined contraceptives and those who use progestin-only methods. In light of the documented effects of estrogen dosage, we predict that experiences of women using progestin-only methods may resemble those of non-users more than users of combined contraceptive users. If this is the case, our work may contribute to promoting the uptake of safer, but currently under-used progestin-only methods.

36. How city living makes us distrustful (SFA)

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Trust is crucial for cooperation in humans. Many social interactions depend critically on positive expectations that the cooperative act will eventually pay-off (i.e. trust). Existing studies show that city-dwellers experience higher anxiety and social stress levels, and consequently suggest that city-dwellers are generally less trusting of strangers than town-dwellers. Moreover, field studies on cooperation support this idea showing that in cities, individuals are less helpful towards strangers than in towns in a variety of contexts. Here we aimed to answer two main questions: 1) does city living lead to lower trust levels; and, if so, 2) are lower trust levels in cities justified by lower trustworthiness of city-dwellers compared to town-dwellers? These questions are of fundamental importance, as they may help understand the impacts of city-life on social behaviour. To investigate the presence of urban-rural variation in trust, we used an online trust game to record trust and trustworthiness across urban scales. We found that an increase in urbanicity negatively affected the decision to invest (trust), but not the decision to reciprocate the investment (trustworthiness). Instead, trustworthiness was affected by the investment received and by the age of the trustee. These results support the idea that urban-dwellers might be less trusting, but not necessarily less trustworthy, than rural-dwellers.

37. The voice of trustworthiness (SFA)

Wilhelm K. Klatt & Janek S. Lobmaier

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Many studies suggest that women's voices are affected by menstrual cycle. However, these studies focused on vocal attractiveness only (e.g. Pipitone & Gallup, 2008). In the present study we aimed at investigating whether the menstrual cycle also affects the perceived trustworthiness of a speaker and to identify physical acoustic characteristics that make female voices sound trustworthy. The voice of 20 female speakers was recorded around ovulation and in the luteal phase. Ovulation was determined by means of ovulation tests and the cycle phases were confirmed by means of hormone assays. From each speaker, voice recordings of both cycle phases were paired. An independent sample of participants were asked to pick the voice sample that sounded more trustworthy of each pair (two-alternative forced choice). Participants were allowed to replay the stimuli as often as they wished before responding. Stimuli were also rated for attractiveness. We used three sentences that suggested a mating context and three sentences of neutral content because context may play a role. Preliminary data suggest that voice samples recorded around ovulation are perceived as being more trustworthy than voices recorded in the luteal phase.

38. Own attractiveness and perceived relationship quality shape sensitivity in women's memory for other men on the attractiveness dimension

Christopher D Watkins¹, Mike J Nicholls¹, Carlota Batres², Dengke Xiao², Sean Talamas² & David I Perrett²

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Person memory may be shaped by our romantic circumstances, such that women are less likely to differentiate other men on the attractiveness dimension when the motive to attract a partner is low (i.e. when partnered). As relationship quality varies over time, here we extended this line of reasoning to test whether experimentally-activating concerns about relationship quality directly improves memory for attractive shape cues in studied-faces. After exposure to faces manipulated to look either more or less attractive, perceived relationship quality was altered in partnered women via experimental priming techniques. Sensitivity in women's memory for attractive face shape was then measured by subtracting false-recall across trials of unstudied versions (i.e. attractive or less-attractive) of studied identities from accurate recall across trials of the correct-versions of studied identities. While high relationship quality enhanced person memory independent of target sex or attractiveness, women's memory was generally more sensitive to attractive women's faces. When considering the moderating factors of own attractiveness and a psychometric measure of relationship quality, however, women differentiated other men on the attractiveness dimension. Our findings suggest that while cues to women's quality are salient in the memories of women in a long-term relationship, factors that may reduce the potential costs of extra-pair partnerships and/or mating competition (own attractiveness) shape women's memory for facial cues to male quality.

39. Mutual olfactory recognition between mother and child (SFA)

Faize Eryaman & S. Craig Roberts

Division of Psychology, University of Stirling, UK

The ability of infants to recognize their own mother is an important component in the development of mother-infant social relationships. Before they become attached to their mother, infants must be able to discriminate between her and other individuals; therefore individual recognition is a pre-requisite for the establishment of specific social relationships. Existing evidence demonstrates that infants can discriminate their mother's odour from a very early age and that this can facilitate the onset and duration of breastfeeding. However, it is not known how long this ability is maintained. In this study, we aim to determine whether children of toddler age (3–5 years) can recognize his/her mother. We also test whether maternal recognition of her child through body odour. Further objectives include tests of the potential moderating effects of different measures of emotional closeness, including breastfeeding duration and time spent together in an average day. We are testing odour discrimination of 24 mother-child pairs recruited from two local nurseries. Participants wear unscented t-shirts for 2 consecutive nights, and both mothers and children are asked to identify which of 6 samples belong to the respective mother/child. Mothers also assess their infants' odour on pleasantness and intensity. Our results will provide insights into the importance of odour in maternal-child bonding beyond the first vulnerable weeks of life.

40. Enclosure use by two mixed species groups of tufted capuchins (*Sapajus apella*) and squirrel monkeys (*Saimiri sciureus*) at Living Links, Edinburgh Zoo (SFA)

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Understanding the relationship between physical environments and non-human primate behaviour is important for effective care and management, especially within a mixed-species exhibit. The physical features of the captive environment, including both the useable space and environmental complexity, can have a significant influence on primate behaviour and ultimately animal welfare. But despite this connection, there remains relatively little conclusive data on how mixed groups of captive primates use the spaces provided to them, especially in modern, naturalistic, indoor-outdoor enclosures that have become more prevalent in recent years. This study examined patterns of space use in two mixed species groups of capuchins (*Sapajus apella*) and squirrel monkeys (*Saimiri sciureus*) housed in similar enclosures (West and East) at the Living Links to Human Evolution Research Centre in the Royal Zoological Society of Scotland's Edinburgh Zoo, in order to determine how each of the species were making use of the three-dimensional space in their out-door enclosures and whether there was much overlap between species. We found that both species used relatively little of their available space, though the capuchins used more than the squirrel monkeys and that they were selective in their space use. The capuchins had a preference for the central zones of their enclosures, where tall trees were available, while the squirrel monkeys preferred zones on the periphery of their enclosures close to the doorways leading back to their indoor enclosures. These data supplement data from wild sympatric populations that form polyspecific associations and provide useful information for those seeking to design enclosures housing mixed-species groups.

41. The effect of stress on eyewitnesses' ability to recall faces (SFA)

Domonic Vasquez

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Eyewitness identification and testimony has primarily been used as a key piece of evidence in the search of a conviction, however recent research shows that this may no longer be the case. The current study will attempt to mimic the process of facial recollection involved in police investigation: the participants "eyewitnesses" see several faces during a stressful event "crime scene" and the following day attempt to recall one specific face the "perpetrator" they saw at the crime scene. EvoFIT, a facial composite system used by police by means of an eyewitnesses' recollection of a perpetrator, will be used to make composites. Subsequently, composites will be evaluated for accuracy of resemblance by individuals both familiar and unfamiliar with the "perpetrator" on a 1-7 Likert scale. The Trier Social Stress Test will be used to ethically induce stress in a lab setting. This construct puts participants through an anticipation period of 10 minutes and a test period of 10 minutes where the participants have to deliver a speech about why they are a good job candidate and also perform mental arithmetic in front of a panel of judges. Self-reported stress levels are measured pre and post experiment, using a Visual Analogue Scale (0-100), coupled with monitoring of heart rate. Results will be used to test the prediction that individuals under more stress will create a poorer composite than those in the control group who are under less stress.

42. Child survival and kin affection in a pastoralist society (SFA)

Juan Du & Ruth Mace

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A growing body of research has highlighted the importance of kin, especially grandparents, on women's reproductive success. Child survival is a key determinant of reproductive success, especially during weaning when infants are weak and kin helpers are invaluable. Most studies on alloparenting are conducted in hunter-gather and agricultural groups, with scant focus on pastoralist societies. In 2014-15, we collected detailed demographic data on 694 households in five villages in Gannan Tibetan Autonomous region where 90% of the local residents are Tibetan, with herding being the only source of income. Given high child mortality rates in the study area, we were interested to assess the importance of grandparents in child rearing. Preliminary analysis showed that mortality rates of male children were 34% higher than female children before age 5. We also found that grandmothers, paternal and maternal, did not affect the survival rates of children, but the existence of paternal grandfather reduces the mortality rates. This talk argues that we should put the social and ecological factors into account when addressing the problems of alloparenting.

43. Handgrip strength and perceptions of aggressiveness, dominance and health in 3D male faces (SFA)

Louise Heron & Anthony Little

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Physical strength may signal male quality in the context of intrasexual and intersexual selection. Handgrip strength is a highly heritable, sexually dimorphic measure of upper body strength and is indicative of blood testosterone levels. This study investigates whether handgrip strength influences social trait judgements in 3D male faces. The potential role of priming male participants about the quality of their handgrip strength performance is also explored. Male participants' handgrip strength was measured using a hand-held dynamometer. Participants were then randomly assigned to one of three priming conditions, where they were informed that they exhibited low, average, or high handgrip strength compared to the wider population. Participants subsequently rated a series of 3D male faces for perceived aggressiveness, dominance, and health. Analyses between participant handgrip strength and perceived ratings of aggressiveness, dominance, and health in male faces will be conducted. It is anticipated that males with the lowest maximum handgrip strength will rate other male faces as more aggressive, dominant and healthy overall. Additionally, interactions between actual handgrip strength, facial trait ratings, and priming condition are predicted. These findings should contribute to evolutionary hypotheses predicting that characteristics linked to handgrip strength are important in male-male social selection.

44. Social perception of bodies (SFA)

Danielle K. Morrison, Benedict C. Jones & Lisa M. DeBruine
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Social perception is the formation of social judgments like 'trustworthiness' or 'aggressiveness' based on perceivable cues, such as facial morphology, expression, or vocal parameters. Previous research has shown that most social judgments of faces can be reduced to two dimensions: valence and dominance (Oosterhof & Todorov, 2008). Social judgments of voices also follow the same pattern (McAleer, Todorov, & Belin, 2014). If this pattern is caused by processes like overgeneralisation of sex and age cues, then we would expect social judgments of all traits to follow the same pattern. In the current study, we investigate whether or not social judgments of nude male and female bodies produce the same pattern of valence and dominance components as faces and voices. We also determine whether social judgments of bodies can predict social judgments of the corresponding faces.

45. Two-to five-year-olds copy movements with higher fidelity when they are not followed by an external effect (SFA)

Brier Alexandra Rigby Dames, Joshua March & Eva Rafetseder

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Previous studies have found that children imitate a sequence of actions more faithfully when they do not produce an external effect. In this context, the movement itself may be seen as the goal. The aim of this study was to investigate how varying the type and number of goals affects imitative fidelity in children. In Experiment 1, children between the ages of 2 and 5 years were shown two actions, of which the first action either produced an external effect (external-effect goal condition) or not (movement-based goal condition). In both conditions, the second action always produced an independent external effect. Action sequences either involved an external object (object-actions) or body movements only (body-actions). It was found that children in both age groups, 2- to 3-year-olds and 4- to 5-year-olds, imitated more faithfully in the movement-based goal condition than in the external-effect based goal condition for object-action tasks. For the body-action tasks this was only significant for the younger age group. Overall, imitative fidelity was higher for object-actions than body-actions and for older children than younger children. In Experiment 2 the number of actions was reduced to one, either producing an external effect or not. The results revealed that there was no significant difference in action style imitation between Experiment 1 and 2 for either age group. These results support the theory that exact imitation is led by the inference of movement-based goals.

Wednesday 3rd August

09.20 – 10.20	
Malinda Carpenter Social affiliation and alignment with others in infancy and early childhood	Pathfoot Lecture Theatre <i>Chair: Amanda Hahn</i>
10.50 – 12.30	
Attractiveness I	Pathfoot Lecture Theatre
Symposium: Developmental approaches to understanding human social learning	Wallace Room
14.00 – 15.20	
Competition II	Pathfoot Lecture Theatre
Vocal Perception	Wallace Room
15.50 – 17.30	
Romantic relationships	Pathfoot Lecture Theatre
Environmental Influence on Behaviour	Wallace Room

Social Affiliation and Alignment with Others in Infancy and Early Childhood

Malinda Carpenter ^{1,2}

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Humans connect with others in special ways. Beginning in infancy, we get great pleasure out of sharing and aligning attention, emotions, attitudes and behaviour with others, and by early childhood a sense of belonging to a larger ‘we’ – our social groups – is also very important to us. I present a broad overview of our recent research on the development of various types of affiliation and alignment with others. I begin by discussing what is unique about human joint attention and imitation in terms of their underlying social motivations. I then turn to our work on children’s groupmindedness, where I present studies on the strength of our early need to belong (e.g., work on young children’s reactions to the threat of ostracism from the group). It is clear, however, that children do not just affiliate and align themselves with others blindly. I end by demonstrating that children show great selectivity in partner choice and similar contexts: I discuss children’s preferential treatment of their in-group members, as well as their selective trust of and prosocial behaviour towards other evolutionarily relevant potential partners, such as people who act like them, people who cooperate with them and good, moral group members. Taken together, these findings show the strength, breadth and complexity of our early motivation to affiliate and align ourselves with others, both interpersonally and at the group level.

Attractiveness I

Chair: Karel Kleisner

Pathfoot Lecture Theatre	
10.50	Jeanne Bovet Preferred Women's Waist-to-Hip Ratio Variation over the Last 2,500 Years
11.10	Jan Havlíček Men's preferences for women's breast size and shape in four cultures
11.30	Agnieszka Żelaźniewicz Breast size in pregnancy and a woman's breastmilk composition and volume
11.50	Lynda Boothroyd Male facial appearance and offspring mortality in two traditional societies
12.10	Karel Kleisner African and European perception of African female attractiveness

Preferred women's waist-to-hip ratio variation over the last 2,500 years

Jeanne Bovet¹ & Michel Raymond²

¹ *Institute for Advanced Study in Toulouse, France*

² *Institute of Evolutionary Sciences, University of Montpellier, France*

The ratio between the body circumference at the waist and the hips (or WHR) is a secondary sexual trait that is unique to humans and is well known to influence men's mate preferences. Because a woman's WHR also provides information about her age, health and fertility, men's preference concerning this physical feature may possibly be a cognitive adaptation selected in the human lineage. However, it is unclear whether the preferred WHR in western countries reflects a universal ideal, as geographic variation in non-western areas has been found, and discordances about its temporal consistency remain in the literature. We analyzed the WHR of women considered as ideally beautiful who were depicted in western artworks from 500 BCE to the present. These vestiges of the past feminine ideal were then compared to more recent symbols of beauty: Playboy models and winners of several Miss pageants from 1920 to 2014. We found that the ideal WHR has changed over time in western societies: it was constant during almost a millennium in antiquity (from 500 BCE to 400 CE) and has decreased from the 15th century to the present. Then, based on Playboy models and Miss pageants winners, this decrease appears to slow down or even reverse during the second half of the 20th century. The universality of an ideal WHR is thus challenged, and historical changes in western societies could have caused these variations in men's preferences. The potential adaptive explanations for these results are discussed.

Men's preferences for women's breast size and shape in four cultures

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The morphology of human female breasts appears to be unique among primates due to their permanent fat deposits. It has been previously suggested that female breast morphology arose as a result of sexual selection. This is supported by evidence showing that women with larger breasts tend to have higher estrogen levels; breast size may therefore serve as an indicator of potential fertility. However, breasts become less firm with age and parity, and breast shape could thus also serve as a marker of residual fertility. Therefore, cross-culturally, males are hypothesized to prefer breast morphology that indicates both high potential and residual fertility. To test this, we performed a survey on men's preferences for breast morphology in four different cultures (Brazil, Cameroon, the Czech Republic, Namibia; N = 267). As stimuli, we used two sets of images varying in breast size (marker of potential fertility) and level of breast firmness (marker of residual fertility). Individual preferences for breast size were variable, but the majority of raters preferred medium sized, followed by large sized breasts. In contrast, we found systematic directional preferences for firm breasts across all four samples. This pattern supports the idea that breast morphology may serve as a residual fertility indicator, but offers more limited support for the potential fertility indicator hypothesis. Future studies should focus on a

potential interaction between the two parameters, breast size and firmness, which, taken together, may help to explain the relatively large variation in women's breast sizes.

Breast size in pregnancy and a woman's breastmilk composition and volume

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Evolutionary hypotheses on the adaptive role of perennially enlarged breasts in women suggest that breast volume might be a cue of a female's age, fertility and/or lactational ability. As breastfeeding is crucial for an offspring's health, the morphological cues of lactational potential (e.g. ability to breastfeeding, milk volume, composition and energy content) should be important in mate choice, what might explain why bigger breast are perceived as physically attractive. The aim of this study was to test if breast size and its changes during pregnancy are related to a woman's breastmilk composition and volume. 69 pregnant women (mean age 29) participated in the longitudinal study. Breast volume was precisely measured in each trimester of pregnancy, starting early in the first trimester, using a 3D scanner. Concentration of proteins, lipids, fatty acids, lactose and milk calorie content were measured in breast milk sample, collected at the fifth week after the delivery. The volume of milk synthesized daily was estimated by the total time of breastfeeding per 24h. Milk energy, protein and lipids content were not related to a woman's breast size and its changes during pregnancy but were positively related to indicators of a woman's body adiposity. Breast volume in pregnancy and body adiposity were positively related to the concentration of some fatty acids (e.g. linoleic) in breast milk. Breast size correlated also negatively with lactose concentration (main osmotic element in milk, regulating its volume and density) and positively with time spent breastfeeding daily. The results suggest that a woman's breast size in pregnancy is positively related to the estimated milk volume synthesized daily and to concentration of some crucial for an infant's development fatty acids in breast milk. This seems to confirm that breast size may be related to a woman's lactational ability.

Male facial appearance and offspring mortality in two traditional societies.

Lynda Boothroyd

Dept of Psychology, Durham University, UK

It has been hypothesised that facial traits such as masculinity and a healthy appearance may indicate heritable qualities in males (e.g. immunocompetence) and that, consequently, female preferences for such traits function to increase offspring viability and health. However, the putative link between paternal features and offspring health has not previously been tested empirically in humans. Here we present data from two traditional societies with little or no access to modern medicine and family planning technologies. Data on offspring number and offspring survival were gathered from the Agta of the Philippines and the Maya of Belize, and archive facial photographs were assessed by British and Filipino or Latin American observers for attractiveness and masculinity. While there was no association between attractiveness and offspring survival in either population, a quadratic relationship was observed between masculinity and offspring survival in both populations, such that intermediate levels of masculinity were associated with the lowest offspring mortality, with both high and low levels of masculinity being associated with increased mortality. Neither attractiveness nor masculinity were related to fertility (offspring number) in either population. These data are not consistent with, and therefore present challenges to, current theories of female preferences for certain traits in male faces. Consequently, further research and replication in other traditional societies should be a key priority for the field.

African and European perception of African female attractiveness

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The majority of research on attractiveness is restricted to faces of European origin. However, perception of attractiveness may vary across communities due to variation in both facial morphology and local standards. We investigated relative contribution of four facial markers of attractiveness based on 100 female facial (standardized, non-manipulated) portraits from Cameroon and Namibia assessed by local male raters and raters from the Czech Republic. Images from Cameroon include only women of Bantu origin while Namibians are represented by Bantu (Ovambo/Herero people) and Khoikhoi ethnolinguistic groups (Nama people). Controlling for age and BMI, we explored the relationship between female attractiveness and a set of facial traits: fluctuating asymmetry, averageness, shape sexual dimorphism, color complexion (rated and measured in CIELab color space). In the Cameroonian sample, the local male raters favored paler female faces with morphology closer to average. Attractiveness of Nama women as rated by Nama men was positively correlated with lighter complexion color, however, this does not extend to the Cameroonian raters. Attractiveness of Namibian Ovambo/Herero women was positively associated with facial femininity and lighter complexion color when judged by both Cameroonian and Nama male raters. The attractiveness in all samples as rated by Czech men was predicted by age and BMI, but not by color complexion. We found no significant association between attractiveness and fluctuating asymmetry in any of the

tested samples. Variation in complexion color represents an important factor of African female attractiveness but it does not seem to affect European raters. However, only Nama men used variation in complexion color as a marker of attractiveness irrespective of ethnicity. In contrast, Cameroonian men were sensitive to complexion color only in Bantu women (in both Cameroonian and Owambo/Herero samples). Sensitivity to some facial markers of female attractiveness seems to be restricted to regional populations and/or constrained by shared ethnicity.

Symposium II. Developmental approaches to understanding human social learning

Chair: Christine Caldwell

Wallace Room	
10.50	Eoin O'Sullivan Automatic imitation effects are influenced by experience of synchronous action in children
11.10	Eva Reindl Human children spontaneously invent great ape tool-use behaviours (SFA, LMA)
11.30	Elizabeth Renner Do children and orangutans learn differently in individual, social, and “ghost” conditions?
11.50	Joshua March Faithful imitation is based on different mechanisms throughout childhood (SFA)
12.10	Emily Messer The role of social experience on young children's donating behaviour

Symposium overview

Much of what distinguishes human behaviour from the behaviour of other species arises as a consequence of cultural transmission. Understanding the evolution, mechanisms, and outcomes of human social learning can therefore provide fundamental insights into humans' extreme adaptability, shedding light on the capacities which have allowed us to occupy a wider range of habitats than any other species.

The developing mind provides a unique window on these capacities, offering the opportunity to observe how various life skills are formed, since these are still being learned, and allowing us to determine how critical social learning may be to the development of particular behaviours. In addition, the child's developing cognitive abilities permit insights into which general mechanisms may support uniquely human forms of social learning, through investigation of patterns of common association over development. Furthermore, the fact that capacities for social learning are themselves developing throughout childhood means that we can also investigate the role of experience in the formation of adult-like social learning.

This symposium brings together researchers using a range of novel techniques to answer such questions. Their methods are varied, but their studies provide powerful demonstrations of the value of experimental research with human children as a means to elucidate general principles relating to social learning. Some of the contributors adopt an explicitly comparative perspective, aiming to understand which of our capacities are shared with other species and which seem to be unique (e.g. Reindl, Renner). Others are focussed on the development of social learning processes which are believed to be uniquely prevalent in humans (e.g. March: overimitation), or the role of social experience in the development of other behaviours most often seen in humans (e.g. contingent reciprocity, McGuigan/Messer). O'Sullivan will consider the role of experience in the development of human social learning mechanisms, which may themselves be dependent on inputs from the rich human social environment.

Automatic imitation effects are influenced by experience of synchronous action in children

Eoin O'Sullivan¹, Simone Bijvoet-van den Berg² & Christine A. Caldwell¹

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Children are expert imitators by their fourth year but it is unclear how this ability develops. Some have suggested that sensorimotor experience might forge associations between sensory and motor representations of an action that later helps scaffold imitation. This sensorimotor experience can take place when an action is imitated by another or when actions are performed in synchrony with others. A learning approach would therefore predict that the strength of an association between the sensory and motor representations of specific actions should be dependent on the frequency of previous experience. In this study we tested this prediction by examining automatic imitation, the tendency of an action stimulus to facilitate the performance of that action and interfere with the performance of an incompatible action. Using a stimulus-response compatibility procedure, we asked children to perform a variety of actions after observing an experimenter perform an action; during some trials participants were required to respond with the same action they observed while in others they were required to perform a different action. As predicted by a learning account of imitation, actions that are thought to be commonly performed in synchrony (e.g. clapping) produced stronger automatic imitation effects when compared to actions where previous sensorimotor experience is likely to be more limited (e.g. pointing). These results suggest a role for sensorimotor experience in the development of imitation in children.

Human children spontaneously invent great ape tool-use behaviours (SFA, LMA)

Eva Reindl, Sarah Beck, Ian Apperly & Claudio Tennie
School of Psychology, University of Birmingham, UK

Two of our closest living relatives, chimpanzees and orangutans, have been shown to possess rich tool cultures, superficially resembling human cultures. However, the complexity and diversity of human tool cultures remain unprecedented. Attempting to explain why and how human tool culture is unique, research has focused on studying social learning mechanisms across species, since high-fidelity social learning is viewed to be a key factor in the production of modern humans' tool cultures. The Zone of Latent Solutions (ZLS) theory states that while tool-use behaviours in non-human great apes are largely acquired via individual (re-)inventions (latent solutions), humans' ability to imitate allows them to use and make tools which they would not have been able to invent individually (Tennie, Call, & Tomasello, 2009). However, in contrast to the growing literature on human social learning (Whiten, Caldwell, & Mesoudi, 2016), not much is known about our ability to invent tool behaviours on our own, without social learning. Here we present the first explicit latent solution test in humans, shedding some light on the contents of the human ZLS for tool behaviours (Reindl, Beck, Apperly, & Tennie, 2016). We presented 50 toddlers with 12 problem-solving tasks based on tool behaviours of wild great apes. We found that children invented the correct tool-use behaviours in 11 out of 12 tasks. Additionally, in high-frequency tasks, children were more likely to succeed than in low-frequency tasks. This study identified several tool behaviours which humans can invent without the need to rely on social learning. In conjunction with other research it suggests that the physical cognition abilities underlying basic tool use might not differ much between humans and non-human great apes.

Do children and orangutans learn differently in individual, social, and “ghost” conditions?

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Social learning results from exposure to others' actions and is evident in humans from an early age and many animal species. Does the source of information (social or non-social) affect the retention and use of information by children and non-human primates? We utilized two analogous touchscreen tasks that involve touching three simultaneously presented pictures in a sequence. In the motor-spatial task, participants must select three identical items based on their locations; in the cognitive task, participants must select three different items based on their identities. Three- and 5-year-old children (N=92) and orangutans (N=3) learned new sequences for each task in four conditions: (i) trial-and-error (Baseline), (ii) Recall after a 30-second delay (using the same sequence as in the Baseline condition), (iii) “Ghost” (computer-only) demonstration, and (iv) human “Imitation” demonstration. Ape performance as measured by Trial 1 accuracy using the binomial test was significantly better than chance (16.7%) in only the Recall condition of the tasks for some but not all orangutans. In contrast, 5-year-old children performed significantly better than chance in all conditions (except Baseline) for both tasks. Three-year-old children performed better than chance in the Recall condition for both tasks and in the Imitation condition for the cognitive task. These results indicate that great apes perform best on these tasks when engaging in individual learning (the Recall condition). While great apes can learn a variety of behaviours from other individuals, they do not appear to do so in tasks like this which require high-fidelity copying. In contrast,

older children learned both types of sequence regardless of the source of the information. Younger children socially learned sequences in one high-fidelity copying task (the cognitive task) but not in the other (motor-spatial) task, indicating that the development of social learning skills may be domain-specific.

Faithful imitation is based on different mechanisms throughout childhood (SFA)

Joshua March, Rosemary Gillespie & Eva Rafetseder
Division of Psychology, University of Stirling, UK

Children can imitate selectively and faithfully. It is still unclear however, which factors determine the kind of imitation children will show on a task. We ran a cross-sectional study with children aged 2 to 12 years to determine how imitation of successive models changes over childhood. Children observed two models using different methods to play the same game (i.e., labelled with the same name) in each other's absence and were asked "to have a go" themselves each time. Children at different ages imitated the successive models in different ways: in particular the older children were more likely to switch between the 2 ways of performing a task. We suggest that motor inhibition allows for greater flexibility of imitation as children age, and that consequently immediate responding encourages greater imitation fidelity in younger children. In a follow-up study children aged 2 to 5 years were again shown two successive models use different methods to perform the same task. However in contrast with the first study only one of the models was an adult, whereas the other was a puppet. The same age effect was replicated, with children's ability to switch between the two models' actions increasing with age. However we also found that the identity of the model affected the likelihood that they would be copied. Children were more likely to accept an addition to a known action sequence when it was an adult performing it than when it was a puppet. This suggests that the effect of immediate responding on children's imitation fidelity can be mediated by the model's identity and by the children's developing motor inhibition. We propose a developmental framework of imitation throughout childhood and highlight future directions that would be useful to explore and evaluate said framework.

The role of social experience on young children's donating behaviour

Emily Messer & Nicola McGuigan

Dept of Psychology, Heriot-Watt University, Edinburgh, UK

Humans show concern for others, even unrelated individuals. Of interest over the development of this other regarding behaviour, is the role of social experience, is it merely the presence of another individual behaving prosocially, or is it the actual prosocial behaviour per se enough to elicit tit-for-tat donating when given the opportunity to respond to a partner's behaviour. In order to help address such questions the current study asked whether young children (3-8 years old) would engage in reciprocal donating with a same aged peer. Alongside such child-to-child exchanges we included a novel (enhanced ghost) control condition, in which children received donations 'selected' by a non-human agent, while a child sat passively nearby. The inclusion of an agent versus non-agent comparison allowed us to more clearly tease apart social and non-social influences on resource donation. Although age dependent, in the child-partner condition children reacted in kind to the behaviour of their partner, whereas no such reciprocity was evident in the non-human agent condition. These findings suggest that an interaction with a partner distributing resources is essential in influencing young children's donating behaviour.

Competition II

Chair: Marc Mehu

Pathfoot Lecture Theatre	
14.00	Jakub Binter Hormonal and behavioral changes in young adult heterosexual men during competition for a female partner: hormonal and behavioral analyses (SFA, LMA)
14.20	Daniel Kruger Divided loyalties: Assessing coalitional behaviors in an American college football rivalry
14.40	Daniel Redhead The Dyadic effects of Prestige and Dominance within Social Networks: A longitudinal study of social status in the classroom (SFA, LMA)
15.00	Marc Mehu Testosterone, dominance, and communicative behavior in face-to-face dyadic negotiations

OWEN ALDIS AWARD WINNER

Hormonal and behavioral changes in young adult heterosexual men during competition for a female partner: hormonal and behavioral analyses (SFA, LMA)

Jakub Binter^{1,2}, Timothy Jason Wells¹⁻², Juan David Leongómez³, Pavel Šebesta², Klára Bártová^{1,2}, Lucie Krejčová^{1,2}, Tereza Zikánová^{1,2}, Renata Androvičová², Kateřina Ježková¹ & Kateřina Klapilová^{1,2}

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Men modify their behavior during interaction with a desired partner and in competition with other male suitors. For example, para-verbal behavior – deeper voice, and nonverbal behavior – more dominant posture and gestures communicate high status. Male hormonal profiles are also expected to change in the context of mate competition – specifically, increases in testosterone (T) and cortisol (C). To test this, we developed a scenario where 96 young adult men (aged between 16 and 18 y.o.) competed over a potential romantic date with a female – 10 young adult women (aged between 15 and 17 y.o.). Each male recorded a short (~1 minute) introductory video, which was later used for analyses of nonverbal behavior. Participants were then exposed to situation a) win (chosen by female) and b) loss (rejection in favor of a rival). Hormonal analyses (T and C from saliva assays) as well as vocal displays (pitch and intensity) were measured following each situation and compared to pretest baseline levels. Nonverbal displays were analyzed using InterAct software; behavior was coded for length and frequency. Opposed to our expectation, results appear to show the modulation of male voices with respect to the competition. Also, as opposed to expectation, there was no difference in T levels; in case of C, there was a significant, unexpected, decrease from win to loss situation. However, we found that nonverbal displays associated with dominance correlated with T levels. C levels

correlated with friendly nonverbal displays but did relate to nonverbal displays associated with dominance or stress. These results suggest that there may be specific behavioral and hormonal patterns associated with courtship situations; dominance displays unsurprisingly relate to testosterone but friendly displays were unexpectedly related to cortisol.

Sex differences in the perceived dominance and prestige of women with and without cosmetics (SFA)

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Women wearing cosmetics have been associated with a higher earning potential and higher status jobs. However, recent literature suggests that status can be accrued through two distinct routes: dominance and prestige (Henrich & Gil-White, 2001). In two experiments, we applied a standardized amount of cosmetics to female faces using computer software. We then asked participants to rate faces with and without cosmetics for various traits including attractiveness, dominance, and prestige. Men and women both rated the faces with cosmetics added as higher in attractiveness. However, only women rated faces with cosmetics as higher in dominance, while only men rated them as higher in prestige. In a follow up study, we investigated whether these enhanced perceptions of dominance from women were caused by jealousy. We found that women experience more jealousy toward women with cosmetics, and view these women as more attractive to men and more promiscuous. Our findings suggest that cosmetics may function as an extended phenotype and can alter other's perceptions differently depending on the perceiver's sex.

The dyadic effects of prestige and dominance within social networks: A longitudinal study of social status in the classroom (SFA, LMA)

Daniel Redhead¹, Joey T. Cheng² & Rick O'Gorman¹

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Evolutionary theory suggests that individuals in human groups accrue rank through either being respected (Prestige) or feared (Dominance). Previous empirical studies have supported the dual model of social hierarchy and suggest that Prestige and Dominance predict social rank in both experimental and naturalistic settings. However, such evidence has only provided evidence from a snapshot in time and does not account for the dyadic relationship between behaviour and the social networks in which individuals operate. The present study aims to provide the first of such evidence and investigates the relationships between Prestige, Dominance and network position and structure. Based on previous studies, we hypothesize that i) individuals high in Prestige and dominance will be more central within their networks, and that ii) these behaviours have divergent relationships to the structure of their networks. To test these predictions we distributed round-robin Prestige and Dominance questionnaires and sociometric surveys among student task groups within a laboratory class (n=120) at a large American University. Data were collected across five time waves over a period of sixteen weeks. Using RSiena, we mapped Prestige and Dominance scores onto the longitudinal multivariate networks within the classroom. Discussion will focus on our findings and the implications that this novel integrative approach has for future research.

Testosterone, dominance, and communicative behavior in face-to-face dyadic negotiations

Marc Mehu¹, Jacobien van Peer² & Katja Schlegel³

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² *Behavioral Science Institute, Radboud University Nijmegen, The Netherlands*

³ *Dept of Psychology, Northeastern University, USA*

A number of studies report positive associations between testosterone (T) and status related social behavior, suggesting that individuals with higher levels of T tend to behave more competitively when their status is challenged. In order to investigate the role of T in non-physical competitive interactions, the present study examined the relationship between T and communicative behavior in face-to-face dyadic negotiations. It is predicted that T measures positively correlate with communicative measures of assertiveness and competitiveness. Sixty-five pairs of same-sex individuals (33 male and 32 female pairs) were video recorded while they engaged in a mixed-motive negotiation exercise. We derived several measures of T from saliva samples (basal and reactive levels of T). Communicative behavior consisted of nonverbal signals (gaze, facial and vocal expressions), as well as negotiation-specific speech acts. Several correlations were found between T measures and communicative behavior, and these correlations depended on the role individuals played in the social interaction, as well as on the nature of the communicative behavior. In general, saliva T measures showed stronger correlations with nonverbal behavior than with negotiation-specific speech acts. In both men and women, T was negatively correlated with engagement behaviors such as speaking time, smiling, gaze, and forward lean. Correlations between T measures and nonverbal behavior appeared to be stronger for individuals having a higher status role in the negotiation. Although the pattern of correlations between saliva T and communicative behavior appeared to be complex, the results go in the direction of an association between T levels and

negative, status preserving, behavioral style during dyadic interactions. These results will be discussed in the light of the interactions between context, sex, hormonal profiles, and social roles on social signalling.

Voice Perception

Chair: Tamsin Saxton

Wallace Room	
14.00	Tamsin Saxton A lover or a fighter? Opposing sexual selection pressures on men's vocal pitch and facial hair
14.20	Juan David Leongómez Perceived differences in social status between speaker and listener affect the speaker's vocal characteristics
14.40	Katarzyna Pisanski Changes in voice pitch across a lifetime: a longitudinal within-individual study
15.00	Irena Pavela Vocal changes across the menstrual cycle: Are we there yet? (SFA, LMA)

A lover or a fighter? Opposing sexual selection pressures on men's vocal pitch and facial hair

Tamsin K. Saxton, Lauren L. Mackey, Kristofor McCarty & Nick Neave

Dept of Psychology, Northumbria University, UK

The traditional assumption within the research literature on human sexually dimorphic traits has been that many sex differences have arisen from intersexual selection. More recently, however, there has been a shift toward the idea that many male features, including male lower-pitched voices and male beard growth, might have arisen predominantly through intrasexual selection: that is, to serve the purpose of male–male competition instead of mate attraction. In this study, using a unique set of video stimuli, we measured people's perceptions of the dominance and attractiveness of men who differ both in terms of voice pitch (4 levels from lower to higher pitched) and beard growth (4 levels from clean shaven to a month's hair growth). We found a nonlinear relationship between lower pitch and increased attractiveness; men's vocal attractiveness peaked at around 96 Hz. Beard growth had equivocal effects on attractiveness judgments. In contrast, perceptions of men's dominance simply increased with increasing masculinity (i.e., with lower-pitched voices and greater beard growth). Together, these results suggest that the optimal level of physical masculinity might differ depending on whether the outcome is social dominance or mate attraction. These dual selection pressures might maintain some of the documented variability in male physical and behavioral masculinity that we see today.

Perceived differences in social status between speaker and listener affect the speaker's vocal characteristics

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Non-verbal behaviours, including voice characteristics during speech, are an important form of communication for signalling social status. Research suggests that individuals can obtain high social status through dominance, using force and intimidation, or through prestige, by being knowledgeable and skilful. However, little is known regarding differences in the vocal behaviour of men and women in response to dominant and prestigious individuals. Here, we tested within-subject differences in vocal parameters of interviewees during simulated job interviews with dominant, prestigious, and average employers (targets), while responding to questions classified as introductory, personal or interpersonal. Vocal modulations were apparent between responses to the average and high status targets, with participants increasing F0 in response to dominant and prestigious targets relative to average targets. Self-perceived status was also reflected in vocal parameters, with relatively prestigious participants decreasing intensity variability, and more dominant participants decreasing both mean and variability in fundamental frequency (F0). Self-perceived prestige, however, was less related to contextual vocal modulations than self-perceived dominance. Finally, vocal parameters were also affected by the context of interview questions participants responded to (introductory, personal, interpersonal). Overall, our results suggest that people adjust their vocal parameters according to the perceived social status of the listener as well as their own self-perceived social status.

Changes in voice pitch across a lifetime: a longitudinal within-individual study

Katarzyna Pisanski¹, Meddy Fouquet^{1,2} & David Reby¹

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² *University of Saint-Etienne, Saint-Etienne, France*

Voice pitch provides an impressive amount of ecologically relevant information. It can indicate our sex, age and circulating hormone levels and is associated with traits like attractiveness, dominance, and trustworthiness. However, most of the research in this domain has focused on between individual differences in the voice or used cross-sectional designs. Little is known about how voices change in an individual's lifetime, and whether changes are linked not only to physical and physiological change, but also to social life events. To explore this, we performed acoustic analyses of voice recordings from males and females from childhood to adulthood. Recordings were extracted from various sources including the British "Up Series", news broadcasts, and interviews with child-to-adult actors. We tracked variation in voice pitch (fundamental frequency) across a substantial portion of their lifetime. In addition to predictable patterns (a major drop in voice pitch around puberty, sexual dimorphism in adulthood, and a slow decrease with age), we observed additional short-term pitch modulations that varied across individuals. We suggest that these more subtle modulations may be linked to major life events (e.g. childbirth, marriage) that affect circulating hormone levels and may lower an individual's motivation for self-presentation. Interestingly, voice pitch before puberty (i.e., age 7) strongly predicted men and women's adult voice pitches. Our findings underscore the advantages of longitudinal voice analysis and offer a window into the understudied influence of social and ecological variables on human voice production.

Vocal changes across the menstrual cycle: Are we there yet? (SFA, LMA)

Irena Pavela¹, Benjamin Banai², Petra Cerovecki ¹ & Matea Perovic¹

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Previous studies showed that human voice provides a source of biologically important information, such as body size, age, fluctuating asymmetry and facial attractiveness. It is also assumed that female voice provides cues of ovulation. In line with this, female voice attractiveness increases with the conception risk across the menstrual cycle, which indicates that certain acoustic characteristics change across the cycle. Previous attempts to identify exact acoustic ovulatory cues produced inconsistent findings. Therefore, the aim of this study was to investigate vocal characteristics in different phases of menstrual cycle. Vocal samples from 48 naturally cycling women and 20 women who were using hormonal contraceptives were collected during menstrual, late follicular (confirmed by using urine test for luteinizing hormone surge) and luteal phases. The analysis of vowel samples from women with natural cycle revealed marginally significant decrease in pitch variability and an increase in minimum pitch values in late follicular phase, as well as lower voice intensity in luteal phase. There were no changes in vocal characteristics across the cycle among women using hormonal contraceptives. Also, this group of women had lower formant dispersion compared to naturally cycling women. In addition, two groups of women differed in noise to harmonics ratio when compared in menstrual and late follicular phase. Taking into an account small effect sizes found in our study, we propose several explanations for these findings, which might serve as an incentive for future research.

Romantic Relationships

Chair: Ana Maria Fernandez

Pathfoot Lecture Theatre	
15.50	Ana Maria Fernandez The reciprocal nature of romantic relationships
16.10	Piotr Sorokowski Meaning of love - a study among hunter-gatherers
16.30	Tara DeLecce Psychological Sperm Competition Mechanisms and the Moderating Effect of Romantic Attachment Style (SFA, LMA)
16.50	Denisa Průšová Manipulative strategies in conflict interactions: The privilege of low powered submissive romantic partners? (SFA)
17.10	Naomi Muggleton Unrestricted sexuality promotes greater distinction in women's short- and long-term mate preferences (SFA, LMA)

The reciprocal nature of romantic relationships

Ana Maria Fernandez¹, Jose Antonio Muñoz² & Paula Pavez¹

¹ *Universidad de Santiago de Chile*

² *Universidad de Playa Ancha, Chile*

Human mating is an adaptive problem that poses diverse challenges to the individuals involved in very specific and sex differentiated ways. However, there are robust affective mechanisms that provide support to the initiation and maintenance of long-term romantic bonds, which were first explained by social exchange theory, and we are currently extending them to incorporate attachment theory as well as an analysis of the reciprocal dynamics of long-term dyadic bonds. We present data from a sample of approximately 65 young dating couples, and another sample of approximately 120 stable couples to illustrate the reciprocal nature of the psychological processes that underlie reciprocity in human mating. We analyze the links between attachment, aggression, and partner control in couples, and we show how variables included in the mating literature, such as mate value, jealousy and mate retention, play an important role explaining the reciprocal nature of human mating. The discussion suggests the importance of incorporating an evolutionary perspective for understanding romantic relationships beyond their immediate function in human development, which points to the strategic nature of pairbonding in the animal kingdom, and which can be extended to explain conflict as well as the affective dynamics involved in couple relationships universally.

Meaning of love - a study among hunter-gatherers

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Psychological studies concentrate on the phenomenology of love, and they mostly show what we feel when we are in love. Beyond this, we know little about the fundamental variables underlying the formation of love and the nature of this feeling. In different words, it is hard to answer a question as to why love exists. One hypothesis is that love can be an adaptation in biological meaning, i.e., it can increase human reproductive success by acting on natural and sexual selection. To test this assumption, we conducted a study among Hadza (n=146) - an evolutionarily relevant population of hunter-gatherers from Tanzania. Their lifestyle is somehow similar to the life of our ancestors, and therefore their life conditions are generally much better suited to investigate the presented hypothesis. Our results show how love defined by three constructs proposed by Stenberg (1986) (intimacy, passion and commitment) is connected with the number of children, reproductive success and mortality of children among Hadza. The most important finding of the study was that passion toward partner correlated with reproductive success female but not male. We discuss our findings in context of evolutionary theory and modern studies on human mating.

Psychological sperm competition mechanisms and the moderating effect of romantic attachment style (SFA, LMA)

Tara DeLecce, Richard B. Slatcher & Catalina Kopetz
Dept of Psychology, Wayne State University, Detroit, USA

Evidence for sperm competition theory has mainly been found in non-human animal species. Attempts at testing the physical mechanisms of this theory in humans have been heavily criticized (Baker & Bellis, 1994), and much of the evidence supporting it in humans regards the psychological mechanisms such as men's greater interest in sexual intercourse with their romantic partner when they suspect that she has committed sexual infidelity. However, even research examining psychological mechanisms of sperm competition are overwhelmingly correlational in nature. The current study investigated these psychological mechanisms using an experimental approach. Men in relationships were either primed with the idea of sperm competition or not and results indicated that men who were primed with sperm competition reported significantly greater interest in engaging in sexual intercourse with their partner than men who were not primed in this way. Additionally, this may possibly be the first study to see how attachment style interacts with these effects. Results revealed that avoidant men were the least interested in engaging in sexual intercourse in the control condition, however this difference disappeared in the experimental condition. The implications of these findings are discussed in terms of sperm competition theory and the methods for testing it in humans.

Manipulative strategies in conflict interactions: The privilege of low powered submissive romantic partners? (SFA)

Denisa Průšová, Kateřina Klapilová &

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Evidence of manipulative strategies is well established but few studies focus on the relationship between manipulative tactics and power. We formulated two contrasting evolutionary hypotheses; one predicting that low-power partners would conceal their goals by using indirect manipulation because they would face a high risk of acquiescence expressing their goals explicitly. According to the second, low-power individuals would use more coercive strategies, which compensate for lower power by being more effective. We tested 55 Czech romantic couples (aged 20-37, mean relationship duration 3 years). To determine behavioral strategies, we qualitatively analyzed (coded and categorized) video-recorded couple's verbal and nonverbal behavior in 2 laboratory interactive tasks: standardized Picture Sorting task and the reenactment of couple's typical relationship conflict - the Relationship Drama. We statistically compared data about strategy use from behavioral analyses with the Pulerwitz's Sexual Relationship Power Scale (scales of Control and Decision-Making in relationship) and self-reported dominance distribution in relationship. Our results confirm a relative independence of situational dominance to power distribution in the couple, as 45% of 'winning' participants scored lower in power and dominance than their partners. Consistent with our second hypothesis, we found open aggression to be more often used by lower power partners. Such individuals were, however, also found to use affiliation and problem solving to reach their goals. In contrast to our predictions, higher powered partners used emotional and verbal manipulation more frequently than lower power partners. Ignoring strategies were used independently on the power level. The increased use of manipulation by high-

power romantic partners has not been previously reported. We speculate that it could be used to mask unfavorable power superiority to the low-power partner.

Unrestricted sexuality promotes greater distinction in women's short- and long-term mate preferences (SFA, LMA)

Naomi K. Muggleton & Corey L. Fincher

Dept of Psychology, University of Warwick, UK

In mate choice research, women often rate the importance of male traits for either a short-term (e.g. one-night stand) or long-term (e.g. husband) sexual relationship. Among women from Western societies, the archetypal short-term partner possesses Good Genes (GG: masculine, attractive), but lacks Good Dad (GD: warm, faithful) and Good Provider (GP: wealthy, high status) traits; preferences for long-term mates are reversed. However, women from Western societies, where sexuality is relatively unrestricted, may have more experience with short-term mating than women from restrictive cultures. We compared women from cultures differing in sociosexuality (restricted vs. unrestricted), expecting that sexually unrestricted women prefer GG traits (devalue GD and GP traits) more than restricted women (H1). We also anticipated that women high in sociosexuality would demonstrate greater distinctions between short- and long-term preferences (H2). In an MTurk study, participants were from cultures differing in sociosexuality (: India, USA). Women were apportioned a 'mate budget' to construct their ideal partner, divided between twelve traits (6xGG, 3xGD, 3xGP). The IVs were nationality, sociosexuality and relationship context (short-term; long-term). The DVs were proportion of budget spent on GG, GD and GP traits. In support of H1, sociosexuality positively predicted spend on GGs, but negatively predicted spend on GP traits. GD spend was negatively predicted by sociosexuality in the short-term context, but positively predicted by sociosexuality in the long-term context. As predicted by H2, unrestricted women's short- and long-term preferences were more distinctive than those of restrictive women. At the national level, both hypotheses were supported. These patterns have far reaching implications for the generalisability of findings within the mate choice literature.

Environmental Influences on Behaviour

Chair: Thomas Pollet

Wallace Room	
15.50	Jiřina Bouřov Tell me baby, does your heart beat faster? Autonomic Response in Newborns to Relatively Strong and Mild Trigeminal Odorants (SFA, LMA)
16.10	Jim Swaffield Assessing the relative impact of physical safety, social support and poor economic conditions on food preference (SFA)
16.30	Micha Misiak Prenatal exposure to sex hormones predicts gratitude intervention use. Examination of digit ratio, motivational beliefs, and online activities (SFA)
16.50	Jean-Luc Jucker Television consumption is the strongest predictor of female body size ideals in populations recently exposed to the media
17.10	Cristina Acedo Carmona Culture or trust as human tools to face environmental changes? The Vyegwa-Gika Pygmies from Burundi

Tell me baby, does your heart beat faster? Autonomic response in newborns to relatively strong and mild trigeminal odorants (SFA, LMA)

Jiřina Bouřov¹, Lenka Martinec Novkov¹⁻³, Jitka Fialov^{2,3}, Markta Sobotkov², Benoist Schaal^{4,5}, & Jan Havlček^{2,3}

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Humans are not born with a fixed set of olfactory likes or dislikes, rather they acquire them mainly via evaluative conditioning. However, even without prior experience, odorants elicit differential preferential responses. Odorant stimuli generally convey olfaction *per se* as well as some degree of intranasal chemesthesis. This tactile confound of the odour sensation mediated by the trigeminal system, whose stimulation may result into neurological airway protection processes, could be a potential predictor of spontaneous preferential responsiveness to unknown odorants. To test this, we explored whether unfamiliar odorants with contrasted trigeminal intensity trigger a stronger defensive response (heart rate (HR) acceleration) indicative of arousal magnitude and perceived unpleasantness in newborns. Fifty, 2- to 3-day-old newborns (26F) were each presented in randomized order with three stimuli — 2 unfamiliar odorants known to vary in trigeminal impact (1 strong, 1 weak) and one blank. Thus, each presentation entailed three consecutive trials. The newborns' HR response was recorded using a 3-lead electrocardiogram during an episode of irregular sleep. Repeated-measures ANOVA revealed that the newborns' HR exhibited a significant interaction of the odorant with the course of HR variation in the first trial. Further, repeated planned contrasts showed a

significant difference between odorants across repeated measures circa half a minute after the presentation. However, paired samples t-tests have shown that the significant difference was for the blank stimulus only, the strong trigeminal odorants induced a slight HR increase compared to which the weak ones induced a stronger HR increase; blank stimuli a marked drop. Further, no such effects were found in the two, consequent trials. At present, our findings do not support asymmetric processing of odours with different trigeminal component at the HR level. Nevertheless, we do provide further evidence that newborns in irregular sleep respond differentially to very low dilutions of odorants.

Assessing the relative impact of physical safety, social support and poor economic conditions on food preference (SFA)

Jim Swaffield & S. Craig Roberts

¹ Division of Psychology, University of Stirling, UK

Prior research has shown that harsh environments can trigger the desire to eat energy dense foods. Harsh environments include a number of sub-conditions and include physical safety, economic and social dimensions. What's more, these sub-conditions have differing influences on food preference. In this study, we examined the effects of six environmental conditions (3 safe conditions and 3 harsh conditions) on food preferences across the food spectrum of dairy, meats, vegetables, fruit, grains, and sweets. We first showed images of 30 different food items to participants and recorded their stated desire to eat each kind of food. We then repeated this procedure after exposing participants to one of three harsh environmental conditions or one of three safe environmental conditions. The results show that some dimensions of environmental harshness conditions may trigger a desire to consume food, whereas others may not. In addition, this study deepens our understanding on what environmental conditions promote healthy eating.

Prenatal exposure to sex hormones predicts gratitude intervention use. Examination of digit ratio, motivational beliefs, and online activities (SFA)

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¹ *Institute of Psychology, Adam Mickiewicz University, Poland*

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Men are less grateful than women and less likely to intentionally enhance gratitude via interventions. Yet, little is known about whether sex differences in gratitude could result from biological influences such as prenatal testosterone and estrogen levels - hormones that control the development of sex specific characteristics. In two studies, we examined how sex and second-to-fourth digit ratio (2D:4D) - an indicator of prenatal sex hormones exposure - predicts gratitude intervention use. In our studies we used Counting blessings intervention (Emmons & McCullough, 2003). In the first study (N=279), we tested whether lower 2D:4D (i.e., higher masculinization) would suppress gratitude intervention use. Contrary to expectations, after controlling for sex, women and men with more male-type fingers were more motivated and likely to complete the intervention. 2D:4D was obtained from hand photos. In the second study, we replicated these findings using a larger sample (n=736) and self-measurement of 2D:4D. Our research suggests that motivation towards gratitude interventions is facilitated by female sex and masculinity. These findings provide initial evidence for a biological basis of individual differences in gratitude behavior. Moreover our findings support the use of self-measurement as reliable tool for acquiring data on 2D:4D. Research limitations will be included and discussed.

Television consumption is the strongest predictor of female body size ideals in populations recently exposed to the media

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Previous research has shown that the media, in particular television, influence what people regard as an attractive female body size, and increase body dissatisfaction in both Western and non-Western women. However, no study has controlled for an apparently obvious determinant of female body size ideals: food availability or nutritional stress. One hundred and twelve participants were recruited from three indigenous communities in Nicaragua that differed only in terms of television consumption and nutritional status, such that the contribution of both factors could be revealed. Participants completed a female figure preference task, reported their television consumption, and responded to several measures assessing their nutritional status and seasonal risk of food scarcity. As expected, comparisons showed that communities with high television consumption and low nutritional stress preferred thinner female bodies than communities with low television consumption and/or high nutritional stress. Regression analyses were used to determine which of television consumption or nutritional stress could account for these differences, and revealed that television consumption is a stronger predictor of female body size ideals than nutritional status, even when splitting the dataset by location and

controlling for other important variables such as socio-economic status. These results demonstrate for the first time that television consumption supersedes nutritional status as the strongest predictor of body size ideals in a non-Western population that was only recently exposed to the media.

Culture or trust as human tools to face environmental changes? The Vyege-Gika Pygmies from Burundi

Cristina Acedo Carmona, Enric Munar & Antoni Gomila
Human Evolution and Cognition (EVOCOG) Group, University of the Balearic Islands, Spain

Humans, unlike other species, have specialized in some tools to face the environment. Trust attitudes towards known people (personal trust) seem to be a very effective mechanism to ensure altruistic behaviors. This psychological mechanism could have evolved very early in human evolutionary history, given that our ancestors socialized within small groups. If this claim is true, personal trust networks would be very robust, and would hardly change in the short term even when individuals faced sudden changes in their cultural and environmental contexts. To test this prediction, we studied how personal trust networks of Pygmies have changed, after being forced to migrate from rainforests to the settlement of Vyege-Gika in the savanna of Northern Burundi. First, we analyzed the social, economic and cultural changes adopted by Pygmies with this migration, and then compared them with their current networks of personal trust and patterns of altruistic behavior using an experimental trust game with some variations. We found (i) small networks of personal trust, similar to those in rainforests that continue to drive altruistic exchanges among Pygmies, despite cohabitating in larger groups; and (ii) a very strong altruistic behavior towards trustees, despite their situation of poverty. The results support the view that personal trust networks are very robust and change more slowly than cultural practices.

Thursday 4th August

09.20 – 10.20	
Benoist Schaal Coevolutionary adjustment of olfactory communication between mammalian – including human – females and their neonates	Pathfoot Lecture Theatre <i>Chair: Jan Havlíček</i>
10.50 – 12.30	
Attractiveness II	Pathfoot Lecture Theatre
Social Cognition I	Wallace Room
14.00	
Social Afternoon	Trip to Stirling Castle

Coevolutionary Adjustment of Olfactory Communication between Mammalian –Including Human – Females and their Neonates

Benoist Schaal^{1,2}

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² *Centre for Smell, Taste and Food Science, University of Burgundy, Dijon, France*

Under extremely tough selective pressure for survival, neonatal mammals must rapidly gain the protective, hydrational, and nutritional benefices from milk. It is thus critical for females to boost their offspring efforts by presenting interface structures for milk transfer (nipples) that match the psychobiology of the newborn receiver. Females evolved nipples probably in exploiting the neonates' most advanced motor and sensory abilities (somesthesia and olfaction). Thus synthesising milk and attracting progeny, on the mother's side, and nipple/milk-related sensory biases and suckling, on the neonate's side, indicate a profusion of coevolved anatomical, physiological and behavioural traits. In the present talk, I will consider odour-based strategies females deploy to drive their offspring to the nipple in several species of mammals, including humans. Maternal chemostimuli are produced through multiple sources, ranging from individual-specific cues and signatures which reflect maternal conditions (genotype, diet, physiological stage, stress, etc.) to species-specific, unlearned signals (i.e., pheromones). As both types of informative stimuli are functionally equivalent in driving neonatal arousal, motivation and appetitive behaviour, they are difficult to disentangle. In rare cases, however, unlearned signals of mammary origin could be isolated from the wealth of arbitrary individual-specific cues conveyed in milk and extra-mammary sources (saliva, skin glands, tears, etc.). The former unconditional chemosignals were shown to work in tandem with the arbitrary odour cues, specifically in imposing expedite learning of the latter. The

complexity, intricateness and developmental sequentiality of the processes engaged by mother-to-neonate chemosignalling will be highlighted. When offspring dependence on milk declines, the functional value of these signals and cues changes, being abolished or reassigned. This developmental alteration of the behavioural significance of chemocommunicative mechanisms provides an opportunity to assess whether they were 'selected for' more or less exclusive service during a restricted period of early life, are vital for multiple proximate benefits to neonates (and mothers), and anticipate offspring transition to the next developmental stage. An understanding of the ontogenetic transformations of emission of these chemostimuli by females and of their perception by neonates can indeed widen the range of testable predictions on early communication, but also on molecular and brain processes underlying early perception and cognition.

Attractiveness II

Chair: Michal Kandrik

Pathfoot Lecture Theatre	
10.50	Ian Stephen The body and the beautiful: Health, attractiveness and body composition in men's and women's bodies
11.10	Anthony Lee Facial averageness and genetic quality: testing heritability, genetic correlation with attractiveness, and the paternal age effect
11.30	Jitka Lindová Blinded by attractiveness? Dance and gait provide numerous reliable cues to female personality, but raters fail to use them accurately
11.50	Barbara Borkowska Men's attractiveness and health – declared health versus real immune status (SFA, LMA)
12.10	Colin Hendrie Women's manipulation of ornament display intensity is situation dependent

The body and the beautiful: Health, attractiveness and body composition in men's and women's bodies

Ian D Stephen^{1,3}, Mary-Ellen Brierley¹, Kevin R. Brooks^{1,3}, Jonathan Mond¹ & Richard J Stevenson^{1,3}

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The dominant evolutionary theory of physical attraction posits that attractiveness reflects physiological health, and attraction is a mechanism for identifying a healthy mate. Previous studies have found that perceptions of the healthiest body mass index (weight scaled for height; BMI) for women are close to healthy BMI guidelines, while the most attractive BMI is significantly lower, possibly pointing to an influence of sociocultural factors in determining attractive BMI. However, less is known about ideal body size for men. Further, research has not addressed the role of body fat and muscle, which have distinct relationships with health and are conflated in BMI, in determining perceived health and attractiveness. Here, we hypothesised that, if attractiveness reflects physiological health, the most attractive and healthy appearing body composition should be in line with physiologically healthy body composition. However, if sociocultural factors influence attractiveness, we would expect to see the most attractive bodies perceived as lower fat (particularly in females), and higher muscle (particularly in males) than the healthiest looking body composition. Thirty female and 33 male observers were instructed to manipulate 15 female and 15 male body images in terms of their fat and muscle to optimise perceived health and, separately, attractiveness. Observers were unaware that they were manipulating the muscle and fat content of bodies. The most attractive apparent fat mass for female bodies was significantly lower than the healthiest appearing fat mass (and was lower than the physiologically healthy range), with no significant difference for muscle mass. The optimal fat and muscle mass for men's bodies

was in line with the healthy range. Male observers preferred a significantly lower overall male body mass than did female observers. Results suggest that, while the body fat and muscle associated with healthy and attractive appearance, sociocultural factors may also influence perceptions of attractive body composition, particularly in women.

Facial averageness and genetic quality: testing heritability, genetic correlation with attractiveness, and the paternal age effect.

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⁵ *School of Psychology, University of Queensland, Australia*

Popular theory suggests that facial averageness is preferred in a partner for genetic benefits to offspring but whether facial averageness is associated with genetic quality is yet to be established. Here, we computed an objective measure of facial averageness for a large sample (N=1,823) of identical and nonidentical twins and their siblings to test two predictions. First, we use biometrical modelling to estimate heritability of facial averageness, which is necessary if it reflects genetic quality. We also test for a genetic association between facial averageness and attractiveness. Second, we assess whether paternal age at conception (a proxy of mutation load) is associated with facial averageness and attractiveness. Our findings are mixed with respect to our hypotheses. While we found that facial averageness does have a genetic component, and a significant phenotypic correlation exists between facial averageness and attractiveness, we did not find a genetic correlation between facial averageness and attractiveness (thus we cannot say that the genes that affect facial averageness also affect facial attractiveness) and paternal age at conception was not negatively associated with facial averageness. These findings support some of the previously untested assumptions of the ‘genetic benefits’ account of facial averageness, but cast doubt on others.

Blinded by attractiveness? Dance and gait provide numerous reliable cues to female personality, but raters fail to use them accurately

Jitka Lindová^{1,2}, Magdalena Rynešová¹, Jan Vávra¹, Lucie Krejčová^{1,2}, Vít Třebický^{2,3}, & Kateřina Klapilová^{1,2}

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³ *Faculty of Science, Charles University, Prague, Czech Republic*

Evolutionary theory predicts an adaptive advantage for humans who are able to infer social information about others, including personality attributions, rapidly from available cues. The social psychology term ‘halo effect’ describes this tendency. Although personality is considered to demonstrate itself mainly through expressions and movements, the relative use and reliability of nonverbal cues to personality attributions is not known. Using the motion capture technology, we recorded 21 females (mean age 23) while dancing individually (fast song and slow song), with partner, and while walking. Motion of individual females was animated on a schematic female figure. Participants also filled out the Big Five Personality Questionnaire (NEO-PI-R). We extracted 19 motion parameters from digital record of 3D movement and compared them with 5 personality factors. Backward linear regression led to 22, 9, 15, and 27 significant motion feature-personality factor relations, for slow dance, fast dance, gait and dance with partner, respectively. For example, Extraversion was related to increased horizontal movement of hips while walking, increased vertical movement of shoulders during fast dance, and using wide space during both individual dances. Followingly, raters (67 males, 117 females, average age 33 years) assessed the same personality factors on the basis of dance/gait presentations. Interestingly, neither male nor female raters were able to assign correct scores in personality dimensions to females based on their 3D-motion record. We

suggest that the strong 'halo' effect of attractiveness might have a great impact on (and blur) ratings of other characteristics.

Men's attractiveness and health – declared health versus real immune status (SFA, LMA)

Barbara Borkowska¹, Judyta Nowak¹, Zuzanna Drulis-Kawa², Daria Augustyniak² & Bogusław Pawłowski¹

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Male attractiveness is perceived as a marker of health status. Yet, in studies on the relationships between attractiveness and health the last one is usually assessed by the declared frequency of illnesses. Here we compared men's attractiveness with both declared frequency of respiratory illnesses and chosen physiological markers of innate immune system efficacy. Participants were 92 healthy men aged 19.0-36.6 years, with all hormonal and immune parameters within norm. We have measured: 1) morphological traits that are supposed to be related with a man's attractiveness: body height, shoulder-to-hip ratio, and muscle mass; 2) the level of hormones affecting these traits: free testosterone, total testosterone, and oestradiol. Furthermore, we have also collected data on the number of sexual partners. Immunological blood parameters were: SC5b-9 complement complex, antibacterial lysozyme activity and the effectiveness of phagocytosis by neutrophils which includes the uptake of pathogen and killing pathogens by generation of reactive oxygen species. We found no correlation of immunological blood parameters with morphological traits nor with hormones. There was a correlation with the number of sexual partners but only for lysozyme antibacterial activity ($R=-0.31$) – men having more sexual partners had lower lysozyme activity against bacteria which means lower immunological potential. There was no relationship of illnesses frequency with any morphological trait nor the number of sexual partners. However, men having less often respiratory illnesses were characterized by more masculine hormone profile but only when it was assessed using ratio between free testosterone and oestradiol ($P=0.02$). Our results showed that body height,

shoulder-to-hip ratio and muscle mass i.e. the traits perceived as attractive in men, are not related to declared immunity status neither blood parameters reflecting the effectiveness of the key innate mechanisms of body defense.

Women's manipulation of ornament display intensity is situation dependent

Colin Hendrie, Rhiannon Chapman, Charlotte Gill, Jordan O'Farrell & Claire Stott

School of Psychology, University of Leeds, UK

Ornament displays signal genetic quality, freedom from developmental adversity and current disease state. Such signals are seen in humans and the intensity of these is commonly manipulated, particularly by females, in order to increase their effectiveness in attracting potential mates. The present studies investigated the hypothesis that ornament displays would be at their most intense in situations where females were most actively seeking to attract male attention. To this end 140 single 18-25 year old females were photographed during the day and on an evening when they were prepared for a social night out that was anticipated to include a visit to a nightclub, party or similar. Women were also asked to report the cosmetics they were wearing and heel heights of their shoes were recorded. Data were clear and showed that ornament displays did indeed increase in intensity when comparing day to evening wear. Heel heights increased on average by approx 7.5cm, flesh exposure by 25-30% and colour intensity of make-up by 3 to 4 points on the 8 point Kornerup and Wanscher scale depending on product. Number of different make-up products and frequency of use was also increased in the evening, as was the use of lipstick. Factor analysis indicated that these products were mainly being used to draw attention to the eyes, enhance the appearance of the skin and to increase its contrast with the eyes and lips. These data together clearly demonstrate that female manipulation of ornament display intensity is situation dependent although more studies are required to further characterise this observation.

Social Cognition I

Chair: Agnieszka Sorokowska

Wallace Room	
10.50	Anna Oleszkiewicz Voice-based assessments of trustworthiness, competence and warmth in blind and sighted adults (SFA, LMA)
11.10	Niklas Dworazik It's not too much about the „Who“ but rather about the „How“. Early parental investment in two cultural contexts (SFA, LMA)
11.30	Caroline Allen Perfumers' perceptions of body odours: Towards a new scale for odour description (SFA, LMA)
11.50	Hermann Prossinger Comparing assessments of facial features by participants using various continuous slider scores
12.10	Agnieszka Sorokowska Olfactory performance in 84 early-blind and late-blind individuals

**Voice-based assessments of trustworthiness,
competence and warmth in blind and sighted adults**
(SFA, LMA)

Anna Oleszkiewicz, Katarzyna Pisanski, Kinga Lachowicz-
Tabaczek & Agnieszka Sorokowska
Institute of Psychology, University of Wrocław, Poland

The hypothesis that blind persons possess ‘supra-normal’ auditory processing capabilities as a result of compensatory neural plasticity related to the absence of vision is highly debated. Previous studies suggest that blind adults outperform their sighted counterparts in low-level auditory tasks testing spatial localization and pitch discrimination, as well as verbal speech processing, however blind persons generally show no advantage in voice recognition or discrimination tasks. The present study is the first to examine whether blind and sighted persons differ in social perception from nonverbal voice cues. Fifty sighted, congenitally blind and early-blind adults assessed the trustworthiness, competence and warmth of men and women speaking a series of vowels sounds, whose voice pitch had been experimentally raised or lowered. Voice pitch is the most salient and likely the most informative nonverbal dimension of the human voice, reliably indicating traits such as body size, testosterone level, dominance, and socioeconomic status. Corroborating previous work, listeners judged voices with lowered pitch as more competent and trustworthy than voices with raised pitch, whereas voice pitch did not significantly affect warmth judgments. Crucially, blind and sighted persons did not differ in their assessments of trustworthiness, competence or warmth, or in their confidence of these assessments. Our results suggest that robust perceptual associations systematically linking pitch to specific social dimensions can develop without visual input, and that nonverbal vocal communication, widespread in other mammals, represents a deeply engrained form of social cognition in humans.

It's not too much about the „Who“ but rather about the „How“. Early parental investment in two cultural contexts (SFA, LMA)

Niklas Dworazik¹, Yan Serdste², Ruthi Senesh², Hiltrud Otto³ & Heidi Keller^{1,2}

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² *NEVET, School of Social Work and Social Welfare, Hebrew University, Israel*

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Ethologists often quantify human Parental investment (PI) by measuring breast-feeding rates, the distribution of financial resources or the presence and spatial proximity of caretakers. These parameters constitute substantial aspects of PI. However, from a developmental and lifespan centered perspective one crucial component of early PI seems to be neglected in the evolutionary literature until now: the activities and behavioral dynamics that occur when someone spends time with a baby. Our study highlights the fact that caretakers already immerse three-month old infants into respective cultural contexts during daily interactions. These interactions can be described as cultural-adaptive PI strategies. We assessed daily routines and caretaker-infant-dyads of highly educated urban middle-class families with three-month old infants in Germany (n=27) and Israel (n=22) over a period of one week. By combining time sampling tools with video recorded behavioral data we show that despite a considerable degree of sociodemographical similarity between sample populations, differences in daily activities and caretaker infant interaction show up. These differences may be regarded as culture-specific PI strategies by which caretakers put into practice their own – implicit and explicit – cultural knowledge, i.e. culturally shared belief systems that guide their behaviors and practices. This way, caretakers ensure that babies acquire the appropriate cultural meaning systems from an very early age on.

Perfumers' perceptions of body odours: Towards a new scale for odour description (SFA, LMA)

Caroline Allen¹, Kate Williams² & S. Craig Roberts¹

¹ *Division of Psychology, University of Stirling, UK*

² *Seven Scent Ltd, Manchester, UK*

Human axillary odours are multi-faceted, with a wide range of information being detectable, from stable traits such as MHC and symmetry, through to those which fluctuate such as emotions, health, and fertility status. This is echoed in studies utilising GC/MS analysis showing that axillary odours are comprised of a large number of varied volatile compounds. Despite this, only a small number of verbal descriptors are used when conducting research investigating the perceptual qualities of odour. In order to address this mismatch between perceptual qualities and the current measures utilised a scale was developed to more accurately describe these perceptual qualities. This work was conducted alongside perfumers in order to benefit from their expertise in olfactory perception and semantic labelling of odours. Perfumers initially developed a list of 15 verbal descriptors after smelling axillary samples from 4 individuals (2 men & 2 women). They then smelled 62 samples (31 women & 31 men) and rated them each using the descriptors provided. Perfumers could not explicitly label the odour samples as male or female at a significantly above chance level, but the ratings given using some of the verbal descriptors did distinguish between male and female samples at a significant level. The continued development of this scale could enable improved understanding of other perceptual qualities of human odour, making it possible to link specific perceptual qualities to specific cues (e.g. symmetry, masculinity, sex) or to manipulate odours based on perceptual qualities in experimental settings, and has direct practical implications for fragrance designers.

Comparing assessments of facial features by participants using various continuous slider scores

Hermann Prossinger, Alexandra Muehlhauser & Elisabeth Oberzaucher

Dept of Anthropology, University of Vienna, Austria

In human ethology surveys, it is common to present survey participants with one or several features and request their level of agreement (or disagreement) on a scale. Quite often, a visual analogue scale is used: the possible response is some real number between two extremes. However, the fineness of the scale and the direction of the extremes are further degrees of freedom when designing the scale. Here, we investigate whether the same (or: statistically indistinguishable) response is elicited from 21 males and 57 females using 8 differently constructed continuous scales for 3 features ('Attractiveness', 'Dominance', 'Friendliness') of 15 faces. We model the responses by maximum-likelihood estimated beta distributions and use singular value decomposition to find how reproducible the responses are as well as which scales are more suitable for participants. We find that using box-and-whisker plots of the raw data does not extract salient features; furthermore, the interquartile range derived from the beta distributions supplies a meaningful definition of outliers: these are, however, not predominantly attributable to solely one scale. We use these analysis outcomes to list requirements that visual analogue scales must fulfil when used for surveys.

Olfactory performance in 84 early-blind and late-blind individuals

Agnieszka Sorokowska^{1,2}

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² *Institute of Psychology, University of Wroclaw, Poland*

The unaffected modalities of blind individuals are widely believed to be hyper-developed as a result of sensory compensation processes, and many researchers have tested the hypothesis that blind people have increased olfactory sensitivity. However, previous examinations of olfactory sensitivity in blind people have produced contradictory findings. Thus, whether visual impairment is associated with increased olfactory abilities is unclear. In the present investigation, I aimed to resolve the existing questions via a relatively large-scale study comprising early-blind (N=43), and late-blind (N=41) and sighted (N=84) individuals matched in terms of gender and age. To compare the results with those of previous studies, I combined the data from a free odor identification test, extensive psychophysical testing (Sniffin' Sticks Test), and self-assessed olfactory performance. The analyses revealed no significant effects of sight on olfactory threshold, odor discrimination, cued identification, or free identification scores; neither was the performance of the early-blind and late-blind participants significantly different. Additionally, the self-assessed olfactory abilities of blind people were no different than those of sighted people. These results suggest that sensory compensation in the visually impaired is not pronounced in the olfactory abilities measured by standardized smell tests. Nevertheless, given the new, interesting hypotheses derived from the present findings, further studies are necessary to fully explore the olfactory abilities of the visually impaired.

Friday 5th August

09.20 – 10.20	
Robin Dunbar Using Big Data to study human sociality	Pathfoot Lecture Theatre <i>Chair: Craig Roberts</i>
10.50 – 12.30	
Roots of Human Nature	Pathfoot Lecture Theatre
Social Cognition II	Wallace Room
14.00 – 15.20	
Applications and Healthy Behaviour	Pathfoot Lecture Theatre
Competition III	Wallace Room
15.50 – 16.30	
General Assembly	Pathfoot Lecture Theatre

PLENARY

Using Big Data to Study Human Sociality

Robin Dunbar

Dept of Experimental Psychology, University of Oxford, UK

In the last decade, the web has begun to offer online data sources of enormous size and potential for understanding human behaviour. These datasets can yield data on many millions of individuals and involve billions of interactions between them. While these data sources are not without their drawbacks (they resemble field studies more than laboratory experiments, and the information one has on individuals can sometimes be sparse), nonetheless the scale of the data offers rare opportunities to explore aspects of human behaviour that are often impossible to study on the laboratory scale. I shall illustrate this with examples drawn from my own research using large cellphone datasets, and data derived from Facebook, Twitter and large scale national surveys.

Roots of Human Nature

Chair: Wulf Schiefenhövel

Pathfoot Lecture Theatre	
10.50	Marian Vanhaeren Dead things, living people: On the interface between ethnology and archaeology
11.10	Trevor Case The animal origins of disgust
11.30	Rick Goldberg The Darwinian Expression of Human Hair
11.50	Felix Schoeller Aesthetic chills and humans' vital need for cognition (SFA, LMA)
12.10	Wulf Schiefenhövel From Benjamin Whorf to Margaret Mead et al. Why are ideas about the power of culture so attractive?

Dead things, living people: On the interface between ethnology and archaeology

Marian Vanhaeren¹ & Wulf Schiefenhövel^{1,2}

¹ *CNRS UMR 5199 Pacea, University of Bordeaux, France*

² *Human Ethology Group, Max Planck Institute for Ornithology, Starnberg-Seewiesen, Germany*

Archaeologists apply increasingly sophisticated methods to unravel the reality of past life from the objects they retrieve from the ground. Modern 3-D representation, microscopic and chemical analysis can tell ever more precise stories about the people who used and left these objects and about the contexts in which this may have happened. Yet, it will always be difficult to reconstruct socio-political structures, customs, cognitive concepts and every-day behaviour from objects. Ethnology in its classical approach to understand life in the societies of the world on the other hand can provide the rich texture of cultural reality. Ethnoarchaeology attempts to combine the two approaches in order to gain better insights into the complexity of motivations and actions performed by people.

In the United States archaeology originates in ethnology/social anthropology, ethnoarchaeology, therefore, is a somewhat logical bidisciplinary blend. In the French tradition, archaeology and ethnology have very different roots: e.g. the study of classic antiquity and the earth sciences. The gap to be bridged is thus wider and it is no surprise that French scholars build up high hurdles for ethnoarchaeological research, which should be restricted to cases where one can prove the “continuity of history, geography and socio-economy” (Aurenche 2013). This would confine ethnoarchaeological studies to diachronic analyses of the very few traditional or near-traditional societies left on our planet and leaves out the chances to understand the *conditio humana* on the basis of universals in perception, emotion, thought and behaviour which unifies our species, represents the hallmark of human ethnology and is a proper and promising ground for the study of ourselves. We will

demonstrate the value of ethnoarchaeological work by merging examples from both disciplines.

Aurenche O. 2013. Qu'est ce que l'ethnoarchéologie ?, ArchéOrient-Le Blog (Hypotheses.org), 6 septembre 2013. [Online] <http://archeorient.hypotheses.org/1459>

Aesthetic chills and humans' vital need for cognition (SFA, LMA)

Felix Schoeller

CRAL, École des Haute Études en Sciences Social, France

One theory of aesthetic emotions relates them to a change in a measure of similarity between incoming bottom-up sensory signals and available top-down mental models (e.g. Perlovsky, 2006). This theory has been repeatedly tested experimentally in studies that have led to various discoveries on the relation between musical emotions and cognitive dissonance, curiosity, pleasure and aesthetic chills. In a battery of experiments, we tested this theory in two different socio-cultural environments by investigating aesthetic chills and their relation to humans' vital need for cognition. Chills are a homeostatic process best described as the sensation of coldness due to small tremors of skeletal muscles. In humans, this process is sometimes associated to a highly hedonic experience, usually elicited by tonal music but also by other forms of art or by the practice of science and religion. When unrelated to changes in temperature levels, there seems to be two apparently contradictory cases of chills—chills related to the subject's greatest hopes (aesthetic chills, AC) and chills related to the subject greatest fear (horror chills, HC). Our mathematical framework accounts for both, where AC/HC correspond to an event where the rate of change of the similarity function between incoming sensory signal and available mental model tends toward a null value. That is, when the subject can predict external events in real time and with great accuracy (when sensory signals match mental models at their highest level of organization) or when the signals are very noisy and any model could correspond them (in the case of a child witnessing shades in the dark for example). In this presentation, we will briefly summarize available data concerning chills and present the results from our own experimentations. We will conclude by discussing the narratology of chill-eliciting scenes and its evolution over time and throughout cultures.

The animal origins of disgust

Trevor I. Case¹, Richard J. Stevenson¹, Richard W. Byrne² & Catherine Hobaiter²

¹ *Dept of Psychology, Macquarie University, Australia*

² *School of Psychology and Neuroscience, University of St. Andrews, UK*

There is little dispute that the emotion of disgust represents an evolved disease avoidance mechanism. However, there are two characteristics of this emotion that do not sit comfortably with an evolved account. First, unlike other basic emotions, disgust emerges later in development. Second, while it is clear that distaste is present in non-humans, there is general agreement among disgust researchers that revulsion at the prospect of oral incorporation of an offensive substance—disgust—is unique to humans. Whereas the first concern most likely reflects a requirement for cognitive sophistication, the second, and related, concern speaks directly to Darwin's assumption of continuity between the emotional lives of humans and animals. The presentation will focus on evidence of continuity for disgust. Specifically, we examine evidence for the existence of aversions, contamination behaviours, and disgust in the great apes obtained from a survey we conducted of great ape researchers and fieldworkers. We conclude with a discussion of how observations of primate behaviour can deliver insights into the origins of human disgust.

The Darwinian expression of human hair

Rick Goldberg

*Independent Scholar and Principal, Binah Yitzrit Foundation,
Austin, Texas, USA*

In *The Descent of Man*, Darwin observed that hair growth patterns of primates, including humans, evolved as secondary sexual characteristics. To reinforce Darwin's observation, this paper presents historical data confirming that the biology of human hair is about more than bristly filaments projecting from the epidermis. From culture to culture, the growth and styling of hair exhibits wide variation, evidence of its having been sexually selected as a cue for mate quality. More so than bodily hair, scalp and facial hair is a major communicator of reproductive value. Head hair is an adornment of prominence since its lofty location appeals to our sense of beauty, smell, touch and movement. Shiny, full-bodied hair indicates healthfulness and attention to personal hygiene, while unkempt or erratically patterned hair conveys inferiority. In addition, poor quality hair can indicate the presence of skin disease or infectious parasites. Hairstyling itself demonstrates conformity to communal rules that prescribe social status displays. Hair "under control" is quickly noticed and highly-valued, and disordered or wild hair degrades the wearer as untrustworthy or even dangerous. Inability or unwillingness to master the presentation of one's hair reveals a lack of self-control. Embellished by many illustrations, this presentation surveys the hair growth morphologies and design techniques of diverse peoples. It will be suggested that hair growth and cultural fashioning has two main objectives: reinforcement of gender dimorphism and compliance with the localized, artful traditions of hair management.

From Benjamin Whorf to Margaret Mead et al. Why are ideas about the power of culture so attractive?

Wulf Schiefenhövel

Max-Planck-Institut für Ornithologie, Seewiesen, Germany

From the earliest time of written history on humans have been fascinated by reports that somewhere at the periphery of the known world dwell people who are radically different than the members of one's own ethnic group. The Amazonian fighters, who even gave superhuman Achilles a tough job, are a good example for this belief that life in many ways of its vital aspects could be changed one day. These Utopian concepts are the very core of some religions: Christians believe that the world as we know it will come to a disastrous end and from then on there will be paradise again... for the pious ones. We humans aspire more than just being another animal – and this has led to magnificent examples of the power of culture and the human mind. On the other hand, we are thus susceptible to ideas telling us that our phylogenetic endowment is insignificant and can and must be overcome by alternative regimes governed by political correctness and similar rules. It is interesting that many would rather prefer hanging on the marionette strings of ephemeral social theories than on those of evolved and thereby tested features of perception, emotion, thoughts and behaviour. I will present examples for this referring to some disproven, but still widely accepted hypotheses concerning the human condition.

Social Cognition II

Chair: Elisabeth Oberzaucher

Wallace Room	
10.50	David Moulds Exploring the dynamic relationship between emotion and referential communication (SFA)
11.10	Romana Žihlavníková The reputation beneath the morality (SFA, LMA)
11.30	Edit Szabó Who knows who is being manipulated? - Mindreading ability and the Dark Triad (SFA, LMA)
11.50	Gregory Carter The Dark Triad in women: Bad girls, femme fatales, and anti-heroines
12.10	Elisabeth Oberzaucher The Ontogeny of the Sexual Dimorphism in Error Management

Exploring the dynamic relationship between emotion and referential communication (SFA)

David J. Moulds¹, Jona Meyer², Hannah Balsillie¹, Michelle Donaldson¹, Janet McLean¹ & Vera Kempe¹

¹ *Division of Psychology, Abertay University, Dundee, UK*

² *Dept of Psychology, Ludwig-Maximilians-Universität München, Munich, Germany*

Research on the link between emotion and communication has demonstrated that positive mood is associated with increased ambiguity of referring expressions - a manifestation of the less deliberate, more heuristic processing style typically found for positive emotions. However, communicative exchanges may extend over considerable time periods, during which mood itself may, in turn, be altered by the process of communication. To explore this reciprocal link between communication and emotion we induced particular moods in dyads of participants prior to a referential communication task where a Director described objects to a Matcher, who had to identify them among a set of distractors. Self-ratings of mood were obtained before and after the task. In study 1, dyads were induced into “happy”, “neutral”, or “sad” moods. Happy participants produced more ambiguous initial descriptions than neutral participants, but, surprisingly, sad participants were almost as ambiguous as happy participants. Crucially, sad participants exhibited mood improvement, along with more frequent turn-taking, suggesting that maintaining initial ambiguity may have served to elicit communicative interaction so dyads could “talk themselves out of a bad mood”. Study 2 examined whether mood improvement in sad participants was indeed linked to communicative interaction by manipulating Matcher feedback. Only when Matchers were allowed to provide feedback was mood improvement observed. In study 3, dyads were induced into mismatched happy/sad moods prior to interaction, with no resulting mood improvement. In line with the Affect-as-Information hypothesis, which conceives of affective states as informative signals about environmental danger or security that

trigger appropriate cognitive strategies (Schwarz & Clore, 1988), our results suggest that shared negative affect may promote cooperation to alleviate potential threats by rewarding communicative interaction with mood improvement. Implications for the role of emotion in the evolution of communicative cooperation will be discussed.

The reputation beneath the morality (SFA, LMA)

Romana Žihlavníková^{1,2}, Andrej Mentel³ & Ivan H. Tuf²

¹ *Dept of Psychology, Palacky University, Olomouc, Czech Republic*

² *Dept of Ecology and Environmental Sciences, Palacky University, Olomouc, Czech Republic*

³ *Institute of Social Anthropology, Comenius University, Bratislava, Slovakia*

Every day, we experience making a choice but is this experience equivalent to what happens in our minds? Probably not. It is likely that our decisions are made before they reach consciousness when reason comes into play. Decisions are made on the basis of feelings. Moreover, we are strongly influenced in decision-making by our environment. Slight changes in situation, the presence of subtle cues or elicited non-conscious feelings can generate different, even opposite behaviour. Moral behaviour is no exception; it can be influenced by environment, too. Our morality does not conform to a set list of rules; rather, it is an active process, just like reason. It justifies our behaviour as socially acceptable. Morality enables us to live in groups and forms the foundation for our mutual cooperation. Without being seen as trustworthy, we are not able to cooperate or live with each other. It is essential to care about our reputation in order to be seen as trustworthy; consequently, moral behaviour is influenced when we manage our reputations. Stimuli can vary from the presence of another person to the simplest, subtlest cue of being watched. We tested five visual stimuli under experimental conditions and discovered that some significantly reduce transgression. We also conclude that the responses of participants were dependent on the neurological salience of the stimulus: the more salient, the more compliant the participant. We consider these results especially interesting given that these results connect brain studies with behavioural correlates. Our results correspond with the belief that hard-wired reputation management acts as an *éminence grise*, exerting influence by watching.

Who knows who is being manipulated? - Mindreading ability and the Dark Triad (SFA, LMA)

Edit Szabó & Tamás Bereczkei

Institute of Psychology, University of Pécs, Hungary

Dark Triad personality traits (DT; Machiavellianism, narcissism, psychopathy) are generally characterized by being manipulative and callous. The assumption that for mastering manipulation one requires high-level mindreading skills, led several empirical studies to investigate this relationship. However, no positive link between theory of mind ability and the DT has been found so far. It is possible, that previous approaches did not assess the specific mental states that are normally used during manipulation. For this purpose, we applied a newly developed method that used different perspectives in analyzing mindreading. In addition to narrative stories that contain mentalization terms, we applied scripted stories that consisted only of dialogues, and so-called manipulative-tactical stories that implied explicit efforts in the service of exploiting others. Results indicated that Machiavellianism was associated with increased mentalization performance in the context of manipulation. Individuals high in Machiavellianism were good mindreaders in this context, in the stories of manipulation they recognized malevolence in the characters' behavior. In contrast, there was no significant relationship between scores on psychopathy and narcissism scales and performance on the mindreading tasks. However, both narcissistic and Machiavellian individuals made cynical assumptions about the characters in the stories. These findings have implications for the unique nature of Machiavellianism inside the Dark Triad personality.

The Dark Triad in women: Bad girls, femme fatales, and anti-heroines

Gregory L Carter , Hannah Keeble & Naomi Wooding
Dept of Psychology, York St John University, UK

Work on the Dark Triad of personality (DT: narcissism, Machiavellianism, and psychopathy) has often focused on the advantages this trait constellation imparts for men, particularly for short-term mating. Although findings are often reported for men and women separately, reflecting well-established sex differences in DT scores, this is not universally true. Moreover, consideration of the theoretical implications of comparable relationships between DT and outcome variables for men and women high in DT is typically limited. Indeed, little work has expressly considered these traits' functionality for female mating strategies, or for women more broadly. This presentation will succinctly review and connect myriad findings from more than a decade worth of literature on DT; it will reconceptualise evidence in respect of societal and evolutionary advantages that DT may impart to women. These include positive impression-formation, interpersonal exploitation, sexual competition and relationship disentanglement. A broad range of empirical evidence will be distilled in a comprehensible and accessible way; Jonason and colleagues' (2012) anti-hero archetypes will be expanded to include recognisable female exemplars including Salome, Morgan le Fay, Alex Vause and Claire Underwood, and real-life women such as Anne Boleyn, or Empress Dowager Cixi. The hope is that this presentation will encourage researchers active in the field to consider their future findings from a less androcentric perspective than has often prevailed to date, and lend weight from existing work to formative attempts to redress this imbalance.

The ontogeny of the sexual dimorphism in error management

Elisabeth Oberzaucher^{1,2}, Stephanie Schmid² & Susanne Schmehl^{1,2}

¹ *Dept of Anthropology, University of Vienna, Austria*

² *Urban Human, Vienna, Austria*

Error management is a fast and frugal algorithm that allows to make decisions quickly and adaptively. As all decision processes are prone to err to a certain extend, the adaptive solution tries to avoid costly mistakes by allowing for some cheaper mistakes. In the case of mate choice, erring in the assessment of the interest of a potential mate bears different costs for the two sexes due to asymmetric investment: Women who overestimate the interest of a man risk to have to go without parental support. Thus the adaptive solution for women is to shift their assessment of male interest towards a general underestimation (type II error). Men risk losing reproductive opportunities by underestimating female interest and have therefore evolved an error management favouring overestimation of female interest (type I error). In previous studies we have shown that this sexual dimorphism can be observed in contexts unrelated to reproduction. In the present study we address the question whether this sex difference is activated during puberty. We carried out an experiment with a patience game, requiring to remove a star from a circle. Our participants were 60 ten-year olds and 60 16-year olds. We showed the task to our subjects and asked them whether they thought they could solve the puzzle within two minutes. After having manipulated the puzzle for two minutes, subjects gave their assessment whether they thought they could solve it given more time. / We compare the degree of sexual dimorphism in the pre- and post-puberty groups and discuss proximate mechanisms and developmental aspects of error management. By generating insights into early life development of sex differences in cognitive strategies, we can contribute to the understanding of behavioural differences.

Applications and Healthy Behaviour

Chair: John Richer

Pathfoot Lecture Theatre	
14.00	Susanne Schmehl Can ethology inform FDM diagnosis and therapy? (SFA)
14.20	Thomas Pollet 'Automatic for the people' – The strengths and weaknesses of Machine Learning for analyzing various types of data in the field of human ethology
14.40	Kraig Shattuck Using Life-History Theory to predict aggression and mate guarding in adolescent males (SFA)
15.00	John Richer Ethology steps outside psychiatry

Can ethology inform FDM diagnosis and therapy? (SFA)

Susanne Schmehl^{1,2}, Anna Ensberger², Kathrin Masuch²,
Hanna Müller², Christoph Weinlinger², Georg Harrer³ &
Elisabeth Oberzaucher^{1,2}

¹ *Faculty of Life Sciences, University of Vienna, Austria*

² *Urban Human, Vienna, Austria*

³ *FDM Association*

Patients suffering from pain rely not only on verbal communication to describe their symptoms to therapists, but use specific gestures to indicate where and how they hurt. There appears to be a link between certain kinds of gestures and specific types of pain. We hypothesize that the evolutionary roots of these pain gestures are to be found in self-therapy and that they have been adopted as communicative tokens as a byproduct. The Fascial Distortion Model (FDM) by osteopath Stephen Typaldos bases diagnosis on the visual analysis of these pain gestures. Manual therapy consists of emphasizing the gestures that were shown by the patient to a certain extent. Five trained ethologists and four trained FDM therapists annotated pain gestures of 34 patients. The ethologists used a behavior catalogue developed on an earlier dataset of pain gestures. The therapists used the FDM nomenclature, classifying the gestures according to six concepts of distortions of the fasciae. Both the ethological and the FDM annotations showed satisfactory reliability regarding intra- and inter-observer agreement. In this study, we analyzed the overlap and differences between ethologists and FDM practitioners. The comparison of the two approaches showed agreement, but also certain disagreement between the two groups of annotators. The concordance between gestures and diagnoses indicates the relevance of the gestures for diagnosis. The differences detected in this study are linked to complex FDM categories that might have to be split into separate ones. This interdisciplinary approach is the first attempt to use ethological methods to improve a diagnostic system. We identified the need to introduce additional classes of

pain gestures, thus contributing to the development of therapeutic treatment.

'Automatic for the people' – The strengths and weaknesses of Machine Learning for analyzing various types of data in the field of human ethology

Thomas V. Pollet

*Dept of Experimental and Applied Psychology, VU University
Amsterdam, The Netherlands*

Machine learning methods are rapidly gaining popularity in computing science, epidemiology, and genetics, among other fields. Machine learning presents a largely 'bottom up' methodological approach, whereby via a suite of algorithms we aim to both uncover statistical patterns in data as well as validate these patterns. Some of these machine learning methods have been particularly attractive for finding important but "hidden" variables. For example, in epidemiology, assume that one predictor variable has no direct influence on risk of death, but rather operates on subgroups: lowering the risk in one group (e.g., men), yet increasing it in another (e.g., women). Moreover, assume that this effect is truly non-linear. Discovering such a predictor variable is likely cumbersome with "traditional statistical" methods. Potentially, some machine learning methods would allow us to uncover such predictors. Other key advantages include that these methods require relatively few assumptions and that they can be applied to a wide range of problems faced when dealing with (complex) data. With some notable exceptions, these methods have not been introduced in the field of evolution of human behaviour. I therefore review the strengths and weaknesses of machine learning approaches for the various types of data often encountered in the field of human ethology. Specifically, I will review "random forest methods" and their use for classification and regression problems. Using illustrations based on a broad spectrum of research topics as well as (secondary) data sources, I review what machine learning can and cannot offer our field.

Using life-history theory to predict aggression and mate guarding in adolescent males (SFA)

Kraig S. Shattuck

Dept of Psychology, Wayne State University, USA

At the individual level, life-history theory posits that early life social and environmental factors (e.g. change in or absence of a father figure, socioeconomic status, stress, and abuse), have an effect on later life developmental outcomes (e.g. age at puberty, age at first sexual intercourse, age at first offspring, number of offspring, joining gangs, aggression, and mate guarding). These early life factors give an indication of what type of future environment the individual will be living in. This indication results in outcomes that are the most suited to that environment. While a large quantity of human life-history research has looked at females, less research has been done looking at males, specifically adolescent males. Two life-history developmental outcomes, aggression, and mate guarding, will be explored in adolescent males. Aggression typically entails risks and rewards. Risks can include injury, loss of status, and death. Rewards can include gaining status, resources, and mating opportunities. Using life-history theory, it is predicted that those coming from a background with a higher mortality rate would gain a greater benefit and lower cost from engaging in aggression, resulting in increased aggression. Conversely, those coming from a background with a lower mortality would have greater costs associated with aggression, resulting in less aggression. Like aggression, mate guarding also entails risks and rewards. Thus, it would be predicted that early life factors would influence mate guarding, such that harsher early environments should lead to more mate guarding in adolescence. Research into these topics in adolescent males would broaden the breadth of life-history findings, expanding and solidifying the field of life-history theory.

Ethology steps outside psychiatry.

John Richer

Paediatric Psychology, Oxford University Hospitals, UK

Ambroise Paré's maxim 'Guérir quelquefois, soulanger souvent, consoler toujours' ("cure sometimes, relieve often, console always") is as good an illustration as any to medical ethics and practice. The clinician is an active member of his society and does the best he can for his patients, though often in a state of considerable ignorance. The last many decades have seen an explosion in understanding of human physiology, how it goes "wrong" and how to put it "right". This has enormously increased the clinician's ability to prevent, and to cure or at least to ameliorate suffering. Science has underpinned practice and in the process changed many of the diagnostic categories which clinicians use. Mental illness has seen some advances but the science underlying it remains relatively undeveloped. Why? One problem is the diagnostic categories themselves. They have been widely criticised as dividing up the area in ways which are neither clinically nor scientifically useful, such that research yields more noise than signal and good clinicians decide to make limited use of them with individual patients. Moreover the categories are excessively influenced by the societal values and views of the world. Since the 1960s a few clinicians have applied an ethological or, more narrowly, an evolutionary perspective to mental illness. This has yielded many useful and interesting insights. But it does not go far enough since it still tries to work with the existing diagnostic categories which are essentially the categories not of scientists but of clinicians with all the value laden, practice oriented arbitrariness which goes along with that. The thoroughgoing ethological approach steps outside questions of disorder or illness and simply looks at the range of behaviour of humans, as it would with any other species. Whilst it is quite likely that many ethological categories will resemble existing ones, they will be derived differently, from a proper observation of the range of human behaviour. Some examples of this approach are given.

Competition III

Chair: Michael Stirrat

Wallace Room	
14.00	Michael Stirrat Perceived fighting ability in female UFC fighters
14.20	Vít Třebický Reckless thugs and mindful wimps: Negative correlation between perception of fighting success and self-rated formidability (SFA)
14.40	Jitka Fialová What makes a fighter successful? Relationship between physical and psychological traits and fighting success in MMA fighters (SFA)
15.00	Jordan Raine Upper-body strength is encoded and perceived in human agonistic nonverbal vocalisations (SFA, LMA)

Perceived fighting ability in female UFC fighters

Michael Stirrat, Neil Abley & James Egdell

Dept of Psychology, York St John University York, UK

There is evidence that non-experts can assess male fighters' formidability from facial images. There has been little research looking at similar questions in women and in recent years there has been a growing number of UFC female fighters. We tested whether non-experts could judge female fighter formidably from facial images and successfully predict the outcome of fights from paired images. We also explored different ratings and measures of faces as predictive variables. Non-experts were able, at least in part, to correctly predict fight outcomes. Other predictors will be discussed.

Reckless thugs and mindful wimps: Negative correlation between perception of fighting success and self-rated formidability (SFA)

Vít Třebický, Jitka Fialová & Jan Havlíček

Faculty of Science, Charles University, Prague, & National Institute of Mental Health, Klecany, Czech Republic

Recent evidence suggests that certain facial features are associated with personality or behavioural characteristics such as dominance, aggression and formidability. Moreover, people are sensitive to such facial cues in others and they are relatively successful in assessing these characteristics. However, it was suggested that inter-individual differences in characteristics of raters play an important role in assessments of others, e.g. taller people perceive themselves as more dominant and rate others as less dominant compared to shorter individuals. Here we tested how self-rated formidability affects perception of others' fighting ability based on facial images. In total, 75 male raters from the University of Stirling completed questionnaires regarding their behaviour in potential conflict (ranging from definitely avoid to definitely enter the confrontation), ways of solving the conflict (ranging from definitely verbally to definitely physically) and their success in previous actual conflicts. Subsequently they assessed fighting ability of 26 standardized portrait photographs of MMA fighters from the Czech Republic. We found significant negative correlations between rated fighting ability and willingness to enter conflict and success in previous conflicts (a non-significant negative correlation was found for willingness to solve conflicts physically). In line with error management theory, our results show that inter-rater variability affects perception of others' fighting ability. Less formidable individuals were more prone to overestimate others' fighting ability, suggesting higher levels of harm avoidance behaviour. This behaviour might represent an evolutionarily beneficial strategy to avoid potential harms or even death by entering unequal physical confrontations.

What makes a fighter successful? Relationship between physical and psychological traits and fighting success in MMA fighters (SFA)

Jitka Fialová, Vít Třebický & Jan Havlíček

Faculty of Science, Charles University, Prague, & National Institute of Mental Health, Klecany, Czech Republic

Previous research has shown that various physical (e.g., 2D:4D ratio), physiological (e.g., hormone levels), and psychological characteristics (e.g., affective states, coping strategies) are responsible for differences in sport performance. Here, we carried out a study testing the relationship between several physical traits including 2D:4D ratio, hormone levels (testosterone (T) and cortisol (C)), and psychological indicators such as motivation to win, affective states (PANAS questionnaire), and athletic coping skills (ACSI questionnaire) on fighting success (wins/fights ratio) together. We employed mixed martial arts fighters (MMA) to investigate these characteristics in physical confrontation resembling real-life physical encounters. Data were collected from 39 MMA fighters during four rounds of a Czech amateur MMA league. Our results show a significant negative correlation between fighting success and self-rated importance of fight and a close to significant negative relationship between fighting success and C levels before the fight. These findings suggest that more successful fighters are less concerned and less anxious about their performance in individual fights. This notion is further supported by their lower levels of C before fight which shows their lower stress levels. However, no relationship was found for fighters' success and their affective states or athletic coping skills.

Upper-body strength is encoded and perceived in human agonistic nonverbal vocalisations (SFA, LMA)

Jordan Raine¹, Katarzyna Pisanski¹, Rod Bond¹, David Feinberg² & David Reby¹

¹ *Mammal Vocal Communication and Cognition Research, University of Sussex, England*

² *Dept of Psychology, Neuroscience, and Behaviour, McMaster University, Canada*

While acoustic cues to body size are well researched in mammals, the vocal communication of strength, a useful attribute in aiding adaptive intrasexual competition decisions, remains poorly understood. To investigate whether the acoustic structure of human NVVs contains cues to strength, and whether these cues are functional and context-dependent, speakers were asked to mimic an interspecific aggression vocalisation and a fear vocalisation. We then studied the relationship between acoustic characteristics, a composite measure of upper-body strength, and strength ratings from a separate sample of listeners. Results indicate that listeners can track strength from nonverbal vocalisations, and that strength is rated more accurately from female than male voices. Furthermore, aggressive vocalisations were rated as stronger than fear vocalisations, and female listeners tracked the strength of female voices more accurately in aggressive vocalisations than fear vocalisations. These findings suggest that males may employ strength exaggeration strategies in agonistic contexts, whereas female vocalisations may provide more honest cues to strength. They also suggest that the acoustic structure of aggressive vocalisations may be functional in facilitating more accurate strength perception. Further analyses will delineate specific acoustic pathways involved in the vocal expression and perception of strength.

Social calendar

Tuesday evening

No special catering or events are organised for this evening, so you are free to explore and make your own arrangements for dinner.

We suggest some places to eat in nearby Bridge of Allan. A map and full list of options and phone numbers are included in your conference bag. Almost all are within about a 15min walk from the Pathfoot Building.

There are also one or two places on campus, or adjacent to it, should you not wish to leave the campus. The Meadowpark Hotel ("The Med") is the nearest pub/restaurant, a minute's walk to the right after you leave the main entrance to the University. On campus, meals can be bought in the Stirling Court Hotel and the MacRobert Centre (see Campus Map on page 7 of this book).

You are also welcome to explore Stirling, which is most easily accessed by bus from the main bus stop outside MacRobert, or taxi. However, you may wish to "save" this for Thursday.

We have made special arrangements for late opening of the bar at MacRobert – it will stay open until 1a.m. Please do use it!

Wednesday evening

There will be a Buffet Dinner and entertainment at Haldanes (#8 on the Campus Map), which is behind and outside MacRobert. The Mini Highland Games starts at 6.00pm and runs to around 8.30pm. Dinner will be served from 6.30.

Highland Games are a traditional annual event, with many different cities and towns across Scotland hosting their own Games. They are said to originate from a summons by King Malcolm III of Scotland, in the 11th Century, to contestants for a race, to find the fastest runner in the Kingdom to be his royal messenger. Since Victorian times, annual Games have included all manner of competitive events such as 'tossing the caber' and 'putting the steyn' (shot put with a stone), as well as bagpipe competitions and Scottish dancing. Here you get your chance to have a go at some of the events.

We have made special arrangements for late opening of the bar at MacRobert – it will stay open until 1a.m. Please do use it!

Thursday afternoon/evening

The traditional congress social afternoon provides an opportunity to see some local sights together. Although you are free to make your own arrangements we have organised a bus to transport people from the University to Stirling Castle. The bus will leave after lunch from the front of the Pathfoot Building.

No special catering or events are organised for this evening, so you are free to explore and make your own arrangements for dinner.

Since many of us will be in Stirling for the Castle visit during the afternoon, we suggest that you may wish to eat in Stirling. Again, a map and full list of options and phone numbers are included in your conference bag.

There is no late opening at the MacRobert bar this evening, but several places stay open late in Stirling.

Getting home: the last bus leaves from opposite the railway station at 11.17pm (bus number 62, arrives at University 11.28pm). Alternatively, taxis are available in the City Centre and at the railway station. See useful numbers at the front of this book.

Friday evening

The closing ceremony and conference banquet is at Stirling Court Hotel (#6 on the campus map), starting at 7.30pm.

The bar is open before that for pre-dinner drinks, and you are welcome to use the bar after the meal; those not staying at the Hotel are supposed to leave by 1.00a.m.

The banquet is a 3 course dinner followed by coffee, with a smattering of Scottish foods including the option to try that haggis starter!

During the evening, winners of the Poster Competition and the Linda Mealey awards will be announced.

The dinner will be followed by a ceilidh, Scottish country dancing, with the Skelpit Lug Band (skelpitlug.com). Please join in – it doesn't matter if you don't know the dances, the Caller tells you what to do before each dance and then we see how well you remember it!

Saturday Post-Conference Trip

This optional trip will be by coach out to the west of Stirling. The coach will leave from the bus stop immediately outside the MacRobert Centre at 9.45am.

The first stop will be in the nearby town of Doune, where you can visit either Doune Castle and its surroundings (famous for several scenes in Monty Python's Holy Grail, as well as other films and programmes like Game of Thrones), or a whisky distillery tour at Deanston Distillery.

We will then continue into the Trossachs National Park, with a short stop for souvenirs and supplies at Kilmahog, outside the popular tourist town of Callander, then on past Loch Venachar to Loch Katrine. Here, people can either choose to walk or cycle (available for hire) around the Loch, or climb nearby Ben Aan.

Finally, we will go for a 1-hr cruise on the Sir Walter Scott steamship on Loch Katrine.

We should be back in Stirling at around 6pm.

Your ticket price includes the coach fare and cruise ticket. You should pay for optional extras on site: entry inside Doune Castle is £5.50 (but free to walk outside and around the river walk), the distillery tour is £9 (including a dram of Deanston malt), and cycle hire at Loch Katrine is £6/hour).

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