

HONORARY PATRONAGE

Rector of the University of Wrocław

Prof. dr hab. Marek Bojarski

MEDIA PATRONAGE:

Gazeta Wyborcza



CONFERENCE FINANCIAL SUPPORT:

**Konferencja zrealizowana przy wsparciu finansowym
Samorządu Województwa Dolnośląskiego.**

*(The conference is financially supported by
The Lower Silesian Voivodship Marshal Office)*



**DOLNY
ŚLĄSK**

The Galton Institute



**Faculty of Law, Administration and Economics,
University of Wrocław**



TABLE OF CONTENTS

Organizing and Scientific Committee	p. 4
Useful Information	p. 5
Quick Timetable	p. 6
Plenary Abstracts	p. 7
Conference Programme	p. 13
Talk Abstracts	p. 19
Poster Abstracts	p. 61
Index	p. 124

The 5th EHBEA Conference Organizing and Scientific Committee

Organizing Committee

Boguslaw Pawlowski^{1,2} (*President of the Conference*)

Dariusz Danel², Stanislaw Gronkiewicz², Slawomir Koziel², Monika Krzyzanowska¹,
Monika Lopuszanska², Alicja Szklarska², Agnieszka Tomaszewska¹,
Agnieszka Zelazniewicz², Anna Ziomkiewicz²

Scientific Committee

Lisa DeBruine, Tom Dickins, Sarah Johns, Monika Krzyzanowska, Kevin Laland,
David Lawson, Daniel Nettle, Boguslaw Pawlowski, Michel Raymond, Anna Rotkirch,
Rebecca Sear, Pontus Strimling, Anna Ziomkiewicz

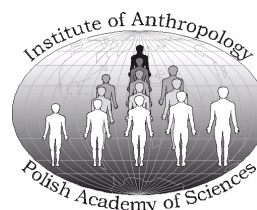
EHBEA Steering Committee

Professor Kevin Laland (University of St Andrews) *President of EHBEA*
Dr Rebecca Sear ((London School of Economics) *Vice President of EHBEA*
Dr Tom Dickins (University of East London) *Treasurer of EHBEA*
Dr David Lawson (London School of Hygiene and Tropical Medicine) *Secretary of EHBEA*

www.ehbea.com



¹ Department of Anthropology,
University of Wrocław, Poland



² Institute of Anthropology,
Polish Academy of Sciences

Registration

Conference registration will be held at the Department of Anthropology (ul. Kuznicza 35) on Wednesday 24th (16:00-20:00) and on Thursday 25th (8:15-15:00).

Opening Ceremony

The Opening Ceremony will be held in the Aula Leopoldinum, Baroque Hall on the first floor of the University Main Building (pl. Uniwersytecki 1).

Talks

Talks will be held in "D" Building of the Faculty of Law, Administration and Economics (ul. Uniwersytecka 7/10); room D1 and room D2 (first floor).

Poster sessions

The poster sessions will be held in the Department of Anthropology (ul. Kuznicza 35). Posters will be accessible continuously during the Conference.

(The number of a poster abstract in the book should match the number on the poster board)

Wine reception

The wine reception will be held in the Oratorium Marianum on the ground floor of the Main University Building (pl. Uniwersytecki 1).

Coffee breaks

Coffee breaks will be held in "D" Building of the Faculty of Law, Administration and Economics (ul. Uniwersytecka 7/10).

Conference dinner

Conference dinner will be held at Mini Brewery and Restaurant Spiz (Rynek Ratusz 2) – situated in the basement of Wrocław Town Hall.

Internet Point

WiFi access in the "D" Building of the Faculty of Law, Administration and Economics will be provided.

Taxi numbers

Domino Taxi phone: +48719625

MPT BOX phone: +48719191

Radio Taxi Serc phone: +48719625

Hallo Radio Taxi phone: +48719621

Cheap taxi (Ryba Taxi) +48 516007700 (You need to call 15-30 minutes earlier)

Wednesday, March 24th

16:00-20:00	Conference Registration
-------------	-------------------------

Thursday, March 25th

8:15 - 15:00	Conference Registration
9:00 - 9:30	Opening Ceremony
9:30 - 10:30	Plenary lecture: Daniel Fessler
10:30 - 10:55	Talk – (<i>the best rated abstract</i>)
10:55 - 11:30	Coffee
11:30 - 13:10	Session A
13:10 - 14:40	Lunch
14:40 - 15:40	Plenary lecture: Eckart Voland
15:40 - 16:05	Session B
16:30 - 17:00	Coffee
17:00 - 18:15	Session C1 & Session C2
18:15 - 19:15	Poster Session
19:30 - 21:00	Wine Reception

Friday, March 26th

9:00 - 10:00	Plenary lecture: Stephen Shennan
10:00 - 10:50	Session D
10:50 - 11:20	Coffee
11:20 - 13:00	Session E
13:00 - 14:30	Lunch
14:30 - 15:30	Plenary lecture: Ernst Fehr
15:30 - 16:20	Session F
16:20 - 16:50	Coffee
16:50 - 18:45	Session G1 & Session G2
18:45 - 20:15	Poster Session & Wine

Saturday, March 27th

9:00 - 10:00	Plenary lecture: Joseph Call
10:00 - 10:50	Session H
10:50 - 11:20	Coffee
11:20 - 13:00	Session I
13:00 - 14:30	Lunch
14:30 - 15:30	Plenary lecture: Alexandra Alvergne
15:30 - 16:20	Session J
16:20 - 16:50	Coffee
16:50 - 18:20	Session K1 & Session K2
18:25 - 18:40	Closing word & Poster Award
18:45 - 19:30	EHBEA AGM
20:15	Conference dinner

PLENARY ABSTRACTS

Thursday 25th (9:30 - 10:30)

The importance of attending to phylogenetic derivation in the study of the mind or why emotions are kludgy (and, thus, incest is toxic).

Daniel M.T. Fessler

Department of Anthropology, University of California, USA

The evolutionary study of mind and behavior has benefited enormously from the functionality heuristic, i.e., the assumption that mental mechanisms can usefully be understood as well-designed solutions to recurrent adaptive problems. While virtually every investigator in this area acknowledges the importance of Tinbergen's (1963) Four Levels of Explanation, in practice, emphasis in evolutionary psychology is invariably placed primarily on ultimate explanations. Although this is a productive starting point, because evolution involves the gradual modification of existing designs, the functionality heuristic will frequently lead investigators to under-emphasize, or even overlook entirely, constraints on optimality entailed by phylogeny. Likewise, even when high levels of functionality are, in fact, observed, the functionality heuristic will often fail to explain many features of the adaptation at issue, features that diminish efficiency even if they do not influence effectiveness. The study of emotions provides an opportunity to illustrate the utility of combining ultimate and phylogenetic perspectives in investigating the mind. A hybrid approach to emotions can illuminate otherwise puzzling combinations of qualia, display, cognition, and behavior, and suggests areas where we might expect constraints on optimality. Additionally, such an approach can productively generate predictions concerning the nature of emotions across species and across taxa, holding the promise of a broadly comparative evolutionary affective science that pinpoints both the commonalities and the divergences between our emotions and those of other organisms.

NOTES:

Thursday 25th (14:40 - 15:40)

The helper conflict - How cooperative breeding might have paved an evolutionary route to conscientiousness and human morals

Eckart Voland

Zentrum für Philosophie und Grundlagen der Wissenschaft, University of Giessen, Germany

Humans have evolved into facultative cooperative breeders. This circumstance generates specific manifestations of the parent-child conflict, which could be labeled the “helping conflict” and the “strategy conflict”. Parents will mostly expect more “helping” than the children are evolved to provide on their own. It is on this evolutionary battleground that the conscience has evolved, which can best be understood as an extended phenotype of parental genes to exert influence on the altruistic tendencies of their offspring. In social practice, the altruism of the offspring in favor of parental interests becomes visible especially in two scenarios, which are described as the “slave scenario” and the “tax scenario”. The “slave scenario” is given when parental fitness is increased by the economic and social exploitation of one’s offspring. The “tax scenario” describes situations in which the fitness of the offspring is paid as a kind of tax so to speak to strengthen common goods. The visible expression of this is the true altruist, as e.g. the heroic warrior, who gives his life to assert the dynastic interests of his lineage. Against the background of this argumentation, the hypothesis is proposed according to which parent-offspring conflict under the conditions of cooperative breeding might have paved another evolutionary route to altruism and human morality.

NOTES:

Friday 26th (9:00 - 10:00)

Human wealth inequality - a long-term perspective

Stephen Shennan

Institute of Archaeology and AHRC Centre for the Evolution of Cultural Diversity,
University College London, UK

The study of the emergence of huge wealth and power inequalities in human societies, and attempts to find an explanation for them, has a very long history in the social sciences. Most of those attempts have focussed on the wealth and the power as ends in themselves although the motors for the different models that have been advanced vary enormously on a spectrum from exploitation to managerial mutualism. Many of them also draw a strong contrast with hunter-gatherer societies seen as characterised by a 'zen' ethic that attaches little importance to material goods. What is different about recent evolutionary models is that they take the achievement of wealth, power and status not as ends in themselves but as proximal goals whose achievement contributes to the ultimate goal of reproductive success. However, this still raises the question of how these proximate goals came to be important. Not only did reproductive success come to depend on the achievement and holding of material wealth, but strategies focussed on the maintenance and increase of wealth could even become more successful in reproductive terms than strategies directed at maximising reproductive success in the short term. This paper will examine the general processes through which this came about and their reflection in the archaeological record.

NOTES:

Friday 26th (14:30 - 15:30)

The evolutionary foundations of strong reciprocity

Ernst Fehr

Institute for Empirical Research for Economics, University of Zurich, Switzerland

Evolutionary theories of human behaviour are notoriously hard to test because the relevant evolutionary process usually took place long ago. This problem is a major obstacle in our empirical assessment of different evolutionary theories of human altruism. Indeed, limited empirical progress on the ultimate origin of human altruism stands in stark contrast to the enormous progress made in terms of its proximate causes. In my presentation I propose a solution to this problem by deriving the proximate mechanisms and associated behavioural predictions that follow from different ultimate explanations. I adopt this method to address an important recent debate about what costly prosocial behaviour in anonymous one-shot interactions implies for different evolutionary theories. Among indigenous groups in Papua New Guinea, we conducted an experiment for which two prominent evolutionary approaches make opposing behavioural predictions. The two approaches are multilevel selection and the importance of a reputation-based psychology. The experimental results are consistent with multilevel selection, supporting the view that evolutionary forces at multiple levels of population structure have shaped human social behaviour in Papua New Guinea.

NOTES:

Saturday 27th (9:00 - 10:00)

Evolving patience

Joseph Call

Max Planck Institute for Evolutionary Anthropology, Germany

Selecting responses and their timing is crucial to optimize behavior. Inhibitory control allows individuals to regulate behavioral output both in terms of what to do and when to do it. Although traditionally research on inhibitory control in primates has focused on the 'what' aspect of inhibitory control, recent years have also seen some research effort devoted to investigate the 'when' aspect. Studies on temporal discounting have begun to uncover important differences between primate species that match those found in tasks measuring non-temporal aspects of inhibitory control. The interest in temporal aspects of behavior has coincided with recent advances in the area of memory and planning in what has become known as mental time travel. Moreover, temporal aspects transcend choices at the individual level and are crucial in regulating the cooperative and competitive interactions between individuals. In this talk, I will present the main advances that have occurred in those areas with regard to primates, discuss the relation between them and explore its socio-ecological correlates.

NOTES:

Saturday 27th (14:30 - 15:30)

Variation in human paternal care - ultimate and proximate factors

Alexandra Alvergne

University of Sheffield, Department of Animal and Plant Sciences, UK

During recent decades, an increase in paternal involvement in childcare in occidental societies has led many to question the role of fathers beyond traditionally prescribed functions of breadwinner, moral authority and masculine role model. Anthropological studies have also highlighted the considerable diversity in fatherhoods between and within human cultural groups. Taking an integrative evolutionary perspective, I address both ultimate and proximate factors underlying the expression of paternal care, and consider the impact of such variation on child development and later reproductive success. According to evolutionary theories of parental investment and kin selection, father investment is expected to vary depending on socio-ecological factors such as paternity uncertainty and mating opportunities. Drawing on data collected from France and Senegal, I argue that paternity uncertainty has constituted an important selective pressure on the use of paternity cues by men (i.e. odour and facial similarity), as well as a manipulation by women of men's perception. Furthermore, I show that the expression of paternal investment is traded-off with mating investment, and mediated through hormonal mechanisms. Finally, I found that the link between paternal investment and fitness-related traits in children depends on the studied population. Overall, this research increases our understanding of the socio-ecological and hormonal factors associated with paternal investment, and highlights the relevance of an evolutionary approach to the study of human behaviour. It also provides a general model to address currently challenging questions such as why father investment has recently experienced a dramatic increase in western societies.

NOTES:

WEDNESDAY 24th MARCH

16:00 - 20:00 Registration

THURSDAY 25th MARCH

08:15 - 15:00 Registration; Poster boards available

09:00 - 09:30 Opening Ceremony *Aula Leopoldinum*

(Chair: *Rebecca Sear*)

09:30 - 10:30 Plenary lecture
The importance of attending to phylogenetic derivation in the study of the mind or why emotions are kludgy (and thus, incest is toxic).
 Daniel Fessler

10:30 - 10:55 Best abstract
The health of a nation predicts their mate preferences: Cross-cultural variation in women's preferences for masculine men.
 Lisa DeBruine, Benedict Jones, John Crawford, Lisa Welling, Anthony Little

10:55 - 11:30 Coffee

Session A – Cooperation I (Chair: *Tom Dickins*) **ROOM D1**

11:30 - 11:55 **Cooperation and communication: How much can cheap talk do?**
 John Lazarus, Jonathan Sayers, Peter Andras, Gilbert Roberts

11:55 - 12:20 **Are patient people really more cooperative? Contrasting results from Northern-Central and Southern Vietnam**
 Stephen Le

12:20 - 12:45 **Unconditional cooperation driven by reputation-based partner choice.**
 Gilbert Roberts

12:45 - 13:10 **Social status influences social cooperation: A cross-cultural replication and real world validation.**
 Laurence Fiddick, Nicole Erlich, Maria Janicki, Sean Lee

13:10 - 14:40 Lunch

Session B – Cooperation II (Chair: <i>Ruth Mace</i>)		ROOM D1
14:40 - 15:40	Plenary lecture The helper conflict - How cooperative breeding might have paved an evolutionary route to conscientiousness and human morals. Eckart Voland	
15:40 - 16:05	The evolution of cooperative breeding in a great ape. Lesley Newson, Adrian Bell, Peter Richerson	
16:05 - 16:30	Demography and ecology drive variation in cooperation across human populations. Shakti Lamba, Ruth Mace	
16:30 - 17:00	Coffee	
Session C1 – Cultural evolution I (Chair: <i>Jeremy Kendal</i>)		ROOM D1
17:00 - 17:25	Why is cumulative culture only seen in humans? Lewis G. Dean, Rachel L. Kendal, Kevin N. Laland	
17:25 - 17:50	The prehistory of Little Red Riding Hood: a case study in folktale phylogenetics. Jamie Tehrani	
17:50 - 18:15	Language shift and the future of Britain’s Celtic languages. Anne Kandler	
Session C2 – Life history strategies, fertility and survival (Chair: <i>Virpi Lummaa</i>)		ROOM D2
17:00 - 17:25	The influence of relatives on the timing of first birth: evidence from a low fertility population. Paul Mathews & Rebecca Sear	
17:25 - 17:50	Life histories of secondborns - Costs of elder sibling’s sex and survival? Charlotte Störmer	
17:50 - 18:15	Relaxed sexual selection in enforced monogamy. Jenni Pettay, Markus Jokela, Anna Rotkirch, Virpi Lummaa	
18:15 - 19:15	Poster session	
19:30 - 21:00	Wine reception	ORATORIUM MARIANUM

FRIDAY 26th MARCH**Session D – Cultural evolution II** (Chair: John Lazarus)

ROOM D1

- 09:00 - 10:00 Plenary lecture
Human wealth inequality - a long-term perspective.
Stephen Shennan
- 10:00 - 10:25 **Social enhancement can create adaptive, arbitrary and maladaptive cultural traditions.**
Mathias Franz, Luke J. Matthews
- 10:25 - 10:50 **The evolution of social learning: individual variation and frequency-dependent rules.**
Jeremy Kendal, Luc-Alain Giraldeau, Kevin Laland
- 10:50 - 11:20 Coffee

Session E - Reproduction, fertility and fitness

(Chair: Rebecca Sear & Anna Ziomkiewicz)

ROOM D1

- 11:20 - 11:45 **The impact of kin on female fertility: a systematic review.**
Rebecca Sear & Paul Mathews
- 11:45 - 12:10 **Reproductive conflict between generations in humans.**
Mirrka Lahdenperä, Duncan Gillespie, Andrew Russell, Virpi Lummaa
- 12:10 - 12:35 **Cultural transmission of fitness.**
Evelyne Heyer, Michela Léonardi, Frederic Austerlitz
- 12:35 - 13:00 **Birth month effects on human reproduction: analyses from different countries.**
Susanne Huber & Martin Fieder
- 13:00 - 14:30 Lunch

Session F - Reciprocity and social strategies

(Chair: Kevin Laland)

ROOM D1

- 14:30 - 15:30 Plenary lecture
The evolutionary foundations of strong reciprocity.
Ernst Fehr
- 15:30 - 15:55 **Machiavellian decision-making strategies and their effectiveness in the Public Goods game.**
Tünde Paál & Tamás Bereczkei
- 15:55 - 16:20 **How to make climate conferences a success: Making full contributions to a public goods game a rational strategy.**
Ulrich Frey
- 16:20 - 16:50 Coffee

Session G1– Behavioural adaptations**ROOM D1***(Chair: Anthony Little & Monika Krzyzanowska)*

- 16:50 - 17:20 **Variability selection and hominin behavioural plasticity.**
Matt Grove
- 17:20 - 17:55 **Human ability to detect kinship in strangers' faces.**
Gwenaël Kaminski, Fabien Ravary, Karine Mazens, Christian Graff,
Edouard Gentaz
- 17:55 - 18:20 **Time awake influences disgust sensitivity: support for the
compensatory behavioral prophylaxis hypothesis.**
Diana S. Fleischman, Micheal DeBarra, Daniel M. T. Fessler,
Valerie Curtis, Robert Aunger
- 18.20 - 18:45 **Phylogenetic methods reveal regular sequence in the evolution
of political organization.**
Thomas Currie, Simon Greenhill, Russel Gray, Toshi Hasegawa,
Ruth Mace

Session G2 - Women's sexual strategies and preferences**ROOM D2***(Chair: Anna Rotkirch)*

- 16:50 - 17:20 **Dyadic, autosexual and extra-pair sexual behavior of coupled
women under the influence of oral hormonal contraception.**
Kateřina Klapilova, Aleš Kuběna, Petr Weiss, Jan Havlicek
- 17:20 - 17:55 **Sexual strategy and woman's prenatal investment allocated into
progeny - testing "hunting for good genes" hypothesis.**
Boguslaw Pawlowski & Agnieszka Zelazniewicz
- 17:55 - 18:20 **Preference for human male body hair changes across the
menstrual cycle and menopause.**
Markus J Rantala, Mari Pölkki, Liisa M Rantala
- 18:45 - 20:15 Poster Session & Wine

SATURDAY 27th MARCH**Session H - Non-human primates behaviour – implications for human evolution. ROOM D1**
(Chair: *Michel Raymond & Slawomir Koziel*)

- 09:00 - 10:00 Plenary lecture
Evolving patience.
Joseph Call
- 10:00 - 10:25 **Facial cues of dominance modulate reflexive gaze-following in human observers.**
Benedict C Jones, Lisa M DeBruine, Julie C Main, Anthony C Little, Lisa LM Welling, David R Feinberg, Bernard Tiddeman
- 10:25 - 10:50 **Social implications of copulation calls in bonobos, *Pan paniscus*.**
Zanna Clay & Klaus Zuberbuhler
- 10:50 - 11:20 Coffee

Session I – Facial cues, hormones and personality ROOM D1
(Chair: *Lisa DeBruine*)

- 11:20 - 11:45 **Facial attractiveness signals the strength of immune function in men.**
Indrikis Krams, Markus J. Rantala, Tatjana Krama
- 11:45 - 12:10 **A test of the stress-linked immunocompetence handicap hypothesis in human faces.**
Fhionna Moore, David Perrett
- 12:10 - 12:35 **Social dominance and sex steroid hormone levels in women.**
Anna Ziolkiewicz, Aleksandra Gomola, Boguslaw Pawlowski
- 12:35 - 13:00 **Robust male skull shape is associated with untrustworthiness.**
Michael Stirrat
- 13:00 - 14:30 Lunch

Session J - Human parental investment ROOM D1
(Chair: *David Lawson*)

- 14:30 - 15:30 Plenary - New Investigator Award
Variation in human paternal care - ultimate and proximate factors.
Alexandra Alvergne
- 15:30 - 15:55 **Surviving early parental loss and the consequences of remarriage.**
Kai P. Willführ & Alain Gagnon
- 15:55 - 16:20 **Differential parental investment in school contexts.**
Annette Scheunpflug
- 16:20 - 16:50 Coffee

Session K1 - Sexual selection in humans
(Chair: *Bogusław Pawłowski*)

ROOM D1

- 16:50 - 17:20 **Sexual selection and human stature: homogamy as a unified framework for understanding mating preferences.**
Alex Courtiol
- 17:20 - 17:55 **Intralocus sexual conflict over human height.**
Gert Stulp, Simon Verhulst, Thomas V. Pollet, Abraham P. Buunk
- 17:55 - 18:20 **The iron grip of sexual selection: Grip strength is positively associated with male but not with female reproductive success.**
Thomas Pollet

Session K2 - Memory and cooperation
(Chair: *Gilbert Roberts*)

ROOM D2

- 16:50 - 17:20 **Memory interference constrains the evolution of cooperation.**
Jeffrey R. Stevens, Jenny Volstorf, Lael J. Schooler, Joerg Rieskamp
- 17:20 - 17:55 **The good, the bad, and the rare: Memory focus on cooperators or defectors?**
Jenny Volstorf, Jörg Rieskamp, Jeffrey R. Stevens
- 17:55 - 18:20 **The efficiency losses of cognitive limitations in reidentification**
Michele Belot
- 18:25 - 18:40 Closing word & Poster Award
- 18:45 - 19:30 EHBEA AGM
- 20:15 Conference dinner

TALK ABSTRACTS

THURSDAY 25TH MARCH

10:30 **The health of a nation predicts their mate preferences: Cross-cultural variation in women's preferences for masculine men.**

Lisa DeBruine¹, Benedict Jones¹, John Crawford¹, Lisa Welling¹, Anthony Little²

¹ School of Psychology, University of Aberdeen, UK

² School of Psychology, University of Stirling, UK

Objective: Recent formulations of sexual selection theory emphasise how mate choice can be affected by environmental factors, such as predation risk and resource quality. Women vary greatly in the extent to which they prefer male masculinity and this variation is hypothesised to reflect differences in how women resolve the trade-off between the costs (e.g., low investment) and benefits (e.g., healthy offspring) associated with choosing a masculine partner. A strong prediction of this trade-off theory is that women's masculinity preferences will be stronger in cultures where poor health is particularly harmful to survival.

Methods: Across 30 countries, we investigated the relationship between women's preferences for male facial masculinity and a health index derived from World Health Organization statistics for mortality rates, life expectancies, and the impact of communicable disease.

Results: Countries' average masculinity preference increased as the quality of health decreased ($r = -.619$, $p < .001$). This relationship was independent of cross-cultural differences in wealth or women's mating strategies.

Conclusions: These findings show non-arbitrary cross-cultural differences in facial attractiveness judgments and demonstrate the utility of trade-off theory for investigating cross-cultural variation in women's mate preferences.

l.debruine@abdn.ac.uk

NOTES:

SESSION A – COOPERATION I

11:30 **Cooperation and communication: How much can cheap talk do?**
John Lazarus¹, Jonathan Sayers¹, Peter Andras², Gilbert Roberts¹

¹ Institute of Neuroscience, Centre for Behaviour and Evolution, Newcastle University, UK

² School of Computing Science, Newcastle University, UK

Objective: Can cheap talk enhance cooperation? We describe an evolutionary model of one-shot dyadic encounters employing the Assurance, or Stag Hunt, Game to examine this question. The Assurance Game has two ESSs – both cooperate (CC) and both defect (DD) – determined by (a) the starting frequency of C play, and (b) the ratio of (gain in switching from C to D against a D player) : (gain in switching from D to C against a C player). Variables (a) and (b) define a space divided into the ESS zones CC and DD.

Methods: The Assurance Game is particularly relevant to the evolution of human cooperation since it can be given a resource acquisition interpretation. To the basic CD strategies we add phenotypes with two additional traits: signals (honest or dishonest) and a belief system (each signal, independently, can be ignored, believed or disbelieved [i.e. the action opposite to that signalled is believed]). A number of models are analysed, having different combinations of signalling and belief systems. Signals have no cost, emulating cheap talk scenarios in which information is transmitted linguistically or nonverbally. Model individuals choose the best response to the action they believe the other party will select.

Results: Signalling can increase the space occupied by the CC ESS due to its greater payoff compared to the DD ESS. We also describe ESS patterns of honesty and beliefs.

Conclusions: Cheap talk can enhance cooperation by allowing it to evolve from lower starting frequencies and at payoffs more advantageous to the DD ESS.

j.lazarus@ncl.ac.uk

NOTES:

11:55 **Are patient people really more cooperative? Contrasting results from Northern-Central and Southern Vietnam.**

Stephen Le¹

¹ Anthropology, University of California, USA

Objective: To determine if there is a relationship between patience and cooperation in northern-central and southern Vietnam. Theoretical work and empirical studies conducted in the US have demonstrated a positive relationship between patience and cooperation, but empirical studies outside the US have not shown any relationship.

Methods: Patience was assessed using a four-choice time discounting questionnaire with real financial rewards. Cooperation was assessed using a four-player anonymous Public Goods game with real financial rewards. Experiments were conducted from 2008 to 2009 at 3 locations in northern-central Vietnam and 3 locations in southern Vietnam, with approximately 32 college students at each site, for a total of 191 participants.

Results: Subjects at the northern-central sites showed a positive relationship between patience and cooperativeness, but subjects at the southern sites showed a negative relationship.

Conclusion: These results tentatively falsify the discounting cooperator hypothesis, in the case of southern Vietnam. An alternative explanation is that differences in economic, cultural, and geographical factors led to differences in framing of the patience and cooperation tasks.

stephen.le@ucla.edu

NOTES:

- 12:20 **Unconditional cooperation driven by reputation-based partner choice.**
Gilbert Roberts¹

¹ Institute of Neuroscience, Centre for Behaviour and Evolution, Newcastle University, UK

Objective: Competitive altruism theory proposes that it pays to develop a reputation because of the benefits that come from attracting a cooperative partner. But when can it pay to 'show off' your generosity? When will people use such displays to choose partners? And how could such a signalling system be 'honest'? Here I aim to show when reputation-based partner choice could explain unconditional cooperation such as donations to charities or contributions to public goods.

Methods: I developed a two-stage model comprising a reputation-building phase followed by choice of partner for a dyadic cooperative game. I used evolutionary simulation to investigate the fate of strategies of investing in a cooperative reputation by giving unconditionally versus withholding help; of selecting a partner with a good reputation or being assigned a partner; and of cooperating versus defecting in subsequent dyadic interactions.

Results: I found that investing in a reputation by cooperating unconditionally; using such reputations in partner choice; and subsequently cooperating could be favoured. Thus, reputation-building could pay through being more likely to be chosen for profitable partnerships. Honesty of reputations was assured when those who invested in a reputation and then defected when paired were subsequently avoided.

Conclusions: Considerable attention has focussed on the indirect reciprocity benefits of developing a cooperative reputation. However, indirect reciprocity depends upon only giving to those who give to others and therefore cannot explain unconditional cooperation. Reputation-based partner choice can explain unconditional cooperation because any behaviour which enhances reputation can reap rewards through access to profitable partnerships.

Gilbert.Roberts@ncl.ac.uk

NOTES:

12:45 **Social status influences social cooperation: A cross-cultural replication and real world validation.**

Laurence Fiddick¹, Nicole Erlich², Maria Janicki³, Sean Lee⁴

¹ Department of Psychology, James Cook University, Australia

² School of Psychology, University of Queensland, Australia

³ Department of Psychology, Douglas College, Canada

⁴ Department of Cognitive and Behavioral Science, University of Tokyo, Japan

Objective: Status hierarchies are common in primate social life, influencing patterns of cooperation and access to resources. Therefore, Fiddick and Cummins (2007) predicted that status differences would influence perceptions of fairness in cooperative exchanges. They found a noblesse oblige effect – greater tolerance of cheating by high-status individuals. Here we sought to replicate the noblesse oblige effect cross-culturally and replicate the effect in participants when real status differences and real money are involved.

Methods: Study 1: Participants (N = 323) in seven different countries were cued into the perspective of either a high- or low-status protagonist in a cooperative venture with a free-riding, low- or high-status partner, respectively. They rated their likelihood of continuing the interaction, their feelings towards their partner, and the perceived fairness of their treatment. Study 2: Students and lecturers/professors played an ultimatum game, specifying both a split of \$25 AUD that they would offer as a proposer and the offers that they would accept as a responder.

Results: Study 1: the noblesse oblige effect replicated in all seven countries with respect perceived fairness and replicated overall with respect to the other two questions. Study 2: professors offered more money as proposers and accepted lower offers as the responders.

Conclusions: Ceteris paribus, one would expect adaptations to be species-universal design features. The fact that the noblesse oblige effect was replicated cross-culturally (and when real status differences and money are involved), therefore, lends support to the proposal that the effect is the outcome of an evolved status psychology.

larry.fiddick@jcu.edu.au

NOTES:

SESSION B – COOPERATION II

15:40 **The evolution of cooperative breeding in a great ape.**
Lesley Newson¹, Adrian Bell¹, Peter Richerson¹

¹ University of California, USA

Objective: To determine the conditions under which cooperative breeding might have evolved in a hominine with simple culture. In contemporary humans, cultural mechanisms operate to maintain cooperative breeding. But it has recently been suggested that cooperative breeding in humans originated prior to the evolution of cumulative culture and that it contributed to the conditions that allowed culture to evolve (Hrdy, 2009).

Method: Mathematical models are used to explore the fitness costs and benefits associated with competing for food and mates versus cooperating in providing parental care for infants.

Results: The situation is different for males and females. In females, cooperating in childcare increases fitness in conditions where division of labour brings benefits to both cooperators. In males, the long interbirth interval of great apes means that more benefit is gained from effort expended competing for mates or mate guarding than provisioning a pregnant or lactating female. Males would, however, gain fitness benefits from supporting a female coalition if the effort resulted in reduced interbirth intervals.

Conclusion: Cooperative breeding might have originated in environments that favoured female coalition formation, such as those in which lactating females have difficulty foraging because of the need to stay near a water source. Greater fitness would have been achieved by females who divided the labour, with females who had young babies staying near water and also feeding the infants of females with older children while they foraged and brought back food. This sharing would have shortened the period of intense lactation and allowed females to ovulate sooner. Males who supported these female coalitions by contributing food and protection would have had increased fitness because mating opportunities and births would have been more frequent.

lnewson@ucdavis.edu

NOTES:

- 16:05 **Demography and ecology drive variation in cooperation across human populations.**
Shakti Lamba¹, Ruth Mace¹

¹ Department of Anthropology, University College London, UK

Objectives: Large-scale cooperation between unrelated humans is a major evolutionary puzzle. There is intense controversy over whether or not it results from selection acting on groups in addition to individuals. Current theory posits that such cooperation evolved via group-level selection acting on populations amongst which variation is maintained by cultural transmission. Critically, selection can occur at the group-level only if stable behavioural variation is maintained between populations in the face of migration. Cross-cultural variation in cooperation is taken as evidence in support of these gene-culture co-evolution models. However, the alternative explanation for the observed variation is that it reflects adaptive responses to different ecologies. We test the hypothesis that variation between populations is driven by differences in demography and local ecology rather than culture.

Methods & Results: We use a one-shot, anonymous public goods game and a new 'real-world' measure of behaviour to demonstrate significant variation in cooperation across 16 villages of the same endogamous small-scale forager society. This within-culture variation is comparable to that found previously between 15 different small-scale societies. We identify individual and population descriptors that explain some of this variation. Finally, we find that behaviour in an economic game correlates with a 'real-world' measure of pro-sociality.

Conclusions: Our results challenge gene-culture co-evolution models on large-scale cooperation, as behavioural variation driven by demographic and ecological factors is unlikely to maintain stable between-population differences essential for selection at the group-level. In turn, this calls for re-interpretation of cross-cultural data on cooperation, mostly sampled from one (or very few) populations per society; behavioural variation currently attributed to cultural 'norms' may be explained by local evolutionary dynamics.

s.lamba@ucl.ac.uk

NOTES:

SESSION C1 - CULTURAL EVOLUTION I

17:00 **Why is cumulative culture only seen in humans?**
Lewis G. Dean¹, Rachel L. Kendal², Kevin N. Laland³

¹ School of Biology, University of St. Andrews, UK

² Department of Anthropology, Durham University, UK

³ School of Biology, University of St. Andrews, UK

Objectives: Most researchers agree that humans are the only species with cumulative culture. A number of hypotheses have been proposed to explain this difference, but few studies have explicitly tested them. Some of these hypotheses are cognitive, such as a lack of teaching or imitation, whilst others are social, such as the relative dominance of individuals and their ability to monopolise resources. We used a comparative study to investigate the abilities of children and chimpanzees to accumulate modifications to behavioural traits.

Methods: Here we used a cumulative puzzle-box, which could be solved to gain three sequentially better rewards. We tested 76 chimpanzees in 8 groups with, trained-demonstrator seeded and unseeded, open diffusion experiments. We also presented the puzzle-box to 35 children in 8 groups in unseeded open diffusion experiments.

Results: Only four chimpanzees learned to open the puzzlebox beyond the first, simplest, stage accessing only the least desirable food reward. In only one group did more than one chimpanzee learn to access the higher stages of the puzzle-box. In contrast multiple children, both across and within groups, accessed the higher, more difficult, stages of the puzzle-box to access the more desirable sticker rewards.

Conclusions: By analysing when and how animals manipulated the puzzle-box and learned to use it, we assess which hypotheses our data are consistent with. Accordingly we posit that a lack of imitation, teaching and cooperation in chimpanzees inhibits the evolution of cumulative culture.

lgd1@st-andrews.ac.uk

NOTES:

- 17:25 **The prehistory of Little Red Riding Hood: a case study in folktale phylogenetics.**
Jamie Tehrani¹

¹ Durham University, UK

Objectives: The question of whether similarities among assemblages are due to common descent or arose independently is a key problem in both biological and cultural evolution. A classic example of the latter is the long-running debate about whether common themes in folktales from different societies can be explained by cultural diffusion, or by similar environments and psychological dispositions. I argue that these issues can be addressed using taxonomic methods developed by biologists to establish whether groups of species are monophyletic (descended from a single common ancestor) or polyphyletic (descended from multiple ancestors).

Methods: Cladistic and Bayesian phylogenetic methods were applied to a group of tales from around the world that resemble Little Red Riding Hood. The first set of analyses measured the extent of phylogenetic versus convergent signal in the tales. The second set of analyses examined whether patterns of relationship hypothesised in folktale trees are more compatible with diffusion across geographical regions or independent evolution within regions.

Results: The results of the analyses suggest that the tales are neither monophyletic nor polyphyletic, but paraphyletic: Although they probably share a common origin, the last common ancestor of the tales also appears to have given rise to another group of tales, known in the west as The Wolf and the Kids. Finer-grained analyses show a number of traits can be traced back to this original ancestral tale, and also revealed instances where tales from distant narrative traditions appear to have converged on similar plot-lines.

Conclusions: The findings demonstrate the importance of both descent and independent evolution in generating cross-cultural patterns in folktales. By distinguishing between these processes, the application of phylogenetic methods in this field opens new avenues into the science of stories, and promises to reveal important general insights into human cognition and cultural transmission.

jamie.tehrani@dur.ac.uk

NOTES:

17:50 **Language shift and the future of Britain's Celtic languages.**
Anne Kandler¹

¹ Institute of Archaeology, University College London, UK

Objective and Methods: 'Language shift' is the process whereby members of a community in which more than one language is spoken abandon their original vernacular language in favour of another. We model the dynamic of language shift as a competition process in which the numbers of speakers of each language and of the bilingual sub-population vary as a function both of internal recruitment (as the net outcome of birth, death, immigration and emigration), and of gains and losses due to language shift.

Results: We apply our approach to the English-Gaelic competition in Western Scotland. We are able to replicate the main dynamic of the shift process and give predictions about the future of the Gaelic language under unchanged environmental conditions. Contrary to the Gaelic situation where a sharp decline of the number of Gaelic-speakers is observed the Welsh situation is an example of a revival of an endangered language but it cannot be replicated by the considered model. The revival success is related to strategies whose objective is stable societal bilingualism - by creating or preserving segregated sociolinguistic domains, in each of which one or other language is the preferred medium of communication. To consider these effects we examine a second model in which bilingualism is no longer simply a transitional state. Superimposed on the basic shift dynamic there is an additional demand for the endangered language as the preferred medium of communication in some restricted sociolinguistic domains.

Conclusion: The creation of segregated sociolinguistic domains can lead to stable co-existence and therewith be a successful maintenance strategy. Our model enables us to estimate e.g. for the English-Gaelic competition the number of English speaker who need to become bilingual to maintain the bilingual sub-population.

a.kandler@ucl.ac.uk

NOTES:

SESSION C2 – LIFE HISTORY STRATEGIES, FERTILITY AND SURVIVAL**17:00 The influence of relatives on the timing of first birth: evidence from a low fertility population.**Paul Mathews¹, Rebecca Sear¹¹ Social Policy, London School of Economics and Political Science, UK

Objective: It is often highly adaptive for organisms to aid and encourage reproduction in their relatives. Particular features of human female life history such as short birth intervals and the early cessation of female reproduction (menopause) are even argued to be evidence that humans are obligate 'cooperative breeders', and require assistance from relatives to successfully reproduce. Human behavioural ecologists have so far focussed on measuring inclusive fitness effects in natural fertility populations. Here, we test whether kin influence the timing of a woman's first birth in the UK. As a secondary objective we compare the effects of relatives' geographic proximity and frequency of contact.

Methods: The risk of first birth is examined using six waves of the British Household Panel Study, a longitudinal dataset collected during the 1990s-2000s. Discrete-time event history analysis is undertaken to determine whether the degree of 'kin orientation' influences the risk of first birth for women. Kin orientation is operationalised as the number of relatives who are within a woman's three closest non-household friends.

Results: Greater kin orientation significantly increases the risk of first birth, controlling for age, household composition and socio-economic status, suggesting that women who have close ties with their kin have earlier first births than those with looser kin ties. We further determined that the effect is strongest when those relatives in the close social network both live within 50 miles and are contacted frequently.

Conclusions: This study shows that relatives influence reproduction even in a modern low fertility context.

p.s.mathews@lse.ac.uk

NOTES:

- 17:25 **Life histories of secondborns - Costs of elder sibling's sex and survival?**
Charlotte Störmer¹

¹ Zentrum für Philosophie und Grundlagen der Wissenschaft, University of Giessen, Germany

Objective: According to life-history theory, parents have a limited amount of resources to invest among their offspring. Due to the possible higher biological costs for mothers to produce male offspring, life histories of subsequent offspring might be affected by the sex of their elder sibling. Furthermore, survival of the preceding sibling might have an additional effect as it determines the length of parental investment in offspring. In this study we investigated the effects of both firstborn's sex and survival through the inter-birth interval on the life histories of secondborns.

Methods: Based on family reconstitution data from church records of the 18th and 19th century Krummhörn population (Germany) we used generalized linear models and survival analyses to analyse reproductive performance and survival of secondborns.

Results: Survival analyses show a negative impact of a surviving same-sex sibling on the longevity of secondborn men and women. Likewise, reproductive success is reduced for both sexes: For females the probability to reproduce is negatively affected by survival of an elder sister. Males with an elder brother have fewer children compared to males with an elder sister.

Conclusions: These results do not confirm other studies indicating an overall negative effect of elder brothers on life histories of laterborns due to higher biological costs for mothers producing sons. In fact, this study shows that both sex and survival of the elder sibling negatively affect longevity and reproductive performance of secondborns probably due to a (same-sex) sibling competition for parental investment.

charlotte.stoermer@phil.uni-giessen.de

NOTES:

- 17:50 **Relaxed sexual selection in enforced monogamy.**
Jenni Pettay¹, Markus Jokela², Anna Rotkirch³, Virpi Lummaa⁴

¹ Section of Ecology, Department of Biology, University of Turku, Finland

² Department of Psychology, University of Helsinki, Finland

³ Väestöliitto, Helsinki, Finland

⁴ Department of Animal and Plant Sciences, University of Sheffield, UK

Objectives: As a species, humans are considered to be mildly polygynous as most of the cultures permit men to have more than one wife. This gives rise to the prediction that men should have higher variance in fitness and experience greater sexual selection than women. However, mating systems vary between populations and this could have large effects on the force of sex-specific sexual selection in a population.

Methods: We analysed variance in sex-specific fitness (lifetime number of offspring raised to adulthood) in 18th-19th century Finnish populations, where monogamy was socially enforced through multiple spouses and divorce being forbidden and remarriage possible only after spousal death. We use opportunity to selection, i.e. standardised variation, to compare fitness variance among men and women depending on their socioeconomic class and their success at surviving to adulthood, (re)marriage or breeding.

Results and Conclusions: Our analysis suggests that males had significantly higher variance in fitness than women, which is largely due to higher mortality of males before reproduction. In perfect monogamy spouses' reproductive success is equal; however remarriage after being widowed could give rise to variation between the sexes. In Finland, widowed men were more likely to remarry than widowed women, and remarriage gave rise to more children in men than in women. However, long-term fitness of men did not improve by remarriage, because the reproductive success of offspring from the first marriage was compromised. Our result suggests that enforced monogamy relaxes sexual selection in men.

jenni.pettay@utu.fi

NOTES:

FRIDAY 26TH MARCH

SESSION D - CULTURAL EVOLUTION II

10:00 **Social enhancement can create adaptive, arbitrary and maladaptive cultural traditions.**
Mathias Franz¹, Luke J. Matthews²

¹ Department of Primatology, Max Planck Institute for Evolutionary Anthropology, Germany

² Department of Human Evolutionary Biology, Harvard University, USA

Objective: Social enhancement is a simple social learning mechanism that is widespread in animals. However, unlike for imitation, it is debated whether social enhancement can create cultural traditions. In this study, we tested the hypotheses that social enhancement (1) can create and maintain stable traditions and (2) can create cultural conformity in the absence of conformist transmission, group norms or any other learning biases. Furthermore, we investigated under which conditions a more sophisticated social learning mechanism such as imitation might evolve.

Methods: Based on a recent study on social enhancement learning in capuchin monkeys we developed an agent-based model. We used this model to compare long-term learning dynamics among groups of individual learners, social enhancement learners and “imitation-like” learners.

Results: Stable traditions emerged in groups of social enhancement and “imitation-like” learners. The formation of arbitrary traditions confirms that social enhancement learning can create cultural conformity in absence of any learning biases. In contrast to groups of “imitation-like” learners, in groups of social enhancement learners maladaptive traditions emerged when the more profitable behaviour was harder to learn than a less profitable alternative.

Conclusions: Our results support both hypotheses. A key factor that led to the emergence of traditions and cultural conformity was the repeated interaction of individual reinforcement and social enhancement learning. Therefore, observations of cultural traditions and conformity do not necessarily imply the existence of group norms, learning biases such as “copy the majority” or sophisticated learning mechanisms such as imitation. In addition, our results suggest that imitation could be favoured by evolution particularly when animals face learning problems in which the more profitable behaviour is harder to learn.

mathias.franz@eva.mpg.de

NOTES:

10:25 **The evolution of social learning: individual variation and frequency-dependent rules.**
Jeremy Kendal¹, Luc-Alain Giraldeau², Kevin Laland³

¹ Department of Anthropology, Durham University, UK

² Departement des Sciences Biologiques, Université du Québec à Montréal, Canada

³ School of Biology, University of St Andrews, UK

Objective and Methods: Social learning is a central component of human cultural evolution. We present mathematical models to address the evolution of individual variation in the use of social learning and the evolution of frequency-dependent social learning rules.

Results: We find that in a finite population, the equilibrium frequency of social learning is more likely to be made up of mixed social learning strategists than a polymorphic population of pure asocial and social learning strategists. Using a gene-culture coevolutionary analysis, we find that frequency-dependent rules (conformist and anti-conformist biases) can become fixed when environment variation is low, whereupon the mean fitness in the population is higher than for a population of asocial learners. Our analysis of frequency-dependent rules reveals some complex non-linear dynamics and conditions where anti-conformists can out-compete conformists.

Conclusion: We conclude that evolution, punctuated by the repeated successful invasion of different social learning rules, should continuously favour a reduction in the equilibrium frequency of asocial learning, and propose that, among competing social learning rules, the dominant rule will be the one that can persist with the lowest frequency of asocial learning.

jeremy.kendal@durham.ac.uk

NOTES:

SESSION E - REPRODUCTION, FERTILITY AND FITNESS

11:20 **The impact of kin on female fertility: a systematic review.**
Rebecca Sear¹, Paul Mathews¹

¹Department of Social Policy, London School of Economics, UK

Objective: Inclusive fitness theory states that relatives have a vested interest in one another's reproduction: fitness can be gained not only by reproducing oneself but also by influencing the reproductive behaviour of kin. Here we test the hypothesis that the presence of kin influences women's fertility behaviour.

Methods: We performed a systematic review of the empirical evidence that kin influence female fertility. Systematic reviews have been developed to introduce rigour into the review process with the aim of making reviews transparent and replicable.

Results: This review demonstrates that the presence of kin does influence female fertility, but that the precise effects of kin vary between categories of kin and between different environments. A woman's parents-in-law tend to speed up her reproductive output; whereas a woman's own parents are about equally likely to speed up and slow down her reproduction. These effects also vary by environment, however. For example, the presence of fathers tends to be correlated with earlier first births in developing country contexts, but is protective against very early childbearing (teenage pregnancy) in developed populations.

Conclusion: This review confirms that kin matter for female fertility behaviour, but that the costs of reproduction for women need to be taken into account. Tentatively, the varying effects of a woman's own kin may be due to these kin trying to encourage reproduction only the optimal time for her, and protecting her from childbearing which may be harmful. A woman's in-laws may be keen to increase her reproductive output regardless of the costs she may face, thereby enhancing their son's fitness, perhaps because a daughter-in-law, unlike a daughter, is replaceable.

r.sear@lse.ac.uk

NOTES:

11:45 **Reproductive conflict between generations in humans.**Mirkka Lahdenperä¹, Duncan Gillespie², Andrew Russell³, Virpi Lummaa²¹ Department of Biology, Section of Ecology, University of Turku, Finland² Department of Animal and Plant Sciences, University of Sheffield, UK³ Daphne du Maurier School of Biosciences, University of Exeter Cornwall Campus, UK

Objective: Menopause in human females is unexpected from an evolutionary viewpoint because there should be no selection for living beyond one's reproductive capacity. Fitness calculations considering the direct benefits of rearing own offspring to independence and the indirect fitness of helping to rear grand-offspring typically yield values insufficient to offset the costs of lost reproduction that results from menopause. Recently, it has been suggested that the costs of overlapping generations of reproductively capable individuals might provide a key part of the puzzle but empirical tests are lacking.

Methods: We investigate by using pre-industrial Finns as a model system the degree to which mothers and offspring overlap in their reproductive lives, the costs for each party of reproducing at the same time and whether there is evidence that mothers cease reproduction early when offspring are of breeding age.

Results and conclusions: We found that only 5% of mothers and offspring breed at the same time. Moreover, breeding at the same time was associated with an up to 60% decline in survival among grand-offspring and 20% among offspring. Also, mothers ceased reproduction a year earlier when in reproductive competition with offspring. Finally, we show by using a quantitative modelling approach that the reproductive conflict between generations could be central in setting the menopause around age of 50 years. Our study provides the first evidence that extreme reproductive conflict occurs between generations in humans and gives support for the Reproductive Conflict Hypothesis for the evolution of menopause.

mirkka.lahdenpera@utu.fi

NOTES:

12:10 **Cultural transmission of fitness.**
Evelyne Heyer¹, Michela Léonardi², Frederic Austerlitz³

¹ UMR 7206- Museum National d'Histoire Naturelle, CNRS, Univ Paris Diderot, France

² Johannes Gutenberg-Universität, Germany

³ UMR CNRS, Université Paris Sud, AgroParisTech, France

Objective: Our previous work has shown in several populations that fertility can be inherited through cultural transmission. This results in positive correlation between the number of progeny of an individual and the number of progeny of his/her parents: individuals belonging to large sibships are more likely to produce numerous offspring than are individuals with few siblings. It has been demonstrated to be an important factor of deviation from neutral evolution (Heyer et al 2005). In this work, we test if cultural transmission of fitness exists in different societies using genetic data.

Methods: we have designed a method to evaluate fertility inheritance with genetic data using the imbalance of genealogical trees (Blum et al 2006). We apply this method to several populations worldwide with different mode of subsistence and in the frame of our global project on genetic diversity in Central Asia (1000 samples, 27 populations) we compare patrilineal versus cognatic societies based on our genetic data on Y chromosomes microsatellites and mtDNA HVS1.

Results and conclusions: Fertility transmission is frequent in human populations. We do not find more paternal fertility transmission in patrilineal society but found more maternal fertility transmission in hunter-gatherer populations.

heyer@mnhn.fr

NOTES:

- 12:35 **Birth month effects on human reproduction: analyses from different countries.**
Susanne Huber¹, Martin Fieder²

¹ University of Veterinary Medicine Vienna, Austria

² University of Vienna, Austria

It is now well known that early life factors during pregnancy and early childhood influence later life time reproductive output in humans. In the Northern hemisphere, men born in autumn have on average fewer children than those born during the other seasons of the years (Huber et al. 2004a), whereas women born in summer appear to have fewer children than those born during the remainder of the year (Smits et al. 1997, Lummaa & Tremblay 2003, Huber et al. 2004b). Patterns found on basis of data from the Southern hemisphere support these findings. The association between birth month and reproduction was shifted by half a year between the Northern and Southern hemisphere. Huber et al. (2008) found that also in New Zealand, women born during the Southern hemisphere summer months have on average the fewest children. Even in tropical climates, a strong association between birth season and later reproductive performance of women has been demonstrated. In Vietnam, which has a tropical kind of climate with a rainy season, women born between May and July have a higher mean offspring count than those born during the other months of the year (Huber & Fieder 2009). The birth month differences are more pronounced in Vietnam as compared to the differences found in developed countries, probably because of lower protection from environmental conditions in a developing economy like Vietnam. On the basis of data from Romania we further found that not only the birth month of the mother but also that of the grandmother may affect a woman's later reproductive performance, indicating the possibility of epigenetic effects on reproduction (Huber & Fieder submitted). We discuss whether factors such as nutrition, photoperiod or temperature might cause these birth month effects on reproduction, and speculate on possible evolutionary mechanisms concerning peak birth rates.

susanne.huber@vu-wien.ac.at

NOTES:

SESSION F - *RECIPROCITY AND SOCIAL STRATEGIES*15:30 **Machiavellian decision-making strategies and their effectiveness in the Public Goods game.**Tünde Paál¹, Tamás Bereczkei¹

¹ Institute of Psychology, Department of General and Evolutionary Psychology, University of Pécs, Hungary

Objective: Machiavellianism is characterized by a low level of trust toward others, decreased anticipation of and sensitivity to punishments, and emotionally cold, profit-oriented decision-making strategies. In the light of evolutionary theory, particularly Social Intelligence Hypothesis, Machiavellianism has been selected for making people successful in social relationships under certain circumstances. The aim of this study was to examine Machiavellian decision-making characteristics and their effect on financial success in an experimental game.

Methods: 52 adults (30 women; 22 men) participated. The Mach IV Questionnaire of Christie and Geis and the BIS/BAS Scale of Carver and Sheier were used as personality measurements. The experimental situation was a computerized, ten-round Public Goods game with the condition of costly punishment in the second half.

Results: 1) There was a significant negative correlation between the amounts of contributions and the level of Machiavellianism in certain crucial rounds. 2) Participants with different scores of Machiavellianism displayed distinct patterns of decision-making. 3) The amount of punishment, that players impose on each other, showed a positive correlation with the level of Machiavellianism and a negative correlation with the activity of Behavioural Inhibitory System (BIS). 4) There was a tendency pointing towards a positive association between the scores on Mach-IV test and the financial success.

Conclusions: The results have shown that different levels of Machiavellianism indeed lead to different decision-making strategies and that the Machiavellian characteristics, as evolutionary theory predicts, provide effective ways of adaptation to social dilemma situations.

oszi79@yahoo.com

NOTES:

15:55 **How to make climate conferences a success: Making full contributions to a public goods game a rational strategy.**

Ulrich Frey¹

¹ Center of Philosophy and Foundations of Science, University of Giessen, Germany

Objective: Social dilemmas and cooperation are a challenge to evolutionary theory. The importance is apparent e. g. in climate conferences. We model such problems through public goods games. Our findings achieve a solution by transforming the problem to create a second Nash-equilibrium at full cooperation.

Methods: We played a standard anonymous public goods game. Four subjects form a group, with an endowment of 10 tokens each of the 10 rounds. Subjects can choose between this treatment or a "deposit game", where all 4 players agree to deposit 10 tokens before the game. For anyone not contributing 10 tokens the deposit is then kept proportionately.

Results: Our baseline treatment, the vcm game, shows the typical standard mean contribution of 55% of the endowment declining to 20%. The deposit game, however, shows a remarkable stable 80% to 75% mean contribution. Our results are evidence for a second Nash-equilibrium. Additionally, the percentage of freeriders is significantly lower and does not rise in the last round – even in absence of reputation, sanctions, etc. Subjects recognize the deposit as a prior punishment and avoid it at first, but then prefer it, realizing that almost all subjects contribute at the social optimum.

Conclusions: We succeeded in making full cooperation a dominant strategy by altering the social dilemma in a way that could easily be implemented in climate conferences. These strong results also connect to seemingly altruistic advance (that is asymmetric) provision of goods or efforts in many species, explained by the evolutionary mechanism of the handicap principle.

ulrich.frey@uni-giessen.de

NOTES:

SESSION G1 – BEHAVIOURAL ADAPTATIONS

16:50 **Variability selection and hominin behavioural plasticity.**
Matt Grove¹

¹ Institute of Cognitive and Evolutionary Anthropology, University of Oxford, UK

Objective: The variability selection hypothesis provides a promising explanation for the evolution of the behavioural plasticity that facilitated the hominin diaspora. However, there has been little attention paid to the theoretical underpinnings of the hypothesis as regards the viability of an invading 'versatilist' allele. Such alleles represent the capacity to apply effectively specialist adaptations to a progressively widening series of situations. This contribution establishes the specific climatic and environmental conditions under which selection for versatility exists, and identifies variation in the relative pressure of that selection within the hominin clade over the past five million years.

Methods: Multi-allelic single locus quantitative genetic models are employed; versatilist alleles compete at given loci with pairs of opposed specialists under selection regimes determined by continuously oscillating model environments. The model environments are then replaced by five million year global temperature and precipitation records as derived from benthic foraminifera and eolian dust records and combined with estimated hominin generation times.

Results: Versatilist alleles achieve fixation in model environments in which periods favouring opposed specialists are both equal and symmetrical; mathematically, this is equivalent to accurate tracking of mean environmental trends by the versatilist. The increasing dominance of the eccentricity cycle as a component of climatic fluctuation in the last million years coupled with an increase in hominin generation times has selected repeatedly for versatilist fixation.

Conclusions: Variability selection is supported as an explanation for the evolution of behavioural plasticity in model environments under particular selection regimes and in hominin populations under actual selection regimes.

matt.grove@anthro.ox.ac.uk

NOTES:

17:20 **Human ability to detect kinship in strangers' faces.**Gwenaël Kaminski¹, Fabien Ravary², Karine Mazens¹, Christian Graff³, Edouard Gentaz²¹ Laboratoire de Psychologie & NeuroCognition, CNRS, France² Department of Entomology, National Taiwan University, Taiwan³ Centre de Biologie du Comportement, Université Pierre Mendès France, France

Objective: The “elementary structures of kinship” prime the detection of genetic relatedness to define one’s own family and, at a higher level, understand groups of strangers. People undeniably pay attention to familial resemblance in appearance, making facial resemblance a likely candidate for kinship detection. To further understand the perceptual processes that underpin kinship judgments in strangers’ faces, we conducted multiple experiments to explore (i) the degree of relatedness among strangers’ faces, and (ii) the importance of individual participants per se (age, ethnicity...).

Methods: Caucasian faces of unknown related and unrelated individuals were presented through photo sets in forced-choice tests. Participants were given either a face-matching or face-comparison task.

Results: We showed that human adults are capable (though not very efficient) at assessing the relatedness of unrelated individuals from photographs, and that visible facial cues vary according to the degree of relatedness. We also showed that kinship detection in strangers’ faces is possible, but that there is much variability, depending on participant characteristics.

Conclusion: These experiments revealed how the capacity to distinguish between kin and non-kin pairs applies to situations related to indirect fitness. Moreover, our study goes further than previous findings, showing that several participant characteristics may influence their ability to detect kinship in strangers’ faces.

gwenael.kaminski@gmail.com

NOTES:

17:55 **Time awake influences disgust sensitivity: support for the compensatory behavioral prophylaxis hypothesis.**

Diana S. Fleischman¹, Micheal DeBarra¹, Daniel M. T. Fessler³, Valerie Curtis¹, Robert Aunger¹

¹The London School of Hygiene and Tropical Medicine, UK

²University of California, USA

Objective: Circadian immune fluctuations whereby immunity is diminished soon after waking then rises steadily until it plateaus a few hours later have long been recognized in humans. The compensatory prophylaxis hypothesis predicts that physiological vulnerabilities to contagion, such as reductions in immunity, are offset by psychological mechanisms designed to promote avoidance of cues of disease. We sought to test this hypothesis by relating disgust, an emotion which motivates organisms away cues of contamination, to time awake.

Methods: Study 1 examined the relationship between time awake and disgust responses to disease salient images. In study 2 we surveyed men and women in an online study by asking them a number of questions probing different kinds of disgust sensitivity as how long they had been awake. In study 3 we surveyed participants online again, gauging their disgust sensitivity and time awake as well as asking more questions about medical history, medication usage and sleep quality.

Results: We found disgust sensitivity decreases as time awake increases up to a few hours after waking in two different surveys of disgust sensitivity. This result is stronger for women than men. Domains of disgust sensitivity differ in evincing this circadian pattern.

Conclusions: We have found evidence that disgust sensitivity tracks circadian patterns in immune function such that participants are more disgust sensitive soon after waking than they are later in the day.

dianafleischman@gmail.com

NOTES:

18:20 Phylogenetic methods reveal regular sequence in the evolution of political organization.

Thomas Currie^{1,2}, Simon Greenhill³, Russel Gray³, Toshi Hasegawa¹, Ruth Mace²

¹ University of Tokyo, Japan

² University College London, UK

³ University of Auckland, New Zealand

The question of whether or not human socio-political organization has evolved through a regular sequence of forms has long been a controversial issue. However, debates have continued largely in the absence of rigorous, quantitative tests of the opposing hypotheses. Here we evaluate six competing sequential and non-sequential models of political evolution that are based on these debates, using a Bayesian phylogenetic comparative method and data from Austronesian-speaking societies. Results provide strong support for sequential over non-sequential models, particularly in the direction of increasing complexity. The study reveals that despite the numerous divergent pathways that human history has taken there have indeed been regularities in human cultural evolution and that these regularities are detectable using modern cultural phylogenetic techniques.

r.mace@ucl.ac.uk

NOTES:

SESSION G2 - WOMEN'S SEXUAL STRATEGIES AND PREFERENCES

16:50 **Dyadic, autosexual and extra-pair sexual behavior of coupled women under the influence of oral hormonal contraception.**Kateřina Klapilova¹, Aleš Kuběna², Petr Weiss³, Jan Havlicek²¹ Faculty of Humanities, Module of Social Sciences, Charles University, Czech Republic² Department of Anthropology, Faculty of Humanities, Charles University, Czech Republic³ 1st Faculty of Medicine, Institute of Sexology, Charles University, Czech Republic

Objective: There is a mixed evidence concerning side effects of the oral contraceptives (OCs) on female sexual and mating behavior. Unfortunately, previous research was concentrated mainly on uncoupled student population. The aim of our study is to explore the differences in sexual behavior, desire and number of sex partners between OC-users and non-users living in permanent relationship on the basis of highly representative sample.

Method: Sample consisted of 316 women in reproductive age, nulliparas, living in long-term relationship (228 OC-users, 88 non-users). The questions representing observed variables (age, relationship status, OC usage, overall frequency of sexual activities, ideal frequency of sexual activities, frequency of masturbation, frequency of orgasms, number of sex partners) were included in the official questionnaire used in the Czech national survey of sexual behavior in 1993, 1998, 2003, 2008. The data were collected via Q-sampling.

Results: In comparison with OC-users, normally cycling women had significantly higher overall sexual desire (1.68 x, $p = 0.003$), frequency of masturbation (1.16 x, $p = 0.012$) and they reached orgasm during sexual intercourse more often (17.86 x, $p < 0.001$). These between-group differences change significantly with the age of women, the effect is caused mainly by the differences in older age. We did not find significant differences for the overall sexual activities frequency, including dyadic sexual behavior. Coupled non-users had significantly higher number of different sexual partners during the past year (1.280x, $p=0.015$).

Conclusion: We found higher scores in coupled normally cycling women in the aspects of female sexuality not depending on the participation of their long-term partner (including the sexual activities with higher number of partners), while the frequencies of dyadic sexual behavior were comparable.

katerina.klapilova@seznam.cz

NOTES:

17:20 **Sexual strategy and woman's prenatal investment allocated into progeny - testing "hunting for good genes" hypothesis.**

Boguslaw Pawlowski^{1,2}, Agnieszka Zelazniewicz¹

¹ Polish Academy of Sciences, Institute of Anthropology, Poland

² University of Wroclaw, Department of Anthropology, Poland

Objective: One of the evolutionary explanations of pursuing short-term mating strategy by women is "hunting for good genes" hypothesis. It assumes that to assure better genes to a progeny, women engage in short-term relationships (adultery or 'one-night stands') with males of high genetic quality. The good measure of a progeny quality can be neonatal weight which is an important factor influencing infant survival. This means that neonatal weight is a convenient proxy for fitness. We test the hypothesis that women who have a child from an uncommitted sexual behaviour make higher prenatal investment and give birth to relatively heavier, fitter newborns.

Methods: The web-based survey was advertised in a Polish nationwide newspaper. 1605 women, who gave birth to at least one child, answered the questionnaire. Among them, there was 145 mothers whose children were conceived in adultery or in a 'one-night stand'. We compared birth parameters of children conceived in short-term mating and children conceived in long-term relationships as well as mothers relative prenatal investment measured by child birth size to mother size ratio.

Results: We found no difference in birth parameters and mother's relative prenatal investment between children conceived in adultery or one night stand and children conceived in long-term committed relationship.

Conclusions: The results do not support 'hunting for good genes' hypothesis. We will discuss both possible reasons for the lack of differences between studied groups of children and the alternative ways of testing good genes hypothesis.

bogus@antropo.uni.wroc.pl

NOTES:

17:55 **Preference for human male body hair changes across the menstrual cycle and menopause.**

Markus J Rantala¹, Mari Pölkki¹, Liisa M Rantala¹

¹ University of Turku, Finland

Objective: It has commonly been considered that women's preference with regard to male body hair changes over the years according to fashion, and is influenced by the media. Experimental evidence, however, is currently lacking.

Methods: We examined the effect of male torso hairiness on Finnish women's attractiveness ratings by presenting pictures of male torsos before and after the removal of body hair.

Results: We found that the women's preferences correlated strongly with the hairiness of their current partners, suggesting that body hair may play a role in actual mate choice. We also found that when the women's fertility was at its highest they preferred males with less body hair, and that post-menopausal women demonstrated stronger preferences relating to male body hair than did pre-menopausal women. Previous studies have found that when fertile in their cycles, women are particularly sexually attracted to masculine features in men, which are suggested to be indicators of genetic quality. Our study suggest that in the fertile period of their cycle Finnish women prefer more the trait that is the current Western ideal of male beauty (hairlessness) than the trait that is traditionally (but incorrectly) seen as a symbol of masculinity. Interestingly, the hairiness of the women's fathers correlated positively with that of their current mates. This suggests that women's preferences as to male hairiness may be partly the result of sexual imprinting on paternal body hair, and/or that this preference is heritable.

Conclusions: These findings suggest that body hair may play a much more important role in human mate choice than previously thought, and that biological factors, such as hormones and sexual imprinting or heritable preferences, may explain individual variation in women's preferences with regard to body hair.

markus.rantala@utu.fi

NOTES:

SATURDAY 27TH MARCHSESSION H - *NON-HUMAN PRIMATES BEHAVIOUR – IMPLICATIONS FOR HUMAN EVOLUTION.*

- 10:00 **Facial cues of dominance modulate reflexive gaze-following in human observers.**
Benedict C Jones¹, Lisa M DeBruine¹, Julie C Main¹, Anthony C Little², Lisa LM Welling¹,
David R Feinberg³, Bernard Tiddeman⁴

¹ School of Psychology, University of Aberdeen, UK

² School of Psychology, University of Stirling, UK

³ Department of Psychology, Neuroscience and Behaviour, McMaster University, Canada

⁴ School of Computer Science, University of St Andrews, UK

Objectives: The ability to follow others' gaze is essential for fluent social interaction, playing a crucial role in social learning, collaboration, threat assessment and understanding others' intentions. While cognitive psychologists have generally proposed that the extent to which observers follow others' gaze is unaffected by non-gaze cues (e.g., facial expressions or explicit social knowledge), a recent study of gaze-following in macaques has challenged this widely held view; macaques follow the gaze direction of dominant conspecifics more than that of subordinate conspecifics, demonstrating that cues of dominance modulate gaze-following in at least one primate species. Consequently, we investigated whether facial cues of dominance modulate gaze-following in humans in a similar way.

Methods: We used a standard spatial cuing paradigm to compare gaze-following behaviour when viewing masculinised (i.e., dominant) and feminised (i.e., subordinate) versions of face images.

Results: At short viewing times, observers demonstrated a greater gaze-following effect for gaze cues from masculinised (i.e., dominant) faces than from feminised (i.e., subordinate) faces. Importantly, this effect of facial masculinity on gaze-following decreased as viewing time was increased, indicating that the effect is driven by involuntary responses.

Conclusions: Our findings suggest that the mechanisms that underpin reflexive gaze-following evolved to be sensitive to cues of others' dominance, potentially because such differential gaze-cuing promoted desirable outcomes from encounters with dominant individuals.

ben.jones@abdn.ac.uk

NOTES:

10:25 **Social implications of copulation calls in bonobos, *Pan paniscus*.**
Zanna Clay¹, Klaus Zuberbuhler¹

¹ School of Psychology, University of St Andrews, UK

Objective: Comparative studies of non-human primates provide important insights into the evolution of human communication and cognition. Here, we investigated copulation calls in bonobos (*Pan paniscus*), to examine how this species of great ape uses vocalisations as behavioural tools to pursue certain social and reproductive goals. Females of many primate species, including humans, produce copulation calls during mating events. Whilst the adaptive significance of copulation calls is considered to be for promoting reproductive success, bonobo females also produce copulation calls during homosexual matings. The social significance of copulation calls challenges current theories explaining them as purely reproductive strategies.

Methods: We observed sexual interactions and recorded copulation calls of females (N = 12) at Lola Ya Bonobo Sanctuary, DR Congo. Additionally, we manipulated group composition in a controlled setting to examine partner and audience effects.

Results: Results indicated that copulation calls produced in homo- and heterosexual contexts were acoustically indistinguishable. Females called more during heterosexual copulations, but there was a relationship in both contexts between calling and the dominance relationship of caller and partner. Particularly during homosexual contexts, low-ranked females called more when invited to mate with high-ranked partners. Analyses also revealed audience effects relating to high-ranked female presence.

Conclusions: Our results suggest that bonobos use copulation calls as strategic signals to express social status and to advertise bonding relationships with high-ranked partners. The way in which bonobo copulation calls have detached from their biological function as reproductive signals represents a relevant contribution to debates on the evolution of language.

zannaclay@gmail.com

NOTES:

SESSION I – FACIAL CUES, HORMONES AND PERSONALITY**11:20 Facial attractiveness signals the strength of immune function in men.**Indrikis Krams¹, Markus J. Rantala², Tatjana Krama¹¹ Institute of Systematic Biology, University of Daugavpils, Latvia² Department of Biology, University of Turku, Finland

Objective: Facial attractiveness is important for human mating behavior and associated with reproductive success. Symmetry, averageness and masculinity have been shown to influence the attractiveness of men's faces and it has been expected that these traits signal a male's immunological competence and that women's preferences on these traits may be adaptations for identifying healthy mates with good genes. To date, tests of this hypothesis have been indirect and the results have been equivocal or even contradictory. Here we show experimentally that the attractiveness of male faces is associated with the strength of their immune defence.

Methods: We photographed and vaccinated 74 men with hepatitis B vaccine and measured the amount of specific antibodies produced and their plasma testosterone levels.

Results: We found a significant relationship between attractiveness ratings of these faces and amount of antibodies produced, suggesting that the most attractive men have superior immune defence. Facial masculinity and symmetry correlated positively with the strength of immune defence. Instead, facial averageness was not associated with strength of the immune defence. Plasma testosterone levels significantly and positively correlated with the strength of humoral immune responsiveness.

Conclusions: Since testosterone is immune suppressive, our study suggests that only the males with strong immune defence are able to pay the cost of having high testosterone levels, suggesting that facial attractiveness is a honest signal of strength of male's humoral immunity and health. Our study supports the hypothesis that perception of attractiveness is an adaptation for identifying high-quality mates, particularly healthy ones with strong immunity.

indrikis.krams@biology.lv

NOTES:

- 11:45 **A test of the stress-linked immunocompetence handicap hypothesis in human faces.**
Fhionna Moore¹, David Perrett²

¹University of Abertay Dundee, Division of Psychology, Scotland

²University of St Andrews, School of Psychology, Scotland

Objective: Recent research implicates a role of stress in the Immunocompetence Handicap Hypothesis (ICHH). An interaction between putative cues to immunocompetence (masculinity) and current health in men's faces suggests that this may apply to humans. The aim of the research was to explore interactions between stress- and sex-hormones on attractiveness of male faces.

Methods: We explored relationships between sex- and stress- hormones (i.e. testosterone and cortisol) and facial masculinity and attractiveness. Twenty-four facial stimuli were constructed from images of males on the basis of levels of salivary cortisol and testosterone. These were rated by female participants across fertile and non-fertile phases of the menstrual cycle.

Results: Female preferences for cues to testosterone in male faces were moderated by levels of cortisol during the fertile phase of the menstrual cycle. Women preferred facial cues to low cortisol over cues to high cortisol across the cycle.

Conclusions: Results support the SL-ICHH and inform as to the nature of the interaction between testosterone and cortisol, but also warrant further investigation of the cues women attend to when judging facial attractiveness on the basis of sex- and stress-hormones.

f.moore@abertay.ac.uk

NOTES:

- 12:10 **Social dominance and sex steroid hormone levels in women.**
Anna Ziomkiewicz¹, Aleksandra Gomola², Boguslaw Pawlowski^{1,2}

¹Polish Academy of Sciences, Institute of Anthropology, Poland

²University of Wroclaw, Department of Anthropology, Poland

Objectives: Several studies demonstrated the relationship between serum testosterone level and social dominance in men. In contrast, only in a few studies conducted on women this relationship was clearly observed. As estradiol in women is the main sex steroid we hypothesized that estradiol rather than testosterone should be related to this personality trait in women. To verify this hypothesis we conducted the study investigating the relationship between social dominance and serum levels of both hormones in reproductive age women.

Methods: Levels of free testosterone and free estradiol were determined by RIA method from a single blood sample taken between day 1 and 10 of the menstrual cycle of 48 healthy reproductive age women living in city of Wroclaw. Dominance-Submissiveness Questionnaire was used to assess social dominance level.

Results: We found that women with high level of serum free estradiol was significantly less dominant than women with lower level of this hormone. Additionally, social dominance correlated negatively with the level of serum free estradiol to free testosterone ratio and positively with the length of the menstrual cycle. In contrast, we did not find any relationship between social dominance and serum free testosterone.

Conclusions: These results show that testosterone alone may not have any effect on personal trait dominance in women. They also put in question Grant's maternal dominance hypothesis which is underpinned by the observation of significant relationship between those two characteristics. Instead, we propose that this relationship can be mediated by estradiol or estradiol to testosterone ratio.

annaz@antro.pan.wroc.pl

NOTES:

12:35 **Robust male skull shape is associated with untrustworthiness.**

Michael Stirrat¹, David Buls¹, David Perrett¹

¹ University of St Andrews, School of Psychology, UK

Objective: Measures of hominini skulls have been shown to be sexually dimorphic in bizygomatic width. Proxy measures of this from photographs of faces have shown that male variation relates to aggression and cooperation. We extend and validate these results using both 2-D and 3-D information.

Methods: Using a set of 3-D and 2-D images of male heads we tested male variation in bizygomatic width against male behaviour and social perceptions of and behaviour toward these men.

Results: Results indicate that bizygomatic width predicts distrust, non-reciprocation of trust, and perceived untrustworthiness and is evident in both 2-D and 3-D information.

Conclusions: Results to be discussed with reference to sexual selection and possible phylogenies and ontogenies of this sexually dimorphic trait.

michael@perceptionlab.com

NOTES:

SESSION J - HUMAN PARENTAL INVESTMENT

15:30 **Surviving early parental loss and the consequences of remarriage.**
Kai P. Willführ¹, Alain Gagnon²

¹ Justus-Liebig-Universität, Zentrum für Philosophie und Grundlagen der Wissenschaft,
Gießen, Germany

² University of Western-Ontario, Department of Sociology, London, Canada

Objective: This paper compares the impact of early parental loss on the survival of children in two different historical populations in Krummhoern [East Frisia, Germany, 1660-1874] and Quebec [Canada 1650-1850]. The Krummhoern can be characterized as a saturated habitat with little expansion possibilities, while in Quebec expansion was virtually unlimited for the European settlers. Because of these different socio-economic and geographic conditions, expectations are that early parental loss affects the survival of children differently.

Methods: We used event history analysis methods with time-varying specifications of family structure on a sample of 5527 male and 5585 female children from the Krummhoern born between 1720 and 1859 and 33213 male and 35089 female children from Quebec whose parents married between 1670 and 1750.

Results: Our results show that in both populations parental loss is directly linked with increased child mortality. Maternal loss has the biggest effect on child's survival and is decreasing with child's age. The effect of remarrying and its associated changes in the family structure differ in both populations. The remarriage of the surviving spouse seems to have no direct effect on orphan's survival in Quebec and Krummhoern. But in Krummhoern the birth of sons to stepmothers is associated with a decrease in survival among of her stepchildren. Stepsisters in Quebec who joined the family with the stepfather appear to be related with an increased mortality of the daughters.

Conclusions: We discuss whether such differential effects of living with half- and stepsiblings might be caused by population specific socio-economic competitions within the family.

kai.p.willfuehr@phil.uni-giessen.de

NOTES:

15:55 **Differential parental investment in school contexts.**
Annette Scheunpflug¹

¹ University Erlangen-Nuremberg, Germany

Objective: The objective is to check the explanatory power of evolutionary theory in regard to differential parental investment in educational research. Trivers & Willard (1973) showed that mothers having superior resources at their disposal tend to invest more in their male offspring; however those with limited resources prefer female offspring. This strategy is related to future reproductive benefits. The gene centric theory will be used in this paper for explaining the differing success in education of girls and boys, especially in the lower range of performance.

Methods: For the following, the international data set „Progress in International Reading Literacy Study“ (PEARLS) of the International Association for the Evaluation of Educational Achievement (IEA) is used. The data had been collected in 35 countries from 146.900 pupils of 4th grade in primary schools and their parents. To avoid confounding with siblings, only single child families had been taken, pupils from development countries and countries in war situation had been excluded (so n= 5.690 pupils with their parents as the data basis). Individual child book resources, learning support by parents and early home literacy activities in relation to the social status of the respective parents had been analyzed by linear regressions.

Results: The results show the Trivers-Willard-effect in all variables (although on small dimensions). In the most cases the interaction effect between sex and social classes shows significance.

Conclusions: This study contributes to the ongoing sociobiological discussion of parental investment in educational contexts (Hobcroft 2005, 2009).

Annette.Scheunpflug@ewf.uni-erlangen.de

NOTES:

SESSION K1 - SEXUAL SELECTION IN HUMANS

16:50 **Sexual selection and human stature: homogamy as a unified framework for understanding mating preferences.**Alex Courtiol¹¹ University of Sheffield, UK

Objective: Assortative mating for human height has long attracted interest in evolutionary biology, and the phenomenon has been demonstrated in numerous human populations. It is often argued that mating preferences generate this pattern, but other processes can also induce trait correlations between mates. The aim of this study was therefore to investigate assortative mating at the level of sexual preferences.

Methods: I present a methodology tailored to quantify continuous preferences based on choice experiments between pairs of stimuli. In particular, it is possible to explore determinants of inter-individual variations in preferences, such as the height of the chooser. I collected data from a sample of 200 individuals from France.

Results: Measurements obtained show that the perception of attractiveness depends on both the height of the stimuli and the stature of the individual who judged them. Therefore, this study demonstrates that assortative mating is present at the level of preferences for both sexes. I also found that both women and men prefer individuals who are significantly taller than average. Finally, results reveal an important phenotypic sexual conflict regarding height preferences.

Conclusions: I demonstrate that measurements of the function describing these preferences are concordant with several distinct mating rules proposed in the literature, and that all major findings are confirmed by a reanalysis of previously published data. In addition, the quantitative approach introduced here fulfills metrics that can be used to compare groups of individuals.

alexandre.courtiol@gmail.com

NOTES:

17:20 **Intralocus sexual conflict over human height.**Gert Stulp¹, Simon Verhulst², Thomas V. Pollet¹, Abraham P. Buunk¹¹ University of Groningen, Department of Social Psychology, The Netherlands² University of Groningen, Department of Behavioral Biology, The Netherlands

Objective: Sexually antagonistic selection (SAS; sex-specific selection for different trait optima) results in intralocus sexual conflict (IASC) when genetic constraints prevent the sexes from reaching their optima. The evolution of sexual dimorphism, through for instance sex-linked genetic expression, can resolve this conflict fully. Yet, IASC often persists despite the sexual dimorphism. Human height is sexually dimorphic indicating previous IASC. As height is highly heritable and genes of fathers and mothers contribute equally to the heights of sons and daughters, additional IASC over this trait may remain. In this study, we examine whether SAS acts on human height, and whether this results in IASC.

Methods: We analyzed data from the Survey of Health, Ageing and Retirement in Europe (SHARE), a cross-national database of data on health, socio-economic status and social and family networks of more than 45,000 individuals aged 50 or over, using Poisson mixed models. We defined reproductive success as number of grandchildren

Results: Male height had a curvilinear association, and female height had a negative linear association with reproductive success, indicating sexually antagonistic selection. IASC was evidenced by taller parents having more reproductive success via sons than daughters, while shorter parents having more success via their daughters.

Conclusions: Human height is under SAS, resulting in IASC as evidenced by the fact that sons of taller parents and daughters of shorter parents had relatively more reproductive success. Thus, despite the existence of sexual dimorphism, there is ongoing intralocus sexual conflict over human height.

g.stulp@rug.nl

NOTES:

17:55 **The iron grip of sexual selection: Grip strength is positively associated with male but not with female reproductive success.**

Thomas Pollet¹

¹ University of Groningen, Evolutionary Social Psychology, The Netherlands.

Objective: Few studies have linked human reproductive success with physical traits in both sexes. However, this is necessary to demonstrate ongoing sexual selection in humans: a given trait has to influence male reproductive success more strongly so than it does female reproductive success (or vice versa). One key trait which is predicted to be under ongoing sexual selection is physical strength. Research shows that male physical strength is a preferred trait by women. There is little evidence, however, that female physical strength is preferred by men. No study so far, however, has linked physical strength to reproductive success in both sexes. Here we test whether physical strength, operationalised as grip strength, predicts male but not female reproductive success (completed fertility).

Methods: The data are from the SHARE Wave 1, a large European sample of retirees, covering 11 countries and Israel. We examined the independent effect of grip strength for completed fertility by use of Linear Mixed modeling (working sample= 12,366). We controlled for nationality, age and educational attainment.

Results: While controlling for other variables, we found a significantly positive effect of grip strength on completed fertility for males ($\beta = 0.08$; $p = 0.00001$). For women, there was no significant effect of grip strength on completed fertility ($\beta = 0.01$; $p = 0.286$). The slope was also significantly higher for males than for females (Z-Test; $p = 0.002$).

Conclusion: In line with the prediction, there was a positive effect of grip strength on male reproductive success but not on female reproductive success. Findings are discussed with reference to the limitations and the literature on sexual selection in humans.

T.V.Pollet@rug.nl

NOTES:

SESSION K2 - MEMORY AND COOPERATION

16:50 **Memory interference constrains the evolution of cooperation.**Jeffrey R. Stevens¹, Jenny Volstorf¹, Lael J. Schooler¹, Joerg Rieskamp²¹ Center for Adaptive Behavior and Cognition, Max Planck Institute for Human Development, Germany² Joerg Rieskamp Department of Psychology, University of Basel, Switzerland

Objectives: Many cooperative strategies require tracking the previous behavior of partners. Few studies, however, have tested the memory requirements for these cooperative strategies. Our objective here is to measure cooperative memory and determine whether it meets the requirements needed for cooperative strategies such as tit-for-tat to evolve.

Methods: We measured participants' memory accuracy in recalling the previous behavior of a number of partners that cooperated or defected in a social interaction. We tested participants with groups of 5, 10, or 15 partners, and they experienced either 5, 10, or 15 interactions with each partner. To assess whether these levels of error constrain the evolution of cooperation, we examined the robustness of various cooperative strategies to errors using an agent-based evolutionary simulation with repeated prisoner's dilemma interactions.

Results: When asked to recall the previous behavior of partners in a cooperative situation, human participants performed poorly, making errors in, on average, 10-24% of the trials. Error rates increased with the number of partners to track, but the number of interactions per partner did not influence error rate. The evolutionary simulations confirmed that overall levels of cooperation drop quickly with increasing error rates, and cooperative strategies could not outperform defection at the error rates demonstrated by our human participants.

Conclusions: Our results suggest that the simplistic strategies typically used in the study of cooperation likely do not reflect the underlying memory abilities used in social interactions. Instead of emphasizing cognitive simplicity, evolutionary models of behavior should incorporate what we know about cognition, bringing cognitive science into the evolutionary approach.

jstevens@mpib-berlin.mpg.de

NOTES:

17:20 **The good, the bad, and the rare: Memory focus on cooperators or defectors?**
Jenny Volstorf¹, Jörg Rieskamp², Jeffrey R. Stevens¹

¹ Max Planck Institute for Human Development, Germany

² University of Basel, Switzerland

Objective Reciprocal strategies like Tit-For-Tat require remembering the previous move of each interaction partner to maintain cooperation. With increasing size of the interaction group, however, memory becomes error prone. To avoid exploitation by interaction partners, people could focus on one partner type, remembering either cooperators or defectors. We tested two ways in which one might save on memory load and track only one partner type: remember cheaters or remember the rarer strategy in the population.

Methods We tested 126 participants in repeated Prisoner's Dilemma Games with frequency of partner types in the interaction group varied between subjects (majority defectors, equal frequency, or majority cooperators). We then asked them to categorize partners as cooperators or defectors after a short and long retention interval (10 minutes and 1 week).

Results Participants remembered rare partner types better than common ones in the respective interaction group (both at short and long retention intervals). In the environment where both partner types were equally common, participants preferentially remembered defectors at short retention intervals, but they showed no difference at the long retention interval.

Conclusions There may be a slight bias to preferentially remember cheaters in the short run, but in the long run people seem to track the rarer type of partner in the environment. This flexibility in responding to the environment suggests the use of ecologically rational memory heuristics in cooperative interactions.

volstorf@mpib-berlin.mpg.de

NOTES:

17:55 **The efficiency losses of cognitive limitations in reidentification.**
Michele Belot¹

¹ University of Oxford, Nuffield College, UK

Objective: This study provides a first set of experimental results highlighting cognitive biases in the recall of identities and payoff-relevant information across races.

Methods: East-Asian and White subjects see faces of East-Asian and White people, mapped to a payoff-relevant value. In a second stage, subjects are asked to recall the pictures with the highest payoffs.

Results: We observe an asymmetry in the accuracy of recall: High value faces are more accurately recalled within race than across races, such that decisions are less efficient across races than within race. On the other hand, if race is a scarce attribute, it serves as an obvious marker of identity and re-identification is substantially improved.

Conclusions: These results raise new questions on the implications of such cognitive biases for the nature of cross-racial relations, in particular for phenomena relying on repeated interactions and reidentification, such as the formation and maintenance of social ties, the establishment of trust and the sustainability of cooperation.

michele.belot@nuffield.ox.ac.uk

NOTES:

POSTER ABSTRACTS

(In alphabetical order according to surname of the first author)

- 1). Mach no mates? The role of Machiavellianism and sex in friendships and social networks.**
Sue Aitken¹, Minna Lyons¹

¹ Liverpool Hope University, UK

Objective: Previous studies have found robust sex differences in forming and maintaining friendships. Developmental studies have demonstrated that boys prefer large, hierarchically structured groups, whereas girls form dyadic groups, where relationships are based on intimacy and emotional attachment (see Vigil, 2007). It is possible that rather than sex alone, personality also plays a role on friendship quality and social networks. This study looks at the relationship between the trait Machiavellianism, friendship quality, and social network size, predicting that manipulateness has a negative relationship with friendship quality, but a positive relationship with the size of and individuals' social network.

Methods: The on-line questionnaire survey utilised the Mach IV (Christie and Geis, 1970), the Friendship and Relationship Quotient (Baron-Cohen and Wheelwright, 2003) and the Social Network Questionnaire (Dunbar and Spoor, 1995) instruments. 263 (188 females, 55 males) individuals participated in an on-line survey.

Results: Irrespective of age and sex, Machiavellianism was negatively related to self-reported importance of friendship. However, Machiavellianism did not have a relationship with social network size. It was also found that individuals do not have a trade-off between quality and quantity of friendships, as people who reported better quality relationships also had more friends in their social networks.

Conclusion: The findings indicate that manipulative people do not form warm, close relationships with others. Furthermore, high-Machs do not have a large number of individuals in their sphere of manipulation, as Machiavellianism was unrelated to the size of social networks. The findings are discussed in relation to ontogeny and evolution of pro-social behaviour.

aitkens@hope.ac.uk

2). Personality and reproductive success in a high fertility human population.Alex Alvergne¹, Markus Jokela², Virpi Lummaa¹¹ University of Sheffield, Department of Animal and Plant Sciences, UK² University of Helsinki, Department of Psychology, Finland

Objective: To investigate in a contemporary polygynous, high fertility human population whether personality traits are associated with reproductive success in men and women, measured by both offspring quantity as well as their quality.

Methods: A total of 65 families from rural Senegal took part in the project. Personality of each parent was assessed using self-reports on the Big Five dimensions through private interviews, and quality of offspring (i.e. child nutritional status) was quantified through anthropometric measurements.

Results: Extravertness is a strong predictor of high social status and polygamy in men, which lead extraverted men to produce a higher number of offspring as compared to their introverted counterparts. In women, neuroticism positively predicts the number of children, both between and within families. Importantly, neuroticism is associated with reproductive a trade-off in women from low social classes: while women's neuroticism positively predicts offspring quantity, it also negatively predicts offspring quality leading to fitness payoffs maximized at intermediate neuroticism level.

Conclusions: These results have implications (1) to discuss the role of alternative adaptive hypotheses in the current debate on the maintenance of personality differences and (2) to discuss the role of individual factors for fertility patterns in contemporary humans.

A.Alvergne@sheffield.ac.uk

3). Childhood and Adulthood Proximity Effects on Incest Aversion.Jan Antfolk¹, Mira Karlsson¹, Pekka Santtila¹¹ Åbo Akademi University, Finland

Edward Westermarck (1891) suggested incest aversion to be an adaptation, and that the proximal mechanism activating the phenomenon, was propinquity in childhood. Later, he also described moral disapproval as a social extension of the individual sentiments (Westermarck, 1906). There is some evidence on the effects of propinquity in childhood on incest avoidance (e.g. Lieberman, Tooby, & Cosmides, 2003). Exploring the presumption a sensitive age for this mechanism (e.g. Wolf, 1995), we wanted to explore whether incest aversion can be activated later in life. Using a survey method, we gathered responses from participants (N = 432) with or without siblings, and with or without own children. We asked them for information of propinquity to siblings in childhood, propinquity to own children and for them to rate biologically and socially incestuous scenarios. We expected main effects of both having had siblings in one's childhood and having own children now, leading to more aversive moral reactions. Furthermore, we expected an interaction, suggesting that later-life activation is mediated by childhood propinquity. The results will be discussed.

jantfolk@abo.fi

4). Parent-offspring conflict over mating and sexual selection under parental choice.Menelaos Apostolou¹¹ University of Nicosia, Social Sciences, Cyprus

Objective: Parents and offspring are not genetically identical and, as a consequence, they have conflicting interests over mating. This conflict induces parents to control the mating decisions of their offspring and choose for them spouses who comply with their own preferences. Being the scarce reproductive resource, the female is controlled more by her parents, while male parents are more influential over the mating decisions of their offspring. Parental control over mating gives rise to sexual selection under parental choice, where men select other men for the purpose of reproduction. Individual mate choice is still exercised, mainly within marriage, through the institution of divorce.

Methods: Data from 186 pre-industrial societies of the Standard Cross Cultural Sample are presented, which are consistent with the model of parental choice.

Results: In particular, arranged marriage is the most common type of marriage, with free courtship being the rarest. When marriages are arranged, male parents are the primary decision-makers, while divorce is as universal as marriage. Mating patterns are contingent upon a society's subsistence type, as arranged marriage is more frequent in agropastoral than in hunting and gathering societies. Finally, males have more decision-making power over their offspring's mating decisions in the former than in the latter societies.

Conclusions: The evolutionary implications of these findings are discussed further.

m.apostolou@gmail.com

5). Does female attractiveness influence recognition based on face silhouette?Magdalena Babiszewska¹, Boguslaw Pawlowski^{1,2}¹ University of Wroclaw, Department of Anthropology, Poland² Polish Academy of Sciences, Institute of Anthropology, Poland

From an evolutionary perspective face recognition and attractiveness are important in the social aspects of human life. Here we test which facialmetric characteristics that can be seen in the profile view (face silhouette), have an impact on recognition task and whether face attractiveness influences face recognition. 19 women face profiles in black were presented in Power Point to 119 male students who were asked to match one out of three gray-scale front-view face images of different women to the presented face profile. Each of the 19 slides was shown only for 10 seconds with 2 seconds intervals between the slides. In order to test which facial traits influence facial recognition on the base of face profile we analyzed six facial anthropological coefficients, that were measured in the saggital plane. Participants were also asked to rate attractiveness of the profiles and front-views images used in the presentation. Overall performance in the recognition task was 44,6% correct, significantly above the 33,3% level expected from chance performance ($\chi^2=5.2$; $p<0.05$). Out of six studied anthropometric coefficients, only two (philtrum length and nose height) were related with the probability of recognition. Recognition was negatively correlated with philtrum length and positively with nose height. Furthermore, face recognition was negatively related with face attractiveness i.e. less attractive faces were recognized more often. It is the 'middle face area' heights that play an important role in face recognition on the base of face silhouette. The accuracy of this recognition also depends on face attractiveness. Attractive faces have usually average anthropometric characteristics and therefore they are not as easily recognized in the profile view as less attractive faces that have some distinguished (far from average) facialmetric traits. These results contribute to our understanding of the mechanisms of face recognition in humans.

babiszewska@interia.pl

6). Disgust Factors and Infection Threats.Micheal de Barra¹, Robert Aunger¹, Val Curtis¹¹ London School of Hygiene & Tropical Medicine, Disease Control & Vector Biology Unit, UK

Objective: Individuals differ in their sensitivity to disgust stimuli; this variability occurs across a number of dimensions, namely animal reminder, core disgust and contamination disgust. It has been argued that the function of disgust is primarily the motivation of behaviour that reduces the probability of contracting an infectious disease. Our objective was to re-examine these disgust factors in light of this disease avoidance model. An additional objective was to test the hypothesis that disgust sensitivity should increase when there is a greater risk of infection.

Methods: Using infectious disease textbooks, an exhaustive list of infection-relevant stimuli was developed. 914 participants rated disgust reactions to disease stimuli in a web based experiment. Using exploratory factor analysis and theory-driven predictions, a new model of disgust variability was developed. With data from a separate sample of participants, confirmatory factor analysis was used to compare competing disgust models in their ability to explain variance in the data set. The same data set was also used to compare disgust sensitivity prior to and during the recent flu epidemic.

Results: Results suggest that the disease avoidance model may better explain individual differences in disgust sensitivity, and that existing conceptualizations of the emotion may overlook important dimensions of individual variability. Data also confirmed predictions about increases in disgust sensitivity in response to recent swine flu pandemic.

Conclusions: Existing theoretical models and psychometrics instruments of disgust sensitivity may require revision. Disgust sensitivity co-varies with public perception of infection threat.

micheal.debarra@lshtm.ac.uk

7). Investigations into the development of facial attraction.

Lynda G Boothroyd¹, Juilitta Sofat, Katie Benson, Lauren Watts, Rebecca Page

¹ Durham University, Department of Psychology, UK

Objective: Although children and adults agree about which faces are attractive from birth onwards, it is not clear what it is about 'attractive' faces that we and they prefer. Adults prefer faces which are feminine (if female), symmetric, average and healthy looking. Infants show mixed results when given faces varying in averageness and symmetry, and no other data exists prior to the early stages of puberty. Here we attempt to address one potential mediator of preferences which has thus far been neglected.

Methods: We assessed preferences, using identical methods, in 7-9 year old girls and adult females; participants rated their preferences for a. apparent health and b. general attractiveness in pairs of adult male faces.

Results and Conclusions: Results suggest that despite any early preferences for 'attractiveness' (be such preferences innate or not), pre-pubertal females do not show adult-typical facial preferences for the known dimensions of attractiveness. Results will be discussed in the context of both methodological considerations and theoretical implications. We will also discuss the emerging results of our research into the facial preferences of 3-5 year olds.

l.g.boothroyd@dur.ac.uk

8). Individuals' beliefs about God and the Afterlife support the importance of supernatural punishment in human cooperation.Pierrick Bourrat¹, Quentin Atkinson¹¹ University of Oxford, Institute of Cognitive and Evolutionary Anthropology, Oxfordshire, UK

Recently, it has been suggested that belief in supernatural monitoring and punishment may discourage individuals from violating established moral norms and so facilitate human cooperation. Here we use cross-cultural survey data from a global sample of more than 300 000 participants to show that beliefs about two related sources of supernatural punishment – God and the Afterlife – predict respondents' assessment of the justifiability of a range of moral transgressions. These relationships hold even after controlling for country of origin, religious denomination, frequency of religious services attendance and level of education. We conclude that Fear of Supernatural Punishment could have had an important role in the origin and maintenance of human cooperation.

p.bourrat@gmail.com

9). Evidence to suggest that female copulatory vocalisations are not a reflexive consequence of orgasm.Gayle Brewer¹, Colin Hendrie²¹ University of Central Lancashire, School of Psychology, UK² University of Leeds, Institute of Psychological Sciences, UK

Objective: The current studies were conducted in order to investigate the phenomena of human copulatory vocalisations and their relationship to orgasm in females.

Methods: Twenty women participated in phase 1 of the study (questionnaire development and piloting). Seventy one sexually active heterosexual women that had previously experienced an orgasm completed phase 2, which was completing the finalised questionnaire.

Results: Data revealed that orgasm was most frequently reported by females following self manipulation of the clitoris, manipulation by the partner, oral sex delivered to the female by the male and least frequently seen during vaginal penetration. More detailed examination of responses during intercourse revealed that whilst female orgasms were most commonly experienced during foreplay, copulatory vocalisations were reported to be made most often before and simultaneously with male ejaculation.

Conclusions: These data together clearly demonstrate a dissociation of the timing of female experiencing orgasm and making copulatory vocalisations and indicate that these responses are to a large extent under conscious control providing females with an opportunity to manipulate male behaviour to their advantage.

GBrewer@UCLan.ac.uk

10). Chimpanzees' Coordination in a 'Stag Hunt' Game.Anke F. Bullinger¹, Emily Wyman, Alicia P. Melis, Michael Tomasello

¹ Max Planck Institute for Evolutionary Anthropology, Department of Developmental and Comparative Psychology, Germany

Chimpanzees engage in a number of complex group activities such as joint mate guarding, boundary patrolling or group hunting. It has been shown that synchronization during these activities not only comes about, because agents individually but simultaneously detect and move towards the target object, but that chimpanzees have some understanding of the partners' role and take their behavior into account. It is unclear, however, whether some mutual understanding of the given situation is sufficient or whether more advanced communicative behaviors such as mutual monitoring, the establishment of mutual gaze, the use of attention-getters or intentional gestures are necessary to coordinate a successful joint action. In this study, we assessed chimpanzees' abilities to coordinate with conspecifics in a 'Stag Hunt' game, i.e., both players could choose between a single action with a low-value reward and a cooperative action with a high-value reward. Retrieval of the high-value reward required simultaneous coordination by both players and resulted in the loss of the low-value reward. In one condition visibility between partners was guaranteed so that communication was possible and in the other condition it was cut off. Regardless of whether chimpanzees could see each other or not ($t(11) = 1.381$, $p = n.s.$), both partners decided for the cooperative option in 91% of the trials and succeeded in 95% of those. These results reveal that a mutual understanding of the situation is sufficient to succeed in the task and that monitoring the other's actions and negotiating about decisions is not necessary.

bullinge@eva.mpg.de

11). Conservatism in laboratory microsocieties: unpredictable payoffs accentuate group-specific traditions.Christine Caldwell¹, Alisa Millen¹¹ University of Stirling, UK

Objective: Theoretical models predict that individuals should strategically increase their reliance on social learning when individual learning would be costly or risky, or when the payoffs for individually-learned behaviours are uncertain. Using a method known to elicit cumulative cultural evolution in the laboratory, we investigated the degree of within-group similarity, and between-group variation, in design choices made by participants under conditions of varying uncertainty about the likely effectiveness of those designs.

Methods: Participants were required to build a tower from spaghetti and modelling clay, their goal being to build the tower as high as possible. In one condition, towers were measured immediately on completion, and therefore participants were able to judge the success of their design during building. In the other condition, participants' towers were measured five minutes after completion, following a deliberate attempt to test the tower's stability, making it harder for participants to judge whether an innovative solution was liable to result in a good score on the final measurement.

Results: Cultural peculiarity (i.e. the extent to which a design could be identified as belonging to a particular chain) was stronger in the delayed measure condition, indicating that participants were placing greater reliance on social learning. Furthermore in this condition there was only very weak evidence of successive improvement in performance over learner generations, whereas in the immediate measure condition there was a clear effect of steadily increasing scores on the goal measurement.

Conclusions: Increasing the risk associated with learning for oneself may favour the development of arbitrary traditions.

c.a.caldwell@stir.ac.uk

12). A dynamic methodology: Raters accurately perceive 10s videos presented simultaneously.Kelly D. Cobey¹, Craig S. Roberts²¹ University of Groningen, Department of Social Psychology, The Netherlands² University of Liverpool, Department of Biological Sciences, UK

Objective: Researchers investigating mate choice preferences commonly collect ratings of static images to gauge how individuals perceive attractiveness in the real world. This methodology negates the influence of dynamic movement cues. While prior research indicates a correlation between ratings of static and dynamic stimuli, a comprehensive consideration of dynamic cues remains important since the two indicators may function to achieve distinct goals. This research tested participants ability to perceive and rate video stimuli presented simultaneously. The aim was to validate a methodology which can be used in future studies investigating dynamic cues and attractiveness preferences.

Methods: To generate stimuli twenty-four women were videotaped discussing their last vacation. These videos were cropped to 10 seconds and sound was removed. Ninety raters were recruited and assigned to one of three conditions. In the first condition the 24 videos were presented individually, while in the second and third videos were presented in pairs and groups of four respectively. Participants were asked to rate each video for attractiveness and in the latter conditions to also explicitly rank the videos.

Results: A correlation test revealed that ratings of attractiveness were highly consistent ($p < 0.001$) in all conditions. Binomial analyses on ranks given to videos were significant ($p < 0.001$) in condition 2 only.

Conclusion: This study validates that raters can accurately make forced choice decisions between 10s videos presented in pairs, as well as rate videos for attractiveness in displays as large as four. These findings may be useful in designing future tests investigating preferences for dynamic cues.

K.D.Cobey@rug.nl

13). Towards a more complete view of attractiveness.Vinet Coetzee¹, Haro de Grauw¹, David I Perrett¹¹School of Psychology, University of St. Andrews, UK

Evolutionary theory posits that attractiveness serves as an 'health certificate', with attractiveness judgments based largely on perceptions of health. Most studies ignore the role of sociocultural factors in attractiveness judgments. The aim of this study was to test whether people prefer the same optimum weight when judging health and attractiveness. We asked male and female participants to optimise health and attractiveness by transforming faces along a BMI continuum. Our results show that (a) people prefer a significantly lower optimum weight when judging attractiveness than when judging health and (b) that this difference is larger in female faces than in male faces. Both results are consistent with the influence of the media on attractiveness judgments.

vc56@st-andrews.ac.uk

14). Personality and situational predictors of decisions in cooperative and competitive interactions.Andrea Czibor¹, Tamas Bereczkei¹¹ University of Pécs, Institute of Psychology, Hungary

Objective: In accordance with evolutionary explanations, we aimed at investigating the influence of personality traits and situational factors on the behavioural strategies involved in a competitive and a cooperative game.

Method: In the experimental settings 105 university students played two versions of the Public Goods Game. Two social situations were created: one in which the individual benefit could be maximized by cooperation with the group members, and one wherein the most beneficial strategy was competition. The subjects' personality characteristics were measured by Temperament and Character Inventory (TCI) by Cloninger and the Mach IV. Test.

Results: Machiavellianism scores negatively correlated with the amount of the individuals' contributions in the cooperative situation, while no association has been found similar correlation in the competitive settings. High Machs seem to recognize that manipulative strategies are most profitable when other group-members are expected to cooperate but do not yield gain when the others also engage in competition. Significant negative relationship was found between the Persistence character factor and final profit. In other words, those persons gain the highest amount of money at the end of the game who permanently adjusted their decisions to their group mates' behaviour. Finally, exploring the influence of certain situational factors on the individual decisions, we found that the presence of cheaters reduced the group-members' contributions, while the groups with at least one altruistic member showed significantly more cooperation.

Conclusion: Our findings support the evolutionary explanations that continuous monitoring and evaluating of the partners' behaviour is essential for successful social exchanges.

czibor.andrea@gmail.com

15). The level of male facial masculinisation as a marker of attractiveness in light of selected qualities of mate value assessed by women.

Dariusz Danel¹

¹ Institute of Anthropology, Polish Academy of Sciences, Poland

Objective: When examining the influence of hormonally dependent sexual dimorphism on facial attractiveness in men, both masculinised and relatively feminized faces may be perceived as attractive by women. This may be observed because it is assumed that female mate choice can be a compromise between biological costs and benefits resulting from a relationship with a particular man. Thus, the final attractiveness assessment of man characterized by specific facial masculinisation could be the outcome of how he is perceived from the angle of direct (genetic) as well as indirect (non-genetic) benefits. These two factors ultimately define men's mate value. The main aim of this work is to determine which of the selected markers of mate value are attractive for women when assessing men's faces with modified masculinisation.

Methods: Firstly, three composite pictures of male faces, which differ in terms of the masculinisation level, were prepared. Secondly, women made a multi-trait assessment of pictures paying special attention to the qualities which are suggested to be connected with attractiveness and mate value.

Results and Conclusions: Statistical models showed that equating a particular quality with different masculinisation levels does not necessarily exert a direct influence on the attractiveness assessment. Furthermore, perceived qualities which are relevant to the high attractiveness of a particular face seem to be selected in a way that helps to minimize the potential risk of loss due to low heritable benefits and to maximize the odds of high parental and relationship investments. The results of this study provide support for the assumption that female aesthetic preference for male faces may be shaped by biological trade-offs between different aspects of male mate value. It is important however, that, depending on the masculinisation level, not all male qualities have a significant and equally important influence on his attractiveness.

danel@antro.pan.wroc.pl

16). Serum level of testosterone and personality trait dominance in postmenopausal women.Marcelina Dluzen¹, Anna Ziomkiewicz²¹ Warsaw School of Social Sciences and Humanities, Campus in Wrocław, Poland² Polish Academy of Sciences, Institute of Anthropology, Poland

Objectives: There is a little consistency in the results of studies investigating the relationship between serum testosterone level and personality trait dominance in women. Most of these studies are conducted in young women of reproductive age in whom levels of testosterone is very low and behavioral effect of this hormone can be masked by the high levels of estradiol. To avoid this masking effect of estradiol we conducted the study investigating relationship between dominance and testosterone in postmenopausal women.

Methods: Forty five women, aged 60 to 65, occupants of Wrocław, Poland participated in the study. Free testosterone and free cortisol level were analyzed from a single blood sample by the RIA method. Trait Dominance-Submissiveness Scale, State-Trait Anxiety Inventory and The Social Readjustment Rating Scale were used to measure dominance, anxiety and life stress in participating women.

Results: We did not find any relationship between serum level of free testosterone and social dominance trait in postmenopausal women. Social dominance was also unrelated to any of other factors controlled in the study such as: serum free cortisol level, anxiety, life stress or bunch of demographic data.

Conclusions: Our study demonstrated lack of relationship between serum testosterone level and personality trait dominance in favorable conditions of low estradiol levels in postmenopausal women. This result may support the alternative hypothesis about the influence of estradiol or estradiol to testosterone ratio on the dominance trait in women.

mdluzen@st.swps.edu.pl

17). Solutions to the Rogers Paradox in Cumulative Culture.Robert Ehn^{1,2}, Kevin Laland²¹ Centre for the Study of Cultural Evolution Stockholm University, Sweden² University of St Andrews, UK

Objective: Anthropologist Alan Rogers (1988) pointed out that social learning does not necessarily increase individual fitness; this is called “The Rogers Paradox”. While various solutions to Rogers Paradox have been proposed (Boyd and Richerson 1985; Enquist et. al. 2007), none have considered cumulative culture. As cumulative culture is a distinctive feature of humans, we set out to explore how Rogers Paradox and its solutions are influenced by cultural accumulation.

Methods: Extension of the mathematical framework provided by Enquist et. al. (2007).

Results: When culture is cumulative, a “second order” Rogers Paradox appears, which invalidates a previous solution (the critical social learner) in many situations. Critical social learners tends to “get stuck” on a level they consider good enough. Surprisingly, this effect can also result in the fitness of the critical social learner actually decreasing as social learning becomes more efficient. Interestingly, another similar solution (the conditional social learner), does not exhibit this behavior and tends to do better than the critical social learner even in situations that have previously been shown to be very beneficial for critical social learners. We also introduce a new learning strategy, the individual refiner, which first uses social learning and then always refines the solution by individual learning. The individual refiner proves a solution to Rogers Paradox in a cumulative setting.

Conclusions: The best way to learn in this setting is to use the individual refiner strategy. This seems consistent with how humans learn in many situations. Furthermore, this is the only one of the strategies in this paper that can reliably cumulate culture over several generations.

michael.ehn@gmail.com

18). Biases in face recognition.Fatima Felisberti¹, Sinem Tekes¹, Lazian Ibrahim¹¹ Kingston University, UK

Previous studies have shown strong biases in face recognition associated with reputations of either cheating or cooperation. Such discrepancies point to the need of further studies. Here biases in face recognition in social contexts were investigated by tagging faces with descriptions associated with positive, negative or neutral social behaviours. Our results showed that in environments where strong reciprocity is common, faces linked to pro-social behaviours were recognised more accurately and quicker than faces associated with uncaring, anti-social, or neutral behaviours. These short-term face recognition biases were also observed when a target face was mixed with new faces. The biases were weakened or overridden when a somewhat vague behavioural tag (e.g. a friend borrowed £25.000 and paid it back with interest within a year) was replaced by a clear and concise tag (e.g. he is a cooperator). Recognition biases play an important role in social exchanges when individuals may have to decide whether to trust or distrust persons based solely on their alleged reputations. In addition, an efficient detection of pro- and anti-social behaviours is vital to the strengthening of social exchanges. Long-term biases in the recognition of faces linked to briefly acquired reputations will be discussed.

f.felisberti@kingston.ac.uk

19). The Evolution of Teaching.Laurel Fogarty¹, Pontus Strimling², Kevin Laland¹¹ University of St. Andrews, Scotland² Malardalen University, Sweden

Objectives: Many species of animals acquire skills and information from others, but until recently it was widely believed that humans alone actively teach. However, while recent reports of teaching in social insects, cooperative breeding birds and carnivores suggest that teaching may be more common in animals than hitherto believed, the absence of similar reports in large-brained, intelligent mammals implies a curious and puzzling taxonomic distribution for this behaviour. We endeavored to solve this taxonomic puzzle and also to examine the highly successful evolution of teaching in humans through developing and analysing theoretical models.

Methods: We explored the evolution of teaching using a series of simple population genetic models in which a single tutor transmits adaptive information to a related pupil at a cost. Our analyses explain both the distribution of teaching behaviour, the evolution of teaching in humans and the absence of teaching in some other large brained taxa.

Results and Conclusions: Teaching is favoured in circumstances where valuable information is difficult to acquire through asocial or inadvertent social learning, and accordingly is not expected to covary with learning capability. By enhancing the relatedness of tutor and pupil and distributing the cost of teaching amongst multiple individuals, sociality and cooperative breeding promote teaching. Teaching may be widespread in humans because psychological mechanisms promoting the fidelity of information transmission enhance teaching efficacy, while cumulative cultural evolution creates highly valuable information that is difficult to acquire through other means.

lf31@st-andrews.ac.uk

20). Parental effects on occurrence of extrapair sexual behavior.Jan Havlicek¹, Barbara Husarova¹, Katerina Klapilova¹, Veronika Rezacova¹¹ Charles University, Faculty of humanities, Department of Anthropology, Czech Republic

Objective: Besides frequent sanctions and potentially serious consequences, extra-pair sexual activities are a relatively common phenomenon. Most previous studies focused on gender differences related to extra-pair sex. However, we can also see high variability even within individual genders. Here we focus on the link between previous experience with extra-pair sex in previous romantic relationships and in primary family and own reported extra-pair sex tendencies and behaviour.

Methods: Each partner of the 86 long-term cohabiting couples filled in the Questionnaire of Dyadic Assessment, Extramarital Behavioural Intentions Scale and Infidelity Experience Questionnaire.

Results: Similarly as in previous studies, in women who reported extra-pair sex we found a lower level of overall Dyadic Adjustment. This difference was mostly due to a difference in subscale Affectional Expression. We found no similar differences in case of men. Previous experience with infidelity in previous relationships (either own or partners') was not linked to the reported extra-pair sex in the current relationship. On the other hand, men who reported their fathers but not mothers being unfaithful were also significantly more unfaithful and showed a higher level of extramarital intentions. There was no effect of parental infidelity on extra-pair sex or extra-marital intentions in women.

Conclusions: Our results suggest that infidelity experience within primary family has an impact on subsequent behaviour. However, this is the case only in men. Women's extra-pair activities seem to be affected rather by quality of the current relationship. Future research is needed to test the influence of ontogenetic and hereditary factors participating on the development of infidelity tendencies.

jan.havlicek@fhs.cuni.cz

21). Unexpected changes in maternal breast size during pregnancy in relation to infant's gender.Andrzej Galbarczyk¹

¹ Jagiellonian University Collegium Medicum, Institute of Public Health, Department of Epidemiology and Population Studies, Poland

Objective: Male infants may place higher energetic demands on mothers during reproduction than female infants. This study evaluated changes in breast size during pregnancy depending on the infant's gender. Due to larger nutritional needs of the male infants during lactation it was expected that greater changes in breast size would occur in women expecting sons.

Methods: Data for this pilot study was collected from an online questionnaire survey of 120 woman from Poland, who had at least one child. Mothers answered questions about their reproduction history, the last child and the course of the last pregnancy. They also provided information about their body size measurements.

Results: Changes in breast circumference during pregnancy, estimated on the basis of self-reported bra size before and directly after the last pregnancy, were associated with the infant's gender. Surprisingly, mothers of female infants had greater breast circumference changes than the mothers of male infants ($p=0,03$). Furthermore, in analysis of covariance, it was shown that after controlling for maternal weight change during pregnancy the observed differences in the changes of breast size depending on infant's gender remained statistically significant ($p=0,03$).

Conclusions: The observed difference seems surprising in the light of studies reporting that mothers of male infants produced milk that had greater energy content. Larger increase in breast size questioned the old wives' tales telling that girls are stealing some of their mother's beauty. It has to be remembered, nevertheless, that the sole size of breasts does not have to determine the quality and quantity of produced milk. It is likely that women developed two strategies for milk production, depending on the infant's gender, similarly to females of rhesus macaques – synthesizing richer milk for sons but more milk for daughters

agalbarczyk@gmail.com

22). Communication and language factors in forming groups of students.Michal Grech¹¹ The Warsaw School of Social Sciences and Humanities, Poland

Objective: First objective of presented research is answer to the question of communication and language factors responsible for forming small subgroups in big social group. Second objective is to present a method developed for this research and its results (based on groups of students). Theory used is systemic and communication theory of society developed by Michael Fleischer on foundations of Niklas Luhmann social systems theory.

Methods: Standardized questionnaires among group of second year students on one of the BA programs run at University of Wroclaw. Students responded 16 questions, about different subjects concerning: self-image, spending free time, reasoning studies, personal values and whom they lately spoke to. Collected data was analyzed in search for small groups, the base was answers on question to which member of the year they lately spoke to. The second analysis focused on consistency of answers on rest of the questions, specially in and between small groups.

Results: Communication networks in big and small groups of students - small groups of different consistency: from very low 'peripheral' to very high 'core groups' - groups of factors common for most of groups and specific for one or two subgroups - high stability of data - answers of respondents, regardless small numbers of groups (4 to 8)

Conclusions: Conducted research suggests that social network analysis in together with questionnaires is promising method of identification of relevant subgroups in big social groups. Subjects of communication seems to be important in forming some groups.

michal@grech.pl

23). Personality traits in mate choice: Homogamy and/or sexual imprinting.Petra Gyuris¹, Tamás Bereczkei¹, Róbert Járai¹

¹ Univeristy of Pécs, Institute of Psychology, Department of General and Evolutionary Psychology, Hungary

Objective: We have made an attempt at demonstrating the effect of sexual imprinting mechanism on human mate choice. Before, we had focused on facial similarities between couples, now we wondered if homogamy is represented in personality characters, as well.

Methods: Forty nine couples (they should be partners for at least five years/ or they should be living in a committed relationship) and their opposite parents filled in Caprara's BIG FIVE Questionnaire and the s-EMBU retrospective attachment test.

Results: The data of the couples show correlation in the Energy, Conscientiousness and Openness main scales. Significant resemblances were found between the males' wife and mother in Conscientiousness traits of the BFQ. Our results on the effects of maternal rearing behavior style on their son's mating revealed controversial patterns. Scores on the Rejection scale of the s-EMBU were associated with Emotional Stability, and Emotional Warmth with the Agreeableness trait, which supports our expectation. Another analysis of maternal rearing has shown that those men who developed an unfavorable attachment with their mother during childhood would be attracted to women who are similar to her in Emotional Stability traits. As for women's mate choice, one tendency has been revealed for supporting the sexual imprinting hypothesis: those women who had experienced high Emotional Warmth from their father during childhood chose men who resembled their father on the Conscientiousness factor of the BFQ.

Conclusions: The present study has supported the homogamy and some of the theoretical considerations of sexual imprinting mechanism concerning mate choice on personality traits.

gyurispetra@freemail.hu

24). Moral posing in moral judgments: An experimental comparison of moral self- and other-judgment and the effect of social presence.Kristiina Janhunen¹¹ University of Helsinki, Department of Social Psychology, Finland

Objective: This study experimentally investigated two main issues: How people's judgements about hypothetical moral actions (both offensive and prosocial) are affected by the role they are depicted playing in them (actor or observer), and whether a component of social presence (transgression becomes public) intensifies the judgements of moral transgressions.

Methods: Three hundred and forty-nine young athletes in Finland (almost all female) completed a questionnaire in which they rated moral acts described in short stories using a Visually-Aided-Rating tool.

Results: The main findings were: 1) In hypothetical moral-judgement tasks, the subjects did not tend to give self-serving exculpatory judgements. 2) When a component of social presence was included in the task, the judgements of those evaluating the act from the point of view of the actor were more severe than the judgements of either of the control groups (a. observer evaluations of public transgressions, and b. actor evaluations of private transgressions). Additional findings include that the aforementioned results were significant only in the age group with 16–28-years-olds, but not in the younger respondents. The Visually-Aided-Rating scale developed in this study yielded slightly better reliabilities than a standard Likert scale.

Conclusions: The findings demonstrate how the processes of “reputation management” or “moral posing” effect every-day moral judgement. Understanding the functioning of moral posing in different kinds of judgement tasks has implications for future research on judgement biases, reputation and morality. Also the system of Visually-Aided Rating developed for this study can serve as a tool in a variety of scientific contexts.

kristiina.janhunen@helsinki.fi

25). In-law conflict and extended kin networksJohanes Johow¹

¹ Zentrum für Philosophie und Grundlagen der Wissenschaft, Justus-Liebig-Universität Gießen, Germany

Objective: In-law conflict arises because of differences in adaptive investment decisions between descendents of the maternal lineage and descendents of the paternal lineage. Prevailing theory suggests that matrilineal kin gain more benefits from investing in existing offspring, while patrilineal fitness rather is maximized in terms of additional reproductions. Therefore it has been assumed that patrilineal kin tends to accelerate reproduction and matrilineal kin rather protects the mother and her offspring from her mate's sometimes harmful fertility goals. This study aims to differentiate this view.

Methods: Methods of survival analysis (Kaplan-Meier-Plots, Cox-Regression models) were applied to analyse interbirth intervals provided in family reconstitution data of the Krummhörn (Ostfriesland, Germany, 18th and 19th centuries).

Results: Results indicate that reproductive scheduling follows hardly a simple scheme of 'patrilineal kin prefer fast reproduction and matrilineal kin prefer slow reproduction'. Matrilineally and patrilineally related men and women shorten or lengthen conditionally interbirth intervals. Instead, variance in interbirth intervals increases with presence of patrilineal kin.

Conclusions: On one side, in-law-conflict can arise if patrilineal kin adaptively lower their investment in one specific child (e. g. uncertain paternity). On the other side, adaptive investment in one specific child can be limited by factors being more important for the maternal lineage (e. g. child's siblings). Comparing adaptive investment between patrilineal kin and matrilineal kin, they can conditionally both fall beyond or exceed each other. In-law conflict between the lineages could largely reflect rather differences in investment variances than strictly opposite investment strategies.

markus.jokela@helsinki.fi

26). Men with many partners have more children: Testing Bateman's predictions in the contemporary United States.

Markus Jokela¹, Anna Rotkirch², Ian J. Rickard³, Jenni Pettay⁴, Virpi Lummaa³,

¹ University of Helsinki, Department of Psychology, Finland

² Väestöliitto, Population Research Institute, Finland

³ University of Sheffield, Department of Animal and Plant Sciences, UK

⁴ University of Turku, Department of Biology, Finland

Objective: Sexual selection theory predicts that variance in numbers of partners and offspring will be greater, and the association between mating and reproductive success stronger, in males than in females. Whether or not these "Bateman's predictions" apply to contemporary humans is little studied. We examine sex differences in (i) the variance of number of long-term partners and (ii) the variance of offspring number, and (iii) whether serial monogamy is associated with the number of children differently in men and women in the contemporary US. We also examine intra-population variation by studying these associations in different ethnic groups.

Methods: The National Longitudinal Survey of Youth (NLSY) is a nationally representative sample of American men (n=3700) and women (n=4010) born between 1957 and 1964. Methods include linear regression analysis and discrete-time survival analysis by parities.

Results: Variance in partner and offspring number were, respectively, 10% and 5% higher in men than in women. The association between mating and reproductive success was stronger in men, so that men with three or more long-term partners had 19% more children than men with only one partner. By contrast, for women partner number beyond the first partner was not associated with number of children. The associations in men varied markedly by ethnicity.

Conclusions: The observed sex differences lend support for Bateman's three predictions. Serial monogamy may resemble polygyny in its reproductive consequences for men and women.

johannes.johow@gmx.de

27). Natural selection, length of the reproductive period, and weaning age: Implications for the evolution of human life history.A. Friederike Kachel^{1,2}, L. S. Premo¹¹ Max Planck Institute for Evolutionary Anthropology, Department of Human Evolution, Germany² Max Planck Institute for Demographic Research, MaxNetAging Research School, Germany

Objective: Among primates, humans are unparalleled cooperative breeders. This is important because allocare may have played an important role in the evolution of human life history, which is characterized by a younger weaning age, a later age at first parturition, a shorter reproductive period, and shorter interbirth intervals in comparison to other primates. Here, we investigate how the proposed effects of allocare on weaning age affect the optimal length of the human reproductive period.

Methods: Assuming that human lifetime reproductive effort (1) does not vary among individuals and (2) follows the Brass polynomial, variation in age-dependent fertility is driven by the length of the reproductive period. We use Monte Carlo simulation to explore the effect of weaning age on the mean number of offspring produced by individuals with reproductive periods that differ in length.

Results: As has been shown elsewhere, we find that shorter reproductive periods yield more offspring than longer reproductive periods when mortality is high. However, holding mortality constant, we also find that shortened reproductive periods yield more offspring than longer reproductive periods in the presence of younger weaning ages. Thus, natural selection will favor a shortened reproductive period in the presence of a younger weaning age.

Conclusions: Allocare may have played a role in decreasing the weaning age in human ancestors. A hominin reproductive period shortened from the “front end” as a consequence of a younger weaning age would have made room for childhood and adolescent life history stages while increasing the age at first parturition.

friederike_kachel@eva.mpg.de

28). Relative contributions of face and body to perceived attractiveness: Analysis using eye-tracking technology.Shelly M Kemp¹, John E Lycett¹¹ University of Liverpool, UK

Objective: The growing literature on the evolutionary psychology of attractiveness has focussed mainly on the face as a single, unitary morphological trait that indicates individual attractiveness, ignoring contributions from the rest of the body. Results from the few studies that have examined the relative importance of faces and bodies are equivocal: three found that the face is a better predictor for overall attractiveness (Curie and Little, 2009; Mueser et al 1984; Peters et al 2007), while a fourth found the opposite (Alicke et al, 1986). However, the different methods used in the four studies render their results incomparable. Here I report a study which (i) attempts to resolve the methodological inconsistencies of previous studies and (ii) provides quantitative measures of visual behaviour in response to face and body stimuli.

Methods: Eye-tracking technology was used on volunteers to measure visual inspection when rating images of human faces and bodies (together and separately) for health and attractiveness.

Results: I quantify the relative proportion of time spent viewing the face or body, and specified regions of interest within both, before arriving at an attractiveness judgement. These data are examined in relation to other evolutionarily relevant physical traits (e.g. height, weight, symmetry, 2D:4D) that indicate underlying genotypic quality.

Conclusions: Based on the previous inconclusive literature, no clear predictions can be made. By analysing the visual behaviour against attractiveness judgements, it can be determined whether eye gaze data are consistent with results generated from attractiveness ratings and a vast number of physical measurements taken from the stimuli donors' faces and bodies.

smkemp@liverpool.ac.uk

29). Preference for facial self-resemblance and attractiveness in human mate-choice.Ferenc Kocsor¹, Tamás Bereczkei², Szabolcs Juhász², Rita Rezneki²¹ University of Pécs, Medical School, Institute of Behavioral Sciences, Hungary² University of Pécs, Institute of Psychology, Department of General and Evolutionary Psychology, Hungary

Objective: Empirical studies proved that human mate choice tends to be homogamous for various traits. However, different experiments on facial resemblance led to contradictory results. Our aim was to obtain additional evidence for the existence of preference for self-resembling potential mates.

Methods: We had taken photos of volunteers' faces, which then were morphed into male and female composite faces. Volunteers were asked to choose a potential partner of three images in different situations: self-resembling faces, non-resembling faces (both with the same degree of attractiveness), and images which were more attractive than the self-resembling faces.

Results: Women did not show any preference for similarity, they preferred the most attractive male and female faces. In contrast, men preferred the most attractive images of the opposite sex to self-resembling faces and the self-resembling to non-resembling faces. The self-resemblance of same-sex faces was preferred by neither men nor women.

Conclusions: Our results support the hypothesis that both facial similarity (i. e. cues of shared genes) and attractiveness (i. e. honest signals of genetic quality) play an important role in males' mate choice. The lack of choice for self-resemblance on the female side in this study might reflect their more complex decision-making rules that are probably based on other cues beside visual stimuli.

kocsorferenc@gmail.com

30). Pleasantness of everyday odors rated by children.Dagmar Kohoutova¹, Jan Havlicek¹¹ Charles University in Prague, Faculty of Humanities, Department of Anthropology, Czech Republic

Objective: It is generally thought that odor preferences develop partially in response to individual differences in experience. The experiences of people from different cultures differ, and so we should expect cultural differences in olfactory perception. This is supported by a cross-cultural study where people rated odors from their cultural background as more familiar, and were more successful in their identification. The present study sought to determine if the presumption that familiarity can affect hedonic ratings is valid for children within a specific cultural background.

Methods: Ninety-one children (36 boys, aged 8-11) participated in the study. Olfactory assessment included the rating of the same set of odorants twice: first to determine preferences, and second to determine whether odors could be correctly named. The Sniffin' Sticks test with 16 widely known smells was used. Data were analysed by the nonparametric Mann-Whitney U test.

Results: Except for the fish odor sample, we did not find a significant difference for any odor pleasantness rating when children were grouped according to whether they could correctly identify the odor. Children who chose the right label for the fish odor rated it as more pleasant than children who did not recognize the sample in the identification test.

Conclusion: Our results shows that odor identification does not influence the hedonic rating of everyday odors. In this case the feeling of familiarity may be more important than the identification itself.

dagmar.kohoutova@seznam.cz

31). Signaling personality and health: Accurate perception from both full faces and internal features.Robin Kramer¹, Robert Ward¹¹ School of Psychology, Bangor University, UK

Objective: We investigated forms of socially-relevant information signalled from static images of the face in order to determine whether they could be accurately perceived. In addition, we began to explore where in the face this information was portrayed.

Methods: We created composite images from women scoring high and low values on personality and health dimensions, and measured the accuracy of raters in discriminating high from low trait values. We also looked specifically at the information content within the internal facial features by presenting the composite images with an occluding mask.

Results: Four of the Big Five traits were accurately discriminated on the basis of the internal facial features alone (conscientiousness was the exception), as was physical health. The addition of external features in the full face images led to improved detection for extraversion and physical health, and led to performance significantly below chance on intellect/imagination (or openness).

Conclusions: Visual appearance based on internal facial features alone can accurately predict behavioural biases in the form of personality, as well as levels of physical health. In conjunction with internal features, external features can both amplify and conceal the levels of personality and health.

psp837@bangor.ac.uk

32). Is there no love for artists?Alek Lačev¹¹ Charles University in Prague, Faculty of Arts, Department of Psychology, Czech Republic

Objective: Phenomenon of art apparently exceeds the functional and as such, it “cries out for an explanation”. In accord with evolutionary theories of art I ask, why art exists at all or why it is so prevalent in human behavior. Among many evolutionary accounts of art, I have chosen and further examined theory of Geoffrey Miller who claims that art might be a product not of natural selection but of sexual selection.

Methods: Two hypothesis based on Miller’s theory were outlined and tested empirically in a form of on-line personal ads. In quasi-experimental design I have published several equivalent and overall attractive personal ads different in one aspect only – presence of some kind of artistic talent or lack of it. These ads were distributed to all popular Czech lonely-hearts servers in randomized intervals and order.

Results: Results show, that neither more nor younger women answer to those ads, which contain expression of artistic talent in comparison of comparable ads without such traits. Thus, these results do not support Miller’s theory, that art might be form of “peacock tail” and as should be preferred.

Conclusions: There might be several different reasons for such outcome. Further interviews show that artists are connected with more short-term mating while women who answer to the ad were looking for long-term partner. Art is also often associated with madness, which further undermines artist chances to succeed in mating.

alek.lacev@gmail.com

33). Changes of the selected features of a male face and assessment of their influence on the facial recognition.Zdzislaw Lewandowski¹

¹ University School of Physical Education, Faculty of Physiotherapy, Department of Human Biology and Ecology, Poland

Objective: The project raises the issue of face similarity, which is crucial in the process of creating a composite drawing. The aim of the research was to assess the influence of various modifications of the face features and the sex of a person who judges the images on the perception of likeness of the faces.

Methods: An average man's portrait (made out of 26 photographs), which was then modified, was used to assess the likeness of the faces. The size, width and height of the nose, eyes and lips were changed in the range of $\pm 20\%$ (every 2%) from the original. The judges assess a similarity of the individuals observed on a seven-point Likert's scale.

Results: The images with the changes in the size and height of the nose received the lowest scores on the likeness scale which indicates that these changes were perceived by the subjects as the most important. The photos with the changes in the height of lip vermillion thickness, the lip width and the height and width of eye slit, in turn, received high scores of likeness. Ranking of the features on the similarity scale is similar for the judges of both sexes. Women considered more portraits to be less similar to the original image.

Conclusions: Modifications of different facial features influence to a different extent the perception of similarity, and that is why people reconstructing a face look should know the influence of these modifications on the faithfulness to the composite drawing.

zdzislaw.lewandowski@awf.wroc.pl

34). Genetic evidence for multiple biological mechanisms underlying in-group favoritisms.Gary Lewis¹, Timothy Bates¹¹ University of Edinburgh, Department of Psychology, UK

Objective: In-group favouritism is a universal feature of human behaviour and yet is little understood from a biological perspective. A fundamental question regarding the biology of in-group favouritism is whether favouritism is inflexibly directed towards distinct, “essentialist” categories, such as ethnicity and race, or whether favouritism can be deployed in a context-relevant manner, suggestive of a general mechanism underlying group affiliation.

Methods: Here we report the first study (to our knowledge) of the genetic and environmental structure of in-group favouritism, examining religious, ethnic, and racial favouritism in a large, representative, and genetically informative sample. We contrasted models positing a domain-general central affiliation mechanism (CAM), with models in which domain-specific mechanisms influence in-group favouritism for each of the measured “essential” domains.

Result: A series of multivariate analyses supported a biology of in-group favouritism based on both a common heritable mechanism influencing all three groups, and additional heritable domain-specific mechanisms. Family environment effects were (only) found for religious favouritism. Non-familial environment effects increasing religious favouritism acted, paradoxically, to decrease racial and ethnic favouritism.

Conclusion: The result indicates that a biological mechanism exists for affiliating with arbitrary groups; but that systems evolved to process salient cues such as shared ancestry and shared belief-systems also underpin group-specific favouritism.

glewis1@gmail.com

35). Effect of self-resemblance on attractiveness ratings depends on rater's partnership status.

Jitka Lindova¹, Anna Rubesova², Anthony C. Little³, Jan Havlicek², S. Craig Roberts³, Jaroslav Flegr¹

¹ Charles University, Faculty of Science, Department of Philosophy and History of Science, Czech Republic

² Charles University, Faculty of Humanities, Department of Anthropology, Czech Republic

³ University of Liverpool, School of Biological Sciences, UK

Objective: Previous findings of (inconsistent) effect of resemblance of rated photographs to raters on attractiveness judgments have been interpreted in terms of a) general preference for relatives or b) costs of mating with close relatives. According to our hypothesis, woman should prefer dissimilar men as mates not to deprive potential male relatives of resources which could assure them additional mates. Having partner, she should prefer resembling men to allow her potential male relatives reproduce their genes "for free". Similarly, only when still looking for partner, man should prefer to mate with dissimilar woman not to deprive his potential female relative of her resources (fertile body) which could assure her mates with additional resources.

Methods: We photographed 30 women and 10 men with and 73 women and 24 men without partner. Different 15 male and 15 female photographs were morphed to appear similar and dissimilar to subjects. Later, subjects chose the morph in all 30 pairs they found more sexy and nice. Attractiveness of raters was included in models.

Results: We found an effect of partnership status on judgment of sexiness of other-sex morphs ($p=0.012$; self-resemblance less sexy for raters without partner; more sexy for raters with partner), but not on judgment of how nice the person appears, nor on judgment of same-sex photographs. In a model for women only, partnership status had the strongest effect on preferences in women not taking contraception pills.

Conclusion: We confirmed our hypothesis of similar/dissimilar mate preferences based on maintenance of relatives' mate market resources.

jit.hanusova@centrum.cz

36). Women's preferences for masculinity in male faces are highest during reproductive age-range.

Anthony C. Little¹, Tamsin K. Saxton², Craig Roberts³, Benedict C. Jones⁴, Lisa M. DeBruine⁴, Jovana Vukovic⁴, David I. Perrett⁵, David R. Feinberg⁶, Todd Chenore³

¹ University of Stirling, Department of Psychology, UK

² University of Edinburgh, Psychology, Philosophy & Language Sciences, UK

³ University of Liverpool, School of Biological Sciences, UK

⁴ University of Aberdeen, School of Psychology, UK

⁵ University of St Andrews, School of Psychology, UK

⁶ McMaster University, Department of Psychology, Neuroscience and Behaviour, Canada

Objective: Masculinity in male faces is thought to be a sign of mate quality and is associated with measures of long-term health. Previous studies have demonstrated that women's masculinity preferences change across the menstrual cycle with women preferring more masculine men during phases of the menstrual cycle where fertility is highest. Given the hormonal correlates of such preferences and that these hormones change across the life span, we tested for differences in female masculinity preferences at different ages.

Methods: We compared the masculinity preferences of peri-pubescent girls and young adult women (Study 1), circum-menopausal women reporting to either be pre- or post-menopause (Study 2), and a large sample of women across a wide range of ages (Study 3).

Results: In all three studies, preferences for masculinity in male faces were highest in women who were at a reproductively active age. Preferences for masculinity were lower when females were peri-pubescent, post-menopausal, or at ages corresponding to these groups.

Conclusions: These data highlight a shift in female visual preferences for men that is associated with important stages of the lifespan. Visual preferences appear to track important hormonal changes associated with age; as women pass puberty their preferences shift towards facial traits associated with mate quality and as women undergo menopause their preferences for such facial traits decrease. Overall, these results demonstrate the important role of reproductive status and support the notion that preferences for male faces are tied to reproductively relevant hormones.

anthony.little@stir.ac.uk

37). Obesity and sexually selected Anorexia nervosa.George A. Lozano¹¹ University of Tartu, Estonia

Anorexia nervosa is diagnosed by drastic weight loss, fear of gaining weight, a distorted body image, and, in women, three consecutive episodes of amenorrhea. It is often associated with a compulsive need for exercise, a bright outlook on life, and a high level of competitiveness. It primarily afflicts young women in higher socioeconomic strata who are highly competitive and otherwise overachievers. There are three adaptive explanations for anorexia nervosa. Here I present a novel hypothesis, the age-related obesity hypothesis. It posits that the otherwise normal tendency by women to seek a youthful appearance can become maladaptive and lead to anorexia nervosa in environments in which thinness becomes the primary indicator of youth, such as in modern industrialized societies. This hypothesis explains the aforementioned associated features of anorexia nervosa, and its increasing prevalence in western societies. The hypothesis generates several testable predictions: (1) Prevalence of anorexia nervosa across societies should be related to the degree to which thinness is an indicator of youth in a population. (2) Conversely, perceptions of the weight-age relationship should differ among populations depending on the prevalence of anorexia nervosa. (3) Anorectic individuals, or those with the propensity to develop the disease, should have a biased perception of the weight-age relationship. (4) Experimental manipulation of individuals' perception of the weight-age relationship should affect weight concerns, particularly among anorectic or at-risk individuals. Should the hypothesis be supported it might be used to screen at-risk individuals. Furthermore, it would call for more integrative public health programs that take a comprehensive approach encompassing both obesity and anorexia.

george.lozano@ut.ee

38). Born in a bad year? Early environmental conditions influence later maternal performance.Virpi Lummaa¹, Matthew R Robinson¹¹ University of Sheffield, UK

Objective: Early-life ecological conditions influence development and, in laboratory and wild mammals, have long-term consequences for survival and reproduction. In humans, developmental conditions predict adulthood health, but surprisingly little is known of their consequences for reproductive performance across lifespan despite the potential demographic, biological and medical implications. Here, we investigate how conditions during year of birth and each year of adult-life influence maternal performance through (i) women's probability of reproducing; and (ii) the probability of their children surviving to adulthood.

Methods: We use individual-based demographic records from four historical (1749-1889) Finnish populations practising farming/fishing and experiencing fluctuating ecological conditions and high mortality/fertility. We characterise annual ecological conditions with a demographic measure (annual infant survival rate) that fluctuates extensively and combines weather, food and disease conditions.

Results: We found that early-life conditions influence a woman's reproductive success throughout life and affect the success of the following generation. Women with favourable birth year are later more likely to produce offspring who survive until reproductive age, because such women have both better age-specific rates of child survival, and an increased ability to provision sons. The results are independent of whether mothers survived child's first five years, and also remained unchanged for offspring surviving to 5+, suggesting that the effects reflect differences in maternal provisioning rather than just an ability to produce viable offspring.

Conclusions: Long-term effects of the early environment may have an important role in shaping reproductive success across generations and influence the ability of individuals to respond to changing ecological conditions.

v.lummaa@sheffield.ac.uk

39). Is altruism and social intelligence related to cheat detection ability? Some experimental evidence.Minna Lyons¹, Claire Buchanan¹¹ Liverpool Hope University, UK

Objective: According to Dawkins (1976), altruism is an evolutionarily viable strategy if altruists can recognise each other, and refuse to cooperate with defectors. Here, the role of altruism and social intelligence are tested in relation to the ability to judge trustworthiness in video clips of Prisoner's Dilemma game. In addition, the importance of length of exposure to PD stimulus is investigated.

Method: 76 people participated in the experiment (61 females). Participants were administered the Eyes test (Baron Cohen et al, 2001), Altruism Scale (Johnson et al, 1989), the Empathy Quotient (Wakabayashi et al, 2006) and a verbal IQ test. Subjects were also shown 20 clips from the ITV Game Show Golden Balls, and were asked to judge trustworthiness of the game show contestants. 42 participants were shown short (1-2 s) clips recorded at the time of the decision-making moment, and 34 were shown longer clips (1-3 min) where the contestants were convincing their partner to split the money.

Results: Age, verbal IQ, the Eyes and the Empathy Quotient were entered as predictors, and accuracy in judging trustworthiness as the criterion variable in simultaneous multiple regression. None of the variables were significant predictors, altruism being the strongest one ($p=.149$). The group that was exposed to short clips performed significantly better than the group that judged longer clips.

Conclusion: At least in this sample, social intelligence was not related to the ability to judge honesty. Altruism had the strongest relationship, indicating that more altruistic individuals were slightly more accurate. The group who were shown the short clips performed better, pointing at nonverbal leakage at the moment when cooperative decisions are being made.

lyonsm2@hope.ac.uk

40). Sexual imprinting in human mate choice: testing correlation between facial measurements of the mate and opposite-sex parent.Urszula Maria Marcinkowska¹, Markus Rantala¹¹ University of Turku, Finland

Recently, positive sexual imprinting, a process in which children internalize their opposite sex parent phenotype as a template for acquiring similar mates, is suggested to play important role in human mate choice. The aim of the study was to repeat objectively previously made researches about the role of sexual imprinting in human mate choice. In the research there were 70 Polish families, consisting of: suspect, partner and opposite-sex parent. Of each 2 photographs were taken (front and profile). For each individual 15 proportions were calculated, based on both pictures. Correlations in the measurements divisions were counted between: suspect and the opposite-sex parent, suspect and the partner and partner and the opposite-sex parent. Each suspect fulfilled socio-demographic questionnaire. Then randomly chosen group of judges were asked to rank similarity between faces from partner's age group including partner and opposite-sex parent. In contrast to previous studies, we did not find any significant correlations between the measurements of the pictures of the partner and opposite-sex parent. Furthermore, independent raters did not find partner to be more similar to opposite sex parent than what could be randomly expect. Thus, our results does not support outcomes of previously made researches on the sexual imprinting theory. In the light of this study it seems that so far there seems to be only little (if any) support for the positive sexual imprinting hypothesis in humans, because many studies have serious methodological problems or flaws and the rest of studies have not been able to exclude the effect of heritable mating preference or other alternative explanation.

urmarc@utu.fi

41). Design traditions in experimental microsocieties.

Cristina A. Matthews¹, Kerstin Schillinger¹, Christine A. Caldwell¹

¹ University of Stirling, UK

Objective: Amongst scientists who study human behaviour from an evolutionary perspective, there is a wide range of views on the extent to which cultural traditions are constrained by genetic predisposition and environmental conditions. In our work we have studied cultural traditions under controlled conditions, using miniaturised populations in the laboratory, or “microsocieties” (Baum et al, 2004, *Evol Hum Behav*). This has allowed us to test predictions regarding the circumstances under which arbitrary traditions emerge.

Methods: All participants were required to build a tower from spaghetti and modelling clay, but their goals varied. Some groups were encouraged to build their tower to be as high as possible, but others were encouraged to build the most attractive tower that they could. In a third condition, participants were given no goal other than to build the tower.

Results: We have found evidence of spontaneous design traditions, in that pairs of towers built by participants from the same microsociety were rated as being more similar to each other, compared with pairs built by participants from different microsocieties.

Conclusions: We have shown that arbitrary traditions emerge spontaneously under controlled laboratory conditions. These methods allow us to test predictions regarding the types of behaviours that are most likely to show variation across cultures, and those that are likely to show convergence.

cristina.matthews@stir.ac.uk

42). The influence of attachment style with father on young women's preference of masculine/feminine characteristics of male face.Norbert Mesko¹¹ University Of Pecs, Hungary

Objective: According to Belsky's model (1997) individuals have been selected to adjust life histories in response to environmental conditions, and variations in the life cycle are considered as adaptive answers to different circumstances. Individuals who develop insecure attachment with parents and who face scarce resources and family stress will reduce the age of biological maturation, accelerate sexual maturation.

Methods: We made two composites of male faces rated as particularly feminine or masculine. We used these composites as templates when we created 14 feminine-masculine counterparts from 7 different male faces. Female student participants (n= 50, age= 20.34±1.35) were asked to rank the portraits on 7 different scale (masculinity, attractiveness, dominance, aggression, maturity, preference for short term bonding, preference for long term bonding). These female respondents were also asked to complete short version of the EMBU questionnaire. This instrument shows the retrospective perception of parental relating on three different scales (Rejection, Emotional Warmth, and Overprotection) in connection with both parents.

Results: Using statistical analysis we found significant differences between the effect of (A) maternal and paternal parental bonding in (B) the scores of different EMBU factors on (C) the preference of feminized and masculinized male faces.

Conclusions: Different attachment styles have variant impact on the young women's mate choice preference. Presumably higher level of father's rejection is correlated with sensitivity of masculinized male faces, because facial signal of masculinity is an important evolutionary cue (e.g. of good genes).

meskonorbert@meskonorbert.hu

43). Psychopathy as an adaptation- evidence from car salesmen.Keith Morgan¹, Holly Nodwell¹, Sue Aitken¹¹ Liverpool Hope University, UK

Objective: Rather than being a maladaptive personality disorder, Mealey (1995) suggested that psychopathy is a frequency-dependent evolutionary adaptation. The design features of psychopathy point at the adaptive nature of the trait, too. Psychopaths are characterised as being superficially charming, manipulative, callous and guilt-free (e.g. Cleckley, 1941), and are successful in achieving short-term success in work environment (Babiak and Hare, 2006) and in the mating arena (Jonason et al, 2009). In this study, psychopathic personality traits were examined in relation to success in car sales. We investigated the hypothesis that features of psychopathy confer advantage in car salesmen.

Method: 61 car salesmen in the North-West of England completed the Self-Report Psychopathy Scale-III (SRP-III) (Paulhus, Hemphill & Hare, in press). SRP-III scores were compared with self-reported sales success in the previous month. The self-reported figures were confirmed as correct by the manager of the car showroom.

Results: Total SRP-III score, and the sub-scales of Interpersonal Manipulation, Callous Affect and Erratic Life-Style were all positively correlated with sales success. Multiple regression analyses found Interpersonal Manipulation and Erratic Life-Style significantly predicted sales, accounting for 41% of the variability. Younger salesmen were more successful than older ones, although IM and ELS scores were more important than experience for sales.

Conclusion: The idea that psychopathic features confer advantage in car sales was supported, providing evidence for evolution of psychopathy as a successful cheater strategy. It is possible that the lack of pro-social emotions and regard for others, coupled with a hunger for success, are features of a male-typical adaptation. The results are discussed in relation to evolution of cheater strategies.

morgank@hope.ac.uk

44). Humans copy more when uncertain.Thomas Morgan¹, Luke Rendell¹, Micael Ehn^{1,2}, Kevin Laland¹¹ St Andrews University, School of Biology, Scotland² Centre for the Study of Cultural Evolution, Stockholm

Objective: We wanted to explore rules governing social learning in humans, based upon theory and work in other species. These experiments specifically consider the effect of unanimity and quantity of social information, task difficulty and subject confidence on the probability that people will change their minds.

Methods: We used two experimental protocols. The first was a binary choice task in which subjects had to choose between two possible sites at which to forage. The second was a mental rotation task, generally perceived as more difficult than the binary choice task, in which subjects had to determine whether two 3D shapes were the same or not. In both experiments subjects were first exposed to asocial information, asked to make an initial decision, then exposed to social information and made a final decision. We varied the number and agreement of demonstrators across conditions to test unanimity and quantity of social information. We used a conditional information lottery protocol to present manipulated social information without the need for deception.

Results: Our clearest result was that subjects changed their initial decisions more often when they reported low confidence in their decision. Subjects were also clearly influenced by the degree to which social information was unanimous, that is, when there was strong consensus among demonstrators. Despite the mental rotation task being perceived as harder, we did not observe significantly elevated levels of copying in this task.

Conclusions: We have shown a tendency for individuals to pay more attention to social information when they are uncertain about their personal information. As we found that confidence was also related to the probability that subjects decisions were right, we argue such copying is adaptive and increases individual fitness.

tjhm3@st-andrews.ac.uk

45). Women's facial femininity and its relationship with the attribution of personality traits.Vera Pivonkova¹, Anna Rubesova¹, Jitka Lindova¹, Jan Havlicek¹¹ Faculty of Humanities, Charles University, Prague, Czech Republic

Objective: Personality attributions based on faces are mostly studied in relation to the halo effect of attractiveness. However, there are other facial traits which may have an impact on the attributions. In our study we concentrated on facial femininity. We measured 15 anthropometric measurements on 117 women's faces. Principal component analysis of these measurements resulted in 4 factors: Cheekbones/jaw development (F1), Inner face verticality (F2), Distance between eyes (F3), Nose/mouth broadness (F4). Consecutively the target's photographs were rated by 387 raters regarding masculinity, attractiveness and nine psychological characteristics (selected Cattell's factors): Warmth, Reasoning, Emotional Stability, Dominance, Liveliness, Rule-Consciousness, Social Boldness, Abstractedness and Privatness.

Results: First we asked whether femininity correlates with the morphological factors. We found no relationship between femininity rated by women and PCA factors. On the other hand, femininity rated by men correlated negatively with F4. Femininity rated by men and women correlated highly positively and it also correlated with attractiveness ratings made by both sexes. Femininity rated by both sexes correlated positively with ratings of Warmth, Reasoning, Emotional Stability, Liveliness, Rule-Consciousness. Femininity rated by men only further correlated negatively with ratings of Dominance and femininity rated by women correlated positively with ratings of Social Boldness, Abstractedness and Privatness.

Conclusion: Low women's facial femininity increases perceived Dominance in the case of male raters, which might play a role in inter-sexual competition, and could reflect men's higher sensitivity for perceiving of biological factor influence (e.g. level of testosterone). On the other hand, femininity rated by women is positively linked to higher perceived Social Boldness, which might point to intra-sexual competition, which could stem from inter-correlation between femininity and attractiveness.

vpivonkova@volny.cz

46). Maternally expressed genes tell the boys from the girlsGill Ragsdale¹¹Leverhulme Centre for Human Evolutionary Studies, UK

Objective: To examine whether imprinted genes could have facilitated the evolution of human cognition by testing for the influence of imprinted genes on theory of mind.

Methods: The ability to read or interpret facial expressions has been used as a measure of theory of mind. The test used in this study is: 'Reading the mind in the eyes' (henceforth Eyes) and was designed to measure theory of mind (Baron-Cohen et al, 2001). Males consistently score lower on this test than females. In order to assess the influence of imprinted genes, correlations between pairs of full (70 pairs), maternal (24 pairs) and paternal siblings (15 pairs) were compared. If scores were influenced by imprinting, then the actual correlations between pairs of siblings would differ from those expected following classical Mendelian inheritance and the ordered correlations between different kinds of related pairs would differ in a predictable way depending on what kind of imprinting was influencing the trait. Where the influence of imprinting was indicated by the ordered correlations between siblings, the relative fit of the Mendelian and imprinted models were assessed by path analysis using the Mplus structural equation modelling program.

Results: The ordered correlations and best fitting models using Mplus indicate that Eyes scores are influenced by preferential maternal X-linked expression, alone, or in combination with preferential maternal autosomal expression.

Conclusions: The results are consistent with an influence from the maternal X acting to decrease scores in males, while the maternal autosomal influence increases scores in both sexes. Thus X-linked imprinting allows the maternal influence to differentiate between sons and daughters and may have facilitated the evolution of sex differences in theory of mind.

gill@ragsdale.org.uk

47). Food availability at birth affects lifetime reproductive success in historical humans.Ian Richard¹, Jari Holopainen², Samuli Helama³, Andrew F. Russell⁴, Virpi Lummaa¹¹ Department of Animal and Plant Sciences, University of Sheffield, UK² Department of Geology, University of Helsinki, P.O. Box 64, FI-00014 Helsinki, Finland³ Arctic Centre, University of Lapland, P.O. Box 122, FIN-96101 Rovaniemi, Finland⁴ Daphne du Maurier School of Biosciences, University of Exeter Cornwall Campus, UK

Objective: Timing of birth is commonly shown to have long-term consequences for individual reproductive success in natural populations of vertebrates. Food availability is often cited as a reason for this correlation, but direct evidence is sparse. In the present study we investigate the effect of food availability around the time of birth on the reproductive success of 927 men and women born in 18th century Finland with differing access to resources due to social stratification

Methods: Statistical analysis of pedigree data extracted from church records and official records of local food productivity (crop yields).

Results: We found that among both men and women born into landless families (i.e. with low access to resources), marital success, probability of reproduction and offspring viability were all positively related to local crop yield during early life. Such effects were generally absent among landowners.

Conclusions: Our results suggest that maternal investment in offspring around birth can have significant life-long implications for human offspring, particularly among those for which resources are commonly limiting.

i.rickard@sheffield.ac.uk

48). Risk taking among young women as a conditional behaviour.Agnieszka Rydlewska¹, Boguslaw Pawlowski^{2,3}, Ewa A. Jankowska^{2,4}, Piotr Ponikowski^{4,5}¹ Centre for Heart Diseases, Military Hospital, Wroclaw, Poland² Institute of Anthropology, Polish Academy of Sciences, Poland³ Department of Anthropology, University of Wroclaw, Poland⁴ Centre for Heart Diseases, Military Hospital, Wroclaw, Poland⁵ Department of Heart Diseases, Wroclaw Medical University, Wroclaw , Poland

Introduction: According to the handicap hypothesis, animals of greater biological fitness can afford signaling this status through behaviour or morphology. Taking risk can be considered as such type of conditional behaviour. Here we test the hypothesis that people who are fitter i.e. those with higher biological quality measured by such physiological parameter as the efficiency of the reflex-based mechanisms controlling the respiration (called central hypercapnic chemosensitivity), are more likely to take risk.

Material & Methods: Central hypercapnic chemosensitivity and proneness to risk taking was assessed in 46 young, healthy and non smoking subjects: 23 women (age: 22.5±2.51) and 23 men (age: 21.64±1.94). Chemosensitivity was assessed with re-breathing test (breathing within a closed circuit - a 5-L bag filled with oxygen). As a result, hypercapnia was developing which, in a reflex manner induced hyperventilation. The test was stopped when a patient was breathless or when the concentration of CO₂ exceeded 10%. Chemosensitivity was defined as the slope of the regression line relating minute ventilation to CO₂ concentration (L/min/mmHg). Lower values are commonly interpreted as an indicators of greater efficiency of autonomic nervous system in the context of breathing control. The tendency to risk-taking was examined using Domain Specific Risk Taking Scale (DOSPRT) that allow to asses risk-taking proneness in five domains of life: ethical, financial, health/safety, social and recreational risks. Higher values indicate stronger tendency to risk taking.

Results: We found significant negative correlation between chemosensitivity indicator and health/safety risk taking only for women. There were no relationships between the studied physiological parameter and other risk taking domains (e.g. financial or ethical) neither for women nor men.

Conclusion: Women whose reflexes responsible for the control of breathing are more efficient i.e. women having relatively higher biological quality, are more prone to take a health/safety risk.

rydlerek@wp.pl

49). Gender differences in children's awareness of olfaction.Anna Sandova¹, Dagmara Kohoutova¹, Jan Havlicek¹¹ Charles University, Faculty of Humanities, Department of Anthropology, Czech Republic

Objective: In general, women compared to men show better olfactory abilities including sensitivity, identification and awareness of smells in mate choice context. Similar pattern was found in children regarding their awareness of olfaction in everyday life situations. This study aimed to investigate whether gender differences in olfaction can be also be found in younger children.

Methods: A total of 92 children (56 girls) aged 8-11 from two elementary schools in Prague participated in the study. They were interviewed using two established measures of olfactory awareness (Environmental Sensory Stimuli Inventory-ESSI and Children's Olfactory Behavior in Everyday Life-COBEL). The first one (ESSI) asks on reliance of different senses in various contexts (including food, flowers and pets choice. The second questionnaire (COBEL) asks about awareness and reactivity to odours of food, people and environment.

Results: The results of ESSI show that older children are more olfaction-oriented than younger ones. However, we found no gender differences. On the other hand, older girls (aged 10-11) outperform boys in the COBEL questionnaire. This suggests that girls are more aware of and rely on their olfaction compared to boys.

Conclusions: Our results indicate that gender differences in olfaction could get established around the age of 10.

sandova.anna@volny.cz

50). Cultural transmission of design traditions from photographic stimuli and live demonstrations.

Kerstin Schillinger, Cara Evans², Christine A. Caldwell¹

¹ University of Stirling, UK

² University College London, UK

Objective: Previous studies (Caldwell & Millen, 2008; in press) have documented the spontaneous emergence of design traditions within laboratory microsocieties consisting of participants given the task to build towers from spaghetti and modelling clay. Such traditions presumably arise because participants' designs are influenced by those they have seen others produce. Our aim in the current study was to determine whether participants would copy tower designs from photographic stimuli, as well as live demonstrations from another person.

Methods: Participants were required to build a tower from spaghetti and modelling clay, their goal being to build the tower as high as possible. Prior to beginning their own tower, they were shown examples of two others, ostensibly built by previous participants. In one condition (photo), the stimuli were photographs of the towers. In the other (live), the stimuli consisted of one real completed tower, and another tower which was built by a confederate while the participant watched. Stimuli towers were built to one of two typical designs identified in our previous research, which we have labelled "cubic" and "tripod". Participants either saw two cubic towers or two tripod towers as their stimuli.

Results: Participants produced designs that were more like those (cubic/tripod) that they had been given as stimuli. This was the case for both the live and photo conditions, with no significant difference in the strength of the effect between the two conditions.

Conclusions: Photographic stimuli represent effective alternatives to face-to-face interaction for future microsociety research.

ks41@stir.ac.uk

51). Female attractiveness is related to reproductive success in indigenous populations.Piotr Sorokowski¹, Agnieszka Szagdaj¹¹ Institute of Psychology, University of Wrocław, Poland

Objective: As fundamental evolutionary theories suggest, attractiveness is a reliable marker of the biologic condition and reproductive potential of individuals. Therefore attractive women should have higher reproductive success (RS). However, few convincing evidences confirming this assumption exist. For example Jokela (2009) showed that physical attractiveness may be associated with reproductive success in humans living in industrialized settings in late 20th century US (on the other hand Pawlowski et al. 2008 found contradictory results in Polish study). The aim of this study was to investigate the relation between attractiveness markers and RS in population of natural birth control. Height and leg length (LDR) were used as attractiveness markers since they do not change in adult life.

Methods: The research was conducted semi-nomad population - the Himba (Ovahimba) tribe from northern Namibia (68 females). Firstly we investigated the preferences towards female LDR and height. Next, we checked whether there existed a relation between LDR and height and RS of women.

Results and Conclusions: We found a preference towards tall women of relatively low LDR. Simultaneously there existed correlation between height and number of children ($r=.24$, $p=.048$). Mortality rate of children of the shortest women (first quartile) was the highest ($p=.054$) in whole group. Moreover, women with relatively low LDR (second quartile) had the highest number of children ($p=.07$). Mortality rate of children of women with average LDR (second and third quartile) was the lowest. These findings suggest that physical attractiveness may be associated with reproductive success in indigenous populations.

sorokowskipiotr@yahoo.co.uk

52). Lip contrast, facial sexual dimorphism and attractiveness.Ian D Stephen¹, Angela M McKeegan², David I Perrett³¹ University of Bristol, Department of Experimental Psychology, UK² University of Ulster, UK³ University of St Andrews, School of Psychology, UK

Objective: Luminance contrast between facial features and facial skin is greater in women than men. Women's makeup enhances this contrast. In black and white photographs, increased luminance contrast enhances femininity and attractiveness in women's faces, but reduces men's masculinity and attractiveness. In Caucasians, much of the contrast between the lips and skin is in redness. Red lips are considered attractive in women in geographically and temporally diverse cultures, possibly because they mimic vasodilation associated with sexual arousal and ovulation. Here we investigate the effects of lip luminance and redness contrast on facial attractiveness and masculinity/femininity.

Methods: 31 participants (both sexes) manipulated lip colour in 48 colour calibrated Caucasian face photographs along L* (lightness) and a* (redness) colour axes to optimise masculinity/femininity and, separately, attractiveness.

Results: Lips are redder and darker than facial skin, and this contrast is stronger in women. Participants increased this sexual dimorphism to enhance attractiveness, increasing a* contrast more in women's faces than in men's. To enhance masculinity/femininity, a* contrast was enhanced in women's faces, but reduced in men's. The existing sexual dimorphism in L* contrast was maintained but not enhanced, while L* contrast was slightly increased to enhance masculinity/femininity and attractiveness of both sexes.

Conclusions: Redness, more than luminance, contrast affects attractiveness and masculinity/femininity differentially in men's and women's faces. The association between lip contrast and attractiveness in women may be attributable to its femininity and association with redness, vasodilation and sexual arousal. Cross-cultural studies would be a valuable next step.

ian.stephen@bristol.ac.uk

53). Is men's sexual strategy related to sex hormones levels?Irmina Sukiennik¹, Boguslaw Pawlowski^{1,2}¹ Department of Anthropology, University of Wrocław, Poland² Institute of Anthropology, Polish Academy of Sciences, Poland

Objective: Human mate preferences and possibly also sexual strategies may be conditional. This conditionality can be related to body morphology, attractiveness, psychological characteristics or socio-economic status of a person. The question is whether sexual strategy conditionality may be related to sex hormones level. Here we test whether sexual strategy that is pursued by men depends on the level of sex hormones.

Materials & Methods: We measured the level of the following sex hormones: DHEA-S, prolactin, testosterone, free testosterone, FSH and LH) in 68 heterosexual, healthy men (mean age: 24). In order to determine the pursued sexual strategy we used SOI (Sociosexual Orientation Inventory, Simpson & Gangestad, 1991).

Results: There was no significant difference in the studied sex hormones levels between men pursuing long-term (low SOI value) and short-term (high SOI value) sexual strategy.

Conclusions: We did not confirm the hypothesis that the pursued sexual strategy by men is related to sex hormones levels. This may imply that sexual strategy pursued by a man, might be a.) determined by the genes that are independent of the genes responsible for the sex hormones level in adult men b.) is caused by some environmental or biological conditions in earlier stages of life or c.) more conscious effect of the activity of neocortex.

irminkas@gmail.com

54). The generous pauper: resource inequality affects behaviour in a competitive altruism setting.Karolina Sylwester¹, Gilbert Roberts¹¹Newcastle University, Institute of Neuroscience, Centre for Behaviour and Evolution, UK

Objective: Previous work shows that competition for social partners can be a driving force for cooperation. This study examines reputation building behaviour in a context where individuals playing a social dilemma game differ in the amount of resources they possess. We also test whether partner choice decisions are governed by the relative or the absolute cost of cooperation. We predict a negative association between the amount of resources allocated and the proportions of the resources contributed to common welfare. Further, we expect that, in cooperation markets, information about the proportion of resources spent on cooperation rather than about the absolute amount of resources spent is used to assess generosity of potential social partners.

Methods: 60 students played a public goods game with three different allocations: £10, £15 and £20. Participants knew that their contributions would be revealed, and that they would have an opportunity to choose partners for the following decision-making game. Subsequently, participants made partner choices between two players whose experimentally manipulated allocations and contributions were displayed.

Results: It was found that participants low in resources contributed proportionally more than wealthier participants. Further, the results indicate that people consider those who devote a larger proportion of their resources to others as more desirable social partners.

Conclusions: This study demonstrates that within the framework of competitive altruism, low-resource individuals send relatively costlier signals than their high-resource counterparts. Moreover, it highlights that partner choice is affected by the relative cost of a signal borne by the sender rather than the signal's absolute value.

karolina.sylwester@ncl.ac.uk

55). Does personality smell?Agnieszka Szagdaj¹, Piotr Sorokowski¹¹ Institute of Psychology, University of Wrocław, Poland

Objective: Smell plays an important role in everyday social interactions. It can be explained in terms of well-known and proven (mainly biological) theories. The aim of the described study was to investigate whether it was possible to detect personality traits on the basis of human smell, as modern personality theories suggest that personality has biological bases.

Methods: The research was conducted in Wrocław, Poland, in two stages. In the first stage, personality tests - NEO-FFI, Dominance test and Sex Role Inventory were done by 60 students. From this population, 10 students – 5 men and 5 women with the most characteristic personality profiles were chosen. They were asked to sleep in white t-shirts for 3 consecutive nights. In the second stage, 60 participants (30 women and 30 men) were asked to rate the personality traits of the t-shirt owners on the basis of their smell.

Results and Conclusions: It was found that detection of age and sex of smell donors was highly accurate. Assessments of particular personality traits (Neuroticism, Extraversion, Openness to Experience, Agreeableness, Conscientiousness, Dominance) were also analyzed. The most accurate were the ratings of Conscientiousness (significantly more accurate than other traits, $p=.006$, Post-hoc test).

szagdaj@yahoo.com

56). Trust, reciprocity, Machiavellianism.Linda Szijjártó¹, Tamas Bereczkei¹¹ Institute of Psychology, University of Pécs, Hungary

The propensity to trust others is a crucial element of cooperation in each society. In the present study we wondered how Machiavellianism modulates the social relationships associated with reciprocity. In order to simulate a real life interpersonal transaction, we used an experimental game, called Trust game. Eighty persons were asked to play with an unfamiliar person via computer (as both first and second player), whereas the experimenter played as their partner. Machiavellianism was measured on the Mach-IV test. Our results showed that those persons who received high scores on Machiavellianism scale (High-Mach persons) proved to be less cooperative than Low-Machs. As first players, they did not appear to trust on their partners, and offered less money to them. As second players, they were less likely to reciprocate the partner's favor: they transferred less money than Low-Mach persons, independent of the amount that player 1 (experimenter) gave them formerly. However, interestingly, when the players had a chance of retaliating the partner's unusually small offer, High-Mach persons did not do that: they did not reciprocate less than Low-Machs. This result empirically supports the theoretical assumption that Machiavellian people are capable of distracting themselves from the emotional effects of situations, and they remain "cool-blooded" even in emotionally highly charged situations. This corresponds with the Social Intelligence Hypothesis claiming that Machiavellianism has been selected for enabling people to use another person as an instrument for increasing their fitness. Keywords: trust, reciprocity, Machiavellianism.

fenonyonyoo@gmail.com

57). Adjusting the sense of humor in social relationships: homogamy or hypergamy?Roland Tisljar¹, Tamas Bereczkei²¹ University of Szeged, Institute of Psychology, Hungary² University of Pécs, Institute of Psychology, Hungary

Humor is a well-known feature of our everyday social life. As everyday experiences and scientific studies show, people prefer romantic partners and friends with a good sense of humor. But do they prefer a friend or a partner with a higher score of humor, compared to their own scores (hypergamy), or they prefer ones with a score equal to their own (homogamy)? We tested the potential role of homogamy and hypergamy in mate selection using the Hungarian version of the Humor Styles Questionnaire. The sample comprised 183 undergraduate students (90 men, 93 women), with ages ranging from 18 to 27 years ($M = 21.3$ years). The participants responded to the 32 humor items (using a 7-point Likert scale ranging from 1 - totally disagree to 7 - totally agree) that represents the two positive (affiliative, self-enhancing), and the two negative (aggressive, self-defeating) humor styles (8 items for each of the four scales) first as themselves, then on behalf of their ideal partner. Our results show that both men and women would prefer romantic partners with significantly higher positive and lower negative humor scores, compared to their own scores. The results suggest that the homogamy in humor scores, that we and other authors found in the former studies within actual romantic relationships, may reflect the constraints of mutual selection. If each individual prefers a partner with higher scores of positive humor than his/her own, then the level of sense of humor will be similar or equal in the actual partnership.

tisljar@gmail.com

58). Attribution of male sexual orientation on the basis of physical appearance.Jaroslava Valentova¹, Marie Chytilova^{1,2}¹Charles University, Faculty of Humanities, Dpt. of Anthropology, Prague, Czech Republic²Dpt. of Electronic culture and semiotics, Prague, Czech Republic

Objectives: Previous research was aimed at attribution of sexual orientation (SO) on the basis of human voice, body type, motion, face etc. We focused on the role of human body in static position with covered face in order to eliminate facial influences on SO attribution. The purpose of this study was to test whether women are able to attribute SO adequately on the basis of physical appearance including clothes and posture. Further, we qualitatively traced specific cues that might influence women during their assessment. Moreover, we tested a possible relation between SO and BMI, and self grooming, since we supposed these might be visible cues influencing judgment of SO.

Methods: Standardized photos of target sample (17 homosexual males) and control sample (19 heterosexual males) were rated for SO by 20 women on a 7-point scale. Afterwards they were asked to give reasons for their assessment verbally. BMI and self-grooming tendencies of the rated men were obtained from questionnaires.

Results: There was no difference in the attribution of SO between target and control sample. Nevertheless, we found a significant difference between the homosexual and heterosexual men in BMI and self grooming. Categorical analysis of the qualitative data showed us specific cues that female raters used while assessing male SO.

Conclusions: The results showed that women are not able to attribute sexual orientation adequately. But there was consensus on traits they mentioned to influence their assessment, i.e. heterosexual men were described as negligent, careless about the fashion and clothing, and homosexuals, on the other hand, as neat, stylish and careful about their appearance. Further, the results showed that homosexuals are more interested in their appearance and they also had lower BMI than their heterosexual counterparts.

jarkavalentova@gmail.com

59). Sensory exploitation and the evolution of human artistic behaviors.Jan Verpooten^{1,2}¹ University of Antwerp, dept. biology, Belgium² Konrad Lorenz Institute, Austria

Introduction: Artistic behaviors (i.e. producing and experiencing paintings, sculptures, music, dance, story-telling, ...) have constituted an integral part of the human behavioral repertoire for some 40,000 years. This observation poses two important questions: • Why do these behaviors appear stably across human cultures since then? • Why don't these behaviors appear with consistent presence in any culture or population earlier than 40,000 years ago? (This is quite remarkable, since humans have been anatomically modern for up to 200,000 years.) A kaleidoscope of evolutionary hypotheses have been proposed to address the first question. They disagree on several crucial points, viz., the adaptivity of artistic behaviors, the level and unit of selection (genetic or cultural), and the underlying evolutionary mechanism and function (e.g., mating display vs. group bonding).

Objective: To articulate and evaluate existing hypotheses about the evolution of artistic behaviors.

Methods: Theoretical analysis and comparison of hypotheses about the evolution of (visual) art. • Applying Sensory Exploitation (SE), a model from biological signal evolution (sexual selection, biological mimicry), to the evolution of human artistic behaviors.

Results: SE, as a model that provides a primary evolutionary force, articulates and evaluates existing hypotheses. Regarding the second question, it predicts that the behavior of producing iconic representations (i.e. rock art, figurines) will evolve even if this behavior would be (initially) a maladaptive or adaptively neutral activity in some circumstances.

Conclusions: SE may apply to other human artistic behaviors as well, such as producing and experiencing music, artificial scents, ornaments in architecture, and so on.

jan.verpooten@ua.ac.be

60). Taller men are less sensitive to cues of dominance in other men.

Christopher Watkins¹, Paul Fraccaro¹, Finlay Smith¹, Jovana Vukovic¹, David Feinberg², Lisa DeBruine¹, Benedict Jones¹

¹ University of Aberdeen, College of Life Sciences and Medicine, Psychology, Scotland

² McMaster University, Department of Psychology, Neuroscience and Behaviour, Hamilton, Ontario, Canada

Objective: Masculine characteristics are correlated with male dominance rank, physical strength, and indices of reproductive success and potential in many animal species, including humans. Accordingly, men generally perceive masculinised versions of men's faces and voices to be more dominant than feminised versions. It may be adaptive for less dominant men to be particularly sensitive to cues of dominance in other men, however, if less dominant men incur greater costs when they incorrectly perceive the dominance of rivals. Since height is a reliable index of men's dominance, we investigated the relationship between own height and men's sensitivity to masculine characteristics when judging the dominance of other men's faces and voices.

Methods: Fifty men completed face and voice perception tests that involved judging the dominance of masculinised versus feminised versions of male faces and voices. Additionally, each participant rated their own dominance and each participant's height was measured.

Results: Although men generally perceived masculinised faces and voices to be more dominant than feminised versions, this effect of masculinity on dominance perceptions was significantly greater among shorter men than among taller men. Moreover, this effect of height was independent of men's self-rated dominance, suggesting that greater sensitivity to cues of dominance among shorter men does not reflect a conscious strategy.

Conclusions: Our findings show that taller men are less sensitive to cues of dominance in other men, suggesting that differences among men in the potential costs of incorrectly perceiving the dominance of rivals have shaped systematic variation in dominance perception.

r01cdw9@abdn.ac.uk

61). Anger and reasoning on the Wason selection task.Szymon Wichary¹¹Warsaw School of Social Sciences and Humanities, Poland

Objective: The 'adaptive tooLDox' view of the mind suggests that emotions should play specialized roles in solving particular adaptive problems by influencing cognition and behavior. The aim of the present study was to test the hypothesis that anger facilitates reasoning on social contract version of the Wason task without influencing reasoning on the abstract version.

Methods: 40 participants (mean age 22 years, SD = 1.42) solved both abstract and social contract versions of the Wason selection task (with counterbalanced order). To induce anger, 20 participants had to recall a situation when they felt angry, in the control group, the other 20 participants described a neutral object (a desk). In addition, dispositional anger was measured with a TPI Scale developed by SpieLDerger and Wrześniewski. The data were analysed by a chi-square and analysis of variance statistics.

Results: Participants in the anger condition solved the deontic version of the task better, while for the abstract version of the task there was no difference between participants' performance in the anger and neutral condition. Additionally, there were differences between high and low dispositionally angry individuals – participants with high anger performed better on the social contract version, but not on the abstract version of the task.

Conclusions: Present results show that the emotion of anger selectively influences reasoning to facilitate the violation of a social contract. The results are in line with previous research on deontic reasoning and the role of anger in regulating social interactions. In this light, anger can be treated as a part of the mental module for regulating social interactions based on reciprocity.

swichary@swsp.edu.pl

62). Gender differences in children risk-taking. Brave boys or rational girls?Tomasz Zaleskiewicz¹¹Warsaw School of Social Sciences and Humanities, Poland

Objective: Adult men take greater risks than women. Several theories tried to explain this differences, referring to temperament, socialization or evolutionary history. If explanations based on biology are correct we should observe gender differences in risk-propensity among young children.

Methods: In our experiment children in the age of 5 participated in the skill risk-taking task. The task was to throw a ball to a basket from one of the three distances. The shortest (longest) distance was associated with worst (best) payoff and highest (lowest) probability of success. In the trial round children could test their skills and then they participated in the actual task.

Results: Boys took higher risk than girls, choosing more often the longest distance. However, we also found that proportion of children who were successfully throwing ball from the longest distance in trial round was consistent with proportion of children who chose this distance in the actual task only among girls. Boys tended to choose the risky distance even if they were not successful in the trial round. This may suggest that boys were not only more risk-prone but also more overoptimistic and overconfident.

Discussion: Our experiment revealed that gender difference in risk-propensity can be found among young children. So, it seems that explanations of risk-taking based on biology and evolutionary psychology are promising. However, our findings also showed that boys' risky behaviors can be rooted in their irrational choices because they were taking risk even if they were not successful in the trial round.

tzaleskiewicz@swps.edu.pl

63). Sociosexual orientation and men's preferences for women's breast size.Agnieszka Zelazniewicz¹, Boguslaw Pawlowski^{1,2}¹ Institute of Anthropology; Polish Academy of Sciences; Wroclaw; Poland² Department of Anthropology; University of Wroclaw; Wroclaw; Poland

Objective: Previous studies showed that sociosexual orientation may be an important factor mediating attractiveness perception of a potential mate. As sexually unrestricted males rate females with low BMI and low WHR higher than restricted ones, we hypothesized that restricted and unrestricted males may also rate differently attractiveness of women's breasts. Therefore the aim of the study was to investigate the influence of men's sociosexuality on assessment of attractiveness of female breast size.

Methods: 128 males completed Revised Sociosexual Orientation Inventory (SOI-R) and assessed the attractiveness of female breasts in dependence on breast size (5 levels) in three different perspectives (breasts were presented "en face", in half-profile and in profile). Participants were divided into two groups (restricted and unrestricted), basing on their responses to SOI-R.

Results: We found that males with higher SOI-R score (unrestricted) generally rated higher the attractiveness of presented breasts, but the significant difference was observed only for the bigger breast sizes. We also showed that middle to big sizes were rated as the most attractive by both male groups and that assessments of breast size attractiveness were different depending on the perspective.

Conclusion: Our results indicate that sociosexuality influences men's perception of female breast attractiveness and confirms that unrestricted men value higher physical attractiveness than restricted ones. This study also contribute to our knowledge on female body attractiveness by examining male preferences for female breast size, which in comparison to face, body weight and height and body shape (WHR), seems to be neglected in the literature.

agnieszka@antro.pan.wroc.pl

A

Aitken, 61, 103
Alvergne, 62
Andras, 20
Antfolk, 63
Apostolou, 64
Atkinson, 68
Aunger, 42, 66
Austerlitz, 36

B

Babiszewska, 65
Barra, 66
Bates, 94
Bell, 24
Belot, 60
Benson, 67
Bereczkei, 38, 74, 83, 89, 116, 117
Boothroyd, 67
Bourrat, 68
Brewer, 69
Buchanan, 99
Bullinger, 70
Buls, 52
Buunk, 56

C

Caldwell, 71, 101, 110
Call, 11
Chenore, 96
Chytilova, 118
Clay, 48
Cobey, 72
Coetzee, 73
Courtiol, 55
Crawford, 19
Currie, 43
Curtis, 42, 66
Czibor, 74

D

Danel, 75
Dean, 26
DeBarra, 42
DeBruine, 17, 19, 47, 96, 120
Dluzen, 76

E

Ehn, 77, 104
Erlich, 23
Evans, 110

F

Fehr, 10
Feinberg, 47, 96, 120
Felisberti, 78

Fessler, 6, 7, 16, 42
Fiddick, 23
Fieder, 37
Flegr, 95
Fleischman, 42
Fogarty, 79
Fraccaro, 120
Franz, 32
Frey, 39

G

Gagnon, 53
Galbarczyk, 81
Gentaz, 41
Gillespie, 35
Giraldeau, 33
Gomola, 51
Graff, 41
Grauw, 73
Gray, 43
Grech, 82
Greenhill, 43
Grove, 40
Gyuris, 83

H

Hasegawa, 43
Havlicek, 44, 80, 90, 95, 105, 109
Helama, 107
Hendrie, 69
Heyer, 36
Holopainen, 107
Huber, 37
Husarova, 80

I

Ibrahim, 78

J

Janhunen, 84
Janicki, 23
Jankowska, 108
Járai, 83
Johow, 85
Jokela, 31, 62, 86
Jones, 19, 47, 96, 120
Juhász, 89

K

Kachel, 87
Kaminski, 41
Kandler, 28
Karlsson, 63
Kemp, 88
Kendal, 26, 33

Klapilova, 44, 80
Kocsor, 89
Kohoutova, 90, 109
Krama, 49
Kramer, 91
Krams, 49
Kuběna, 44

L

Lačev, 92
Lahdenperä, 35
Laland, 26, 33, 77, 79, 104
Lamba, 25
Lazarus, 20
Le, 21
Lee, 23
Léonardi, 36
Lewandowski, 93
Lewis, 94
Lindova, 95, 105
Little, 19, 47, 95, 96
Lozano, 97
Lummaa, 31, 35, 62, 86, 98, 107
Lycett, 88
Lyons, 61, 99

M

Mace, 25, 43
Main, 47
Marcinkowska, 100
Mathews, 29, 34
Matthews C., 101
Matthews L., 32
Mazens, 41
McKeegan, 112
Melis, 70
Mesko, 102
Millen, 71
Moore, 50
Morgan, 103, 104

N

Newson, 24
Nodwell, 103

P

Paál, 38
Page, 67
Pawlowski, 45, 51, 65, 108, 113, 123
Perrett, 50, 52, 73, 96, 112
Pettay, 31, 86
Pivonkova, 105
Pölkki, 46
Pollet, 56, 57
Ponikowski, 108
Premo, 87

R

Ragsdale, 106
Rantala, 46, 49, 100

Ravary, 41
Rendell, 104
Rezacova, 80
Rezneki, 89
Richard, 107
Richerson, 24
Rickard, 86
Rieskamp, 58, 59
Roberts, 20, 22, 72, 95, 96, 114
Robinson, 98
Rotkirch, 31, 86
Rubesova, 95, 105
Russell, 35, 107
Rydlewska, 108

S

Sandova, 109
Santtila, 63
Saxton, 96
Sayers, 20
Scheunpflug, 54
Schillinger, 101, 110
Schooler, 58
Sear, 29, 34
Shennan, 9
Smith, 120
Sofat, 67
Sorokowski, 111, 115
Stephen, 112
Stevens, 58, 59
Stirrat, 52
Störmer, 30
Strimling, 79
Stulp, 56
Sukiennik, 113
Sylwester, 114
Szagdaj, 111, 115
Szijjártó, 116

T

Tehrani, 27
Tekes, 78
Tiddeman, 47
Tisljar, 117
Tomasello, 70

V

Valentova, 118
Verhulst, 56
Verpooten, 119
Voland, 8
Volstorf, 58, 59
Vukovic, 96, 120

W

Ward, 91
Watkins, 120
Watts, 67
Weiss, 44
Welling, 19, 47
Wichary, 121
Willführ, 53

Wyman, 70

Z

Zaleskiewicz, 122

Zelazniewicz, 45, 123

Ziomkiewicz, 51, 76

Zuberbuhler, 48