

# WELCOME TO HBES 2008

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Dear Colleague,

It is my immense pleasure to be able to announce that HBES 2008 will be held at Kyoto University, Japan, the first one outside the Western hemisphere in its history. Kyoto, a beautiful ancient city, used to be an old capital of Japan for about 1000 years since the 8th century, and has a variety of interesting and important monuments of Japanese culture. These are now registered as one of the World Heritage sites. We sincerely hope that you will enjoy a pleasant early summer stay in Kyoto along with the HBES conference. HBES-Japan has more than 100 members and all of us are eagerly waiting for your attendance in Kyoto. Certainly it is a bit far from the US and European countries, and inevitably a bit more costly than usual meetings. We shall try our best to set up fascinating scientific programmes and social gatherings to meet up the cost and more! Please contact us through e-mail if you have any questions related to the HBES 2008 in Kyoto.

Mariko Hiraiwa-Hasegawa

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## **CONFERENCE ORGANIZERS**

Mariko Hiraiwa-Hasegawa & Toshikazu Hasegawa

## **PROGRAM COMMITTEE**

Debra Lieberman (Chair), Frank Marlowe & Lisa DeBruine  
Jae Chun Choe

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Martin Daly (Chair), Bobbi Low & Oliver Curry

## **POSTDOCTORAL RESEARCH AWARD COMMITTEE**

Clark Barrett (Chair), Nobuyuki Takahashi & Jim Roney

## **POSTER AWARD COMMITTEE**

Nick Pound (Chair), Akiko Uchida & Ryo Oda

## **ORGANIZATION STAFF**

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Local Hosting Coordinator: Kai Hiraishi  
Guest Speaker Coordinator: Shinya Yamamoto  
Oral Session Coordinator: Ryo Tamura  
Poster Session Coordinator: Hiroki Ozono  
Food Coordinator: Yuko Morimoto  
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Image Creator and Registration Manager: Koki Ikeda

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# QUICK TIMETABLE

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## Wednesday, June 4

**13:00-21:00** : *Registration* — Foyer (Centennial Hall 1F Hall)

**19:00-21:00** : *Welcome Reception* — Yoshida Cafeteria

## Thursday, June 5

**09:00-09:15** : *Coffee*

**09:00-17:00** : *Registration* — Foyer (1F Hall)

**09:15-09:30** : *Announcement & Welcome* — Centennial Hall

**09:30-10:30** : *Morning Plenary by Tetsuro Matsuzawa* — Centennial Hall

**10:30-10:50** : *break*

**10:50-12:30** : *Morning Sessions (A1-A4)*

**12:30-13:40** : *Lunch Break*

**12:30-13:40** : *HBES Executive Council Meeting* — Restaurant La Tour

**13:40-14:40** : *Afternoon Plenary by Carel van Schaik* — Centennial Hall

**14:40-15:00** : *Break*

**15:00-16:40** : *Afternoon Sessions (B1-B4)*

**16:40-17:00** : *Break*

**17:00-18:40** : *Evening Sessions (C1-C4)*

## Friday, June 6

**09:00-09:30** : *Coffee*

**09:00-17:00** : *Registration* — Foyer (1F Hall)

**09:30-10:30** : *Morning Plenary by Andrew Whiten* — Centennial Hall

**10:30-10:50** : *Break*

**10:50-12:30** : *Morning Sessions (D1-D4)*

**12:30-13:40** : *Lunch Break*

**12:30-13:40** : *HBES Publications Committee Meeting* — Conference Room I

**13:40-14:40** : *Afternoon Plenary by Wayne Potts* — Centennial Hall

**14:40-15:00** : *Break*

**15:00-16:40** : *Afternoon Sessions (E1-E4)*

**16:40-17:00** : *Break*

**17:00-18:20** : *Evening Sessions (F1-F4)*

**18:20-20:20** : *Poster Session* — Intl. Conf. Hall III

## Saturday, June 7

**09:00-09:30** : *Coffee*

**09:00-17:00** : *Registration* — Foyer (1F Hall)

**09:30-10:30** : *Morning Plenary by Nicholas Humphrey* — Centennial Hall

**10:30-10:50** : *Break*

**10:50-12:10** : *Morning Sessions (G1-G4)*

**12:10-13:20** : *Lunch Break*

**12:15-13:15** : *Student Bento Box Discussion* — Intl. Conf. Hall I

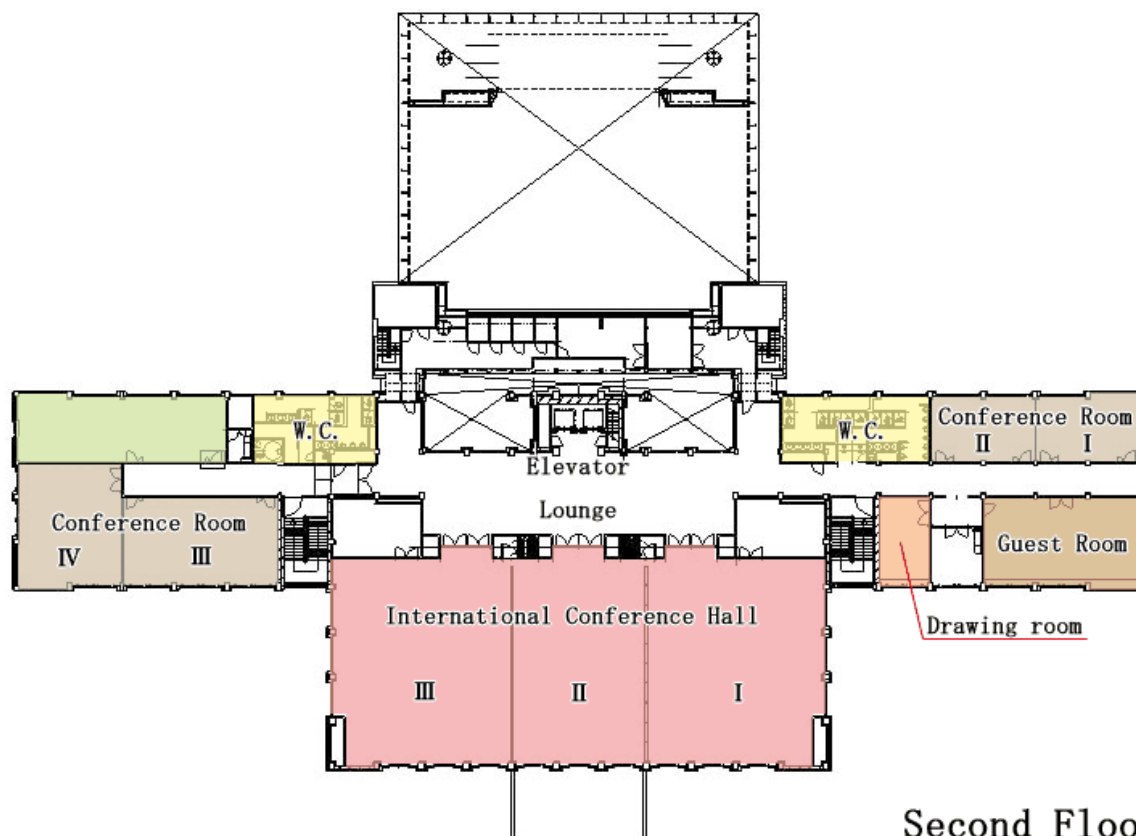
**13:20-14:20** : *New Investigator Competition Finalists* — Centennial Hall

**14:20-15:20** : *Postdoctoral Competition Finalists* — Centennial Hall  
**15:20-15:40** : *Break*  
**15:40-17:20** : *Afternoon Sessions (H1-H4)*  
**17:20-18:35** : *Keynote Address by Richard D. Alexander* — Centennial Hall  
**18:35-19:25** : *Transfer by Bus*  
**19:25-21:25** : *Banquet* — Tokasaikan

## Sunday, June 8

**09:00-09:30** : *Coffee*  
**09:00-13:10** : *Registration* — Foyer (1F Hall)  
**09:30-10:30** : *Morning Plenary by Toshio Yamagishi* — Centennial Hall  
**10:30-10:50** : *Break*  
**10:50-12:50** : *Morning Sessions (I1-I4)*

**Book Exhibition** — Conference Room IV  
**Coffee** — Conference Room II, IV  
**Headquarter** — Conference Room I  
**Wireless LAN available** — Second Floor



# DETAILED TIMETABLE

## Wednesday, June 4

1:00-9:00 PM **Registration**  
7:00-9:00 PM **Welcome Reception**

**Clock Tower Foyer**  
**Yoshida Cafeteria**

## Thursday, June 5

9:00-9:15 AM **Coffee**  
9:15-9:30 AM **Announcement & Welcome**  
9:30-10:30 AM **Morning Plenary by Tetsuro Matsuzawa**  
*Chimpanzee Mind: Studies in the Field and the Laboratory*  
10:30-10:50 AM **Break**

**Centennial Hall**  
**Centennial Hall**

### Thursday Morning Sessions

Session A-1: **Emotions** Intl. Conf. Hall I  
Chair: Debra Lieberman

TH 10:50	<i>Different domains of disgust mediate stigmatization of different groups</i> Debra Lieberman, Josh Tybur
TH 11:10	<i>What does domestication of the silver fox have to do with the evolution of theory of mind?</i> James Chisholm
TH 11:30	<i>Facial mimicry in understanding other person's emotional states</i> Hisamichi Saito, Tatsuya Kameda
TH 11:50	<i>Associations among components of evolved emotion mechanisms</i> Achim Schuetzwohl

Session A-2: **Kinship I** Intl. Conf. Hall II  
Chair: Heidi Colleran

TH 10:50	<i>Reproductive strategizing in a natural fertility population in Poland: a human behavioural ecology approach</i> Heidi Colleran, Ruth Mace
TH 11:10	<i>Proximal mediators of kin-based altruism and prosocial behavior: Why objective social contact is more important than subjective closeness</i> Gregory Webster, Courtney Rocheleau, Angela Hendricks, Angela Bryan
TH 11:30	<i>Parental resemblance of the newborn: Do newborns actually resemble their father?</i> Sevgi Kocaman, Hakan Cetinkaya, Sonia Amado
TH 11:50	<i>Trade-offs in modern parenting: a longitudinal study of sibling competition for parental care</i> David W. Lawson, Ruth Mace
TH 12:10	<i>Grandparents give more childcare to their daughters' children</i> Ralf Kaptijn

Session A-3: **Symposium: Precursors of Morality**  
Chair: Farah Focquaert & Katinka Quintelier

Conference Room III

TH 10:50	<i>Lacking empathy: psychopathological or at the edge of the male empathy distribution?</i> Farah Focquaert
TH 11:10	<i>How much of our cooperative behaviour is human?</i> Brian Hare
TH 11:30	<i>Sex differences in nepotism</i> Katinka Quintelier
TH 11:50	<i>Two roads from empathy to morality</i> Jelle De Schrijver
TH 12:10	<i>Imitation, pretence, deception, and altruism in chimpanzees</i> Tetsuro Matsuzawa

Session A-4: **Vocal Attractiveness**  
Chair: Benedict Jones

Centennial Hall

TH 10:50	<i>Integrating cues of social interest and voice pitch in men's preferences for women's voices</i> Benedict Jones, David Feinberg, Lisa DeBruine, Anthony Little, Jovana Vukovic
TH 11:10	<i>Self-rated attractiveness influences women's preferences for masculine men's voices</i> Jovana Vukovic, David Feinberg, Benedict Jones, Lisa DeBruine, Lisa Welling, Anthony Little, Finlay Smith
TH 11:30	<i>How and when do women enhance their vocal attractiveness?</i> Greg Bryant, Martie Haselton, Elizabeth Pillsworth
TH 11:50	<i>Facial and vocal attractiveness, masculinity-femininity and sexual orientation in males</i> Jaroslava Valentová, Jan Havlíček
TH 12:10	<i>Hormonal contraceptive use and correlated preferences for vocal and facial masculinity</i> David Feinberg, Lisa DeBruine, Benedict Jones, Anthony Little

**12:30-1:40 PM Lunch Break**

**12:30-1:40 PM HBES Executive Council Meeting**

**Restaurant La Tour**

**1:40-2:40 PM Afternoon Plenary by Carel van Schaik**

**Centennial Hall**

***Alone Among Apes: Cooperative Breeding and Human Cognitive Evolution***

**2:40-3:00 PM Break**

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## Thursday Afternoon Sessions

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Session B-1: **Cooperation I**  
Chair: Frank Marlowe

Intl. Conf. Hall I

TH 3:00	<i>From Rousseau to Hobbes: more "altruistic" punishment in larger societies</i> Frank Marlowe, Colette Berbesque, Abigail Barr, Clark Barrett, Alex Bolyanatz, Juan Camilo Cardenas, Jean Ensminger, Michael Gurven
TH 3:20	<i>Prosocial emotions, conflict and cooperation. A cross-cultural study on shaming-punishments in historical societies</i> Joerg Wettlaufer
TH 3:40	<i>Evolution of social contracts in the laboratory</i> Pontus Strimling, Kimmo Eriksson
TH 4:00	<i>Revisiting "the evolution of reciprocity in sizable groups."</i> Masanori Takezawa, Michael Price
TH 4:20	<i>Stability-dependent cooperation, status, and "upping the threat level"</i> Pat Barclay, Stephen Benard

Session B-2: **Cognition I**  
Chair: Thomas Suddendorf

Intl. Conf. Hall II

TH 3:00	<i>The evolution of mental time travel</i> Thomas Suddendorf
TH 3:20	<i>Extensive allomaternal care and cognitive evolution</i> Judith Burkart, Carel van Schaik
TH 3:40	<i>Does man's mind interpret woman's and man's mindset in a different way?</i> Evrin Gulbetekin, Hakan Cetinkaya, Seda Dural, Alp Giray Kaya
TH 4:00	<i>Developmental and evolutionary origins of cognition: the case of number</i> Claudia Uller
TH 4:20	<i>The Male Warrior Hypothesis: evolution, gender, and the psychology of intergroup conflict</i> Mark Van Vugt, Dominic Johnson, Rick O'Gorman

Session B-3: **Physiology & Neurosciences**  
Chair: Roger Sullivan

Conference Room III

TH 3:00	<i>Revealing the paradox of drug reward in human evolution</i> Roger Sullivan, Edward Hagen, Peter Hammerstein
TH 3:20	<i>Human counter-exploitation of plant neurotoxins: towards resolving the paradox of drug reward</i> Edward Hagen, Roger Sullivan, Peter Hammerstein
TH 3:40	<i>Neuroeconomics of temporal and probability discounting</i> Taiki Takahashi
TH 4:00	<i>Primate brain architecture and selection in relation to sex</i> Patrik Lindenfors, Charles Nunn, Robert Barton
TH 4:20	<i>Novel proportionate skeletal sexual dimorphisms in Homo sapiens</i> Jeremy Atkinson

Session B-4: **Mating I**  
Chair: Lisa Welling

Centennial Hall

TH 3:00	<i>Sex drive is positively associated with women's preferences for sexual dimorphism in men's and women's faces</i> Lisa Welling, Benedict Jones, Lisa DeBruine
TH 3:20	<i>Quality and choice: context-dependent preferences for facial dimorphism in a rural Malaysian population</i> Isabel Scott, Viren Swami, Steven Josephson, Ian Penton-Voak
TH 3:40	<i>Carving nature a new joint: intersexual mate competition in humans</i> Doug VanderLaan, Paul Vasey
TH 4:00	<i>Costly mate choice traits should be fairly rare and particularly attractive to members of the opposite sex</i> Ned Kock
TH 4:20	<i>Decisions about sexual behavior are affected by the health of recently seen faces</i> Lisa DeBruine, Benedict Jones, Falko Sniehotta

**4:40-5:00 PM Break**

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## Thursday Evening Sessions

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Session C-1: **Kinship II**  
Chair: Tih-Fen Ting

Intl. Conf. Hall I

TH 5:00	<i>Fertility preferences in revolutionary China</i> Tih-Fen Ting
TH 5:20	<i>Individual variation in the cradling bias: a longitudinal observation of mothers in the first four months after delivery</i> Brenda Todd
TH 5:40	<i>Evolution of human social monogamy by maximization of inclusive fitness</i> Laura Fortunato, Marco Archetti
TH 6:00	<i>Within-family conflict in age-structured populations</i> Joonghwan Jeon
TH 6:20	<i>Human beings as evolved nepotists: exceptions to the rule and effects of cost of help</i> Steve Stewart-Williams

Session C-2: **Life History**  
Chair: Catherine Salmon

Intl. Conf. Hall II

TH 5:00	<i>Life history strategy and disordered eating behavior</i> Catherine Salmon, Lindsey Woodburn, Aurelio José Figueredo
TH 5:20	<i>Cross-validation of life history model using quasi-populations</i> Barbara Brumbach, Aurelio Jose Figueredo
TH 5:40	<i>Culture across the lifespan: the ontogeny of essential Tsimane' skills and abilities</i> Eric Schniter
TH 6:00	<i>A life history model for the evolution of human occupational behavior</i> Mark Hudson, Mami Aoyama
TH 6:20	<i>When fecundity does not equal fitness: evidence of an offspring quantity vs. quality tradeoff in pre-industrial humans</i> Duncan Gillespie, Andrew Russell, Virpi Lummaa

Session C-3: **Aggression & Conflict I**  
Chair: Leif Edward Ottesen Kennair

Conference Room III

TH 5:00	<i>Conflicting Tastes: mothers' and daughter's ratings of daughter's ideal long term partner</i> Leif Edward Ottesen Kennair, Robert Biegler
TH 5:20	<i>Sexual conflict over spousal obligations revealed through audience effects</i> Bria Dunham, Lee Cronk, Shannon Steadman
TH 5:40	<i>Applying evolutionary theory to the crime drop: Variation in crime rates as variation in risk-taking</i> Sandeep Mishra, Lalumière Martin
TH 6:00	<i>Sociosexual orientation and sexual harassment: a study of risk factors in male and female upper secondary school students</i> Mons Bendixen, Leif Edward Ottesen Kennair
TH 6:20	<i>On the urgency and possibility of an integrated theory of rape causation</i> Griet Vandermassen



Session C-4: **Mating II**

Centennial Hall

Chair: Boguslaw Pawlowski

TH 5:00	<i>Men's attraction to women's bodies changes seasonally</i> Boguslaw Pawlowski, Piotr Sorokowski
TH 5:20	<i>Parental influence on sexual preferences: the case of attraction to smoking</i> Hanna Aronsson, Stefano Ghirlanda, Magnus Enquist
TH 5:40	<i>The implications of parental control of mate choice: an emphasis on women's chastity and possessive jealousy</i> Abraham Buunk, Justin Park
TH 6:00	<i>Who is worth remembering: Does recalling the romantic rival depend on the jealousy evoking characteristics</i> Mert Tekozel, Aysun Yilmaz
TH 6:20	<i>Male dominance and female facial attractiveness modulate male behaviours in trust games</i> Michael Stirrat, David Perrett

## Friday, June 6

**9:00-9:30 AM Coffee****9:30-10:30 AM Morning Plenary by Andrew Whiten****Centennial Hall*****The Scope of Culture in Chimpanzees, Humans and Ancestral Apes*****10:30-10:50 AM Break**


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### Friday Morning Sessions

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Session D-1: **Cooperation II**

Intl. Conf. Hall I

Chair: Jude Higgins

FR 10:50	<i>One-Shot Dictator Game &amp; Altruism at One World Café: a unique population or a unique atmosphere?</i> Jude Higgins, Mercedes Ward, Scott Martin
FR 11:10	<i>Does intention matter? A comparison between Public Good and Common Resource Dilemma Games with positive and negative sanctions in one-shot interactions</i> Toko Kiyonari, Carolyn Declerck, Christophe Boone, Thomas Pollet
FR 11:30	<i>Return of the lost letter: Experimental framing does not enhance altruism in an everyday context</i> Daniel Fessler
FR 11:50	<i>Multi-game approach: evolution of linked game strategies in social and prisoners' dilemmas</i> Motoki Watabe, Yoshiyuki Ueda, Gen Masumoto, Koh Hashimoto
FR 12:10	<i>A theoretical study on the evolution of reciprocity with gossip-based image-scoring: the effects of delay and variation in information</i> Motohide Seki, Mayuko Nakamaru

Session D-2: **Groups I**  
Chair: Theresa Robertson

Intl. Conf. Hall II

FR 10:50	<i>Making the best of a bad situation: recalibrational adaptations for social exclusion</i> Theresa Robertson, Andrew Delton
FR 11:10	<i>The role of gender in the persistence of learned fear to a social outgroup</i> Carlos David Navarrete, Andreas Olsson
FR 11:30	<i>Magnetic personalities: Ostracism and disease concerns produce attractive and repulsive, functionally biased first impressions</i> Chad Mortensen, Vaughn Becker, Joshua Ackerman, Steven Neuberg, Douglas Kenrick
FR 11:50	<i>Can race be erased in politics? The psychology of political coalitions</i> Oliver Curry, David Pietraszewski
FR 12:10	<i>Humor, social networks and interpersonal evaluation in rural Brazil</i> Thomas Flamson

Session D-3: **Personality & Individual Differences**  
Chair: Chris von Rueden

Conference Room III

FR 10:50	<i>The effects of male social status on reproductive success and health: evidence from the Tsimane of Bolivia</i> Chris von Rueden, Michael Gurven
FR 11:10	<i>Gender and attachment style influences on jealousy arousal and response</i> Vera Roquemore, Thomas Robinson
FR 11:30	<i>Mating strategies: possible niches resulting in the extraversion continuum</i> Naomi Pike
FR 11:50	<i>An adaptive individual difference perspective on the Dark Triad</i> Peter Jonason, Norman Li, Gregory Webster, David Schmitt
FR 12:10	<i>The "Dark Triad" of personality across 57 nations: The evolution of sex differences and cultural variations in anti-sociality</i> David Schmitt

Session D-4: **Attractiveness I**  
Chair: Claire Conway

Centennial Hall

FR 10:50	<i>Evidence for adaptive design in human gaze preference</i> Claire Conway, Benedict Jones, Lisa DeBruine, Anthony Little
FR 11:10	<i>Perception of gaze direction is influenced by characteristics of the observed face</i> Robbie Cooper, Charlotte Tye, Chris Benton, Ian Penton-Voak
FR 11:30	<i>Effect of manipulating sexual dimorphism on attractiveness in dynamic faces</i> Edward Morrison, Andrew Clark, Bernard Tiddeman, Ian Penton-Voak
FR 11:50	<i>Smiling the wrong way: It only matters to men</i> Andrew Clark, Fiona Reeve, Ian Penton-Voak
FR 12:10	<i>The impact of attractiveness on competitor derogation</i> Maryanne Fisher, Anthony Cox

**12:30-1:40 PM Lunch Break**

**12:30-1:40 PM HBES Publications Committee Meeting**

**Conference Room I**

**1:40-2:40 PM Afternoon Plenary by Wayne Potts**

**Centennial Hall**

***Mate Choice Influenced by Histocompatibility Genes***

**2:40-3:00 PM Break**

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## Friday Afternoon Sessions

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**Session E-1: Cooperation & Punishment III**

Intl. Conf. Hall I

Chair: Rick Goldberg

FR 3:00	<i>The enigmatic relationship between cooperation and competition explained by Costly Signaling Theory</i> Rick Goldberg
FR 3:20	<i>The effect of the heterogeneous lattice-structured population on the coevolution of cooperation and punishment</i> Takuya Sekiguchi, Mayuko Nakamaru
FR 3:40	<i>Punishment and reward to linguistic and facial signals</i> Hiroki Ozono, Motoki Watabe, Sakiko Yoshikawa
FR 4:00	<i>Strict-and-severe punishment promotes the evolution of cooperation level in the spatial game</i> Mayuko Nakamaru, Ulf Dieckmann
FR 4:20	<i>The rise of behavioural modernity</i> Nathalie Gontier

**Session E-2: Mating III**

Intl. Conf. Hall II

Chair: Lynne Honey

FR 3:00	<i>Interactive effects of female dominance and physical attractiveness for mate choice</i> Lynne Honey, Cassie Preston, Krista Alyn, Deanna Forrester
FR 3:20	<i>Male sexual preferences for female breast morphology in Papua New Guinea, Samoa and New Zealand</i> Barnaby Dixson, Katayo Segata
FR 3:40	<i>Copying and contrast in human mate preference</i> Anthony Little, Robert Burriss, Lisa DeBruine, Benedict Jones, David Feinberg, Christine Caldwell
FR 4:00	<i>Sex difference in preference for similar speech patterns in humans and its adaptive function</i> Gen Sakurai, Kazuhide Hashiya
FR 4:20	<i>Astrology does not predict marital or evolutionary success</i> Virpi Lummaa, Ian Rickard, Rachel Dexter-Spooncer

**Session E-3: Game Theory**

Conference Room III

Chair: Shinsuke Suzuki

FR 3:00	<i>Why do people prefer mutual cooperation?</i> Shinsuke Suzuki
FR 3:20	<i>Reproductive discount of the future: effects of sexual arousal</i> Hakan Cetinkaya, Seda Dural, Osman Iyilikci, Evrim Gülbetekin, Sonia Amado
FR 3:40	<i>Test of the induced value theory</i> Ryohei Haitani, Sobei Oda
FR 4:00	<i>Culture or genes: identifying the most plausible inheritance mechanism in group selection</i> Adrian Bell, Peter Richerson, Richard McElreath
FR 4:20	<i>Signaling in risk communication: priority and consistency of vocal, facial and verbal cues</i> X.T. Wang, M.L. Yang

Session E-4: **Cognition II**  
Chair: Jessica Pass

Centennial Hall

FR 3:00	<i>All you need is love: Is the sociometer especially sensitive to one's value as a mate?</i> Jessica Pass, Justin Park, Siegwart Lindenberg
FR 3:20	<i>Evolutionizing the study of conceptual knowledge</i> Max Krasnow, Danielle Truxaw, Leda Cosmides, John Tooby
FR 3:40	<i>Pricing closeness</i> Margo Wilson, Sandra Thomson, Martin Daly
FR 4:00	<i>Adaptations for computing personality traits: co-evolved functions of episodic recall and summary representations</i> Leda Cosmides, Stanley Klein, John Tooby
FR 4:20	<i>The hot hand phenomenon as a cognitive adaptation to clumped resources</i> Clark Barrett, Andreas Wilke

**4:40-5:00 PM Break**

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## Friday Evening Sessions

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Session F-1: **Symposium: Cross-Cultural Differences and Similarities: Cultural and Evolutional Perspectives** Intl. Conf. Hall I  
Chair: Kai Hiraishi

FR 5:00	<i>The perceived immorality of infidelity: cross-cultural investigations</i> Laurence Fiddick, Francis (Kum Chew) Chan, Eileen (Hiang Khim) Tan
FR 5:20	<i>Culture, self, and friendship: reciprocity monitoring in Japanese and American contexts</i> Yukiko Uchida, Shinobu Kitayama, Batja Mesquita
FR 5:40	<i>Hindsight bias and a dual process model: a cross-cultural study</i> Hiroshi Yama, Ken Manktelow, Mercier Hugo, Jean-Baptiste Van der Henst, Kyung Soo Do, Yayoi Kawasaki, Kuniko Adachi
FR 6:00	<i>Control and ambiguity on probability judgments: cross-cultural study</i> Kuniko Adachi, Hiroshi Yama, Jean-Baptiste Van der Henst, Hugo Mercier, Minoru Karasawa, Yayoi Kawasaki

Session F-2: **Foraging & Physiology**  
Chair: Steven Gaulin

Intl. Conf. Hall II

FR 5:00	<i>Sex differences in the influence of dietary fatty acids on cognition in children</i> William Lassek, Steven Gaulin
FR 5:20	<i>Food preferences of the Hadza hunter-gatherers</i> Julia Berbesque, Frank Marlowe
FR 5:40	<i>Subsistence choice as long-term parental investment</i> Steven Josephson
FR 6:00	<i>Life history, body morphology and health in a natural fertility population: implications for attractiveness assessment psychology</i> Lawrence Sugiyama, Aaron Blackwell

Session F-3: **Teaching & Methods**  
Chair: Seda Can

Conference Room III

FR 5:00	<i>An investigation of sex bias in the Self-Perceived Mating Success (SPMS) Scale by application of Differential Item Functioning (DIF)</i> Seda Can, Seda Dural, Hakan Cetinkaya, Alp Giray Kaya
FR 5:20	<i>An integrated model for theory development and evaluation in the behavioral sciences</i> Gary Brase
FR 5:40	<i>Does human behavioral ecology need the phenotypic gambit?</i> Hisashi Nakao
FR 6:00	<i>19 tools for teaching evolutionary psychology</i> David Buss

Session F-4: **Kinship III & Development**  
Chair: Huijing Lu

Centennial Hall

FR 5:00	<i>The uselessness of men: towards explaining male longevity in humans</i> Andrew Russell, Mirkka Lahdenperä, Virpi Lummaa
FR 5:20	<i>Kinship effect on subjective temporal distance of autobiographical memory</i> Huijing Lu, Lei Chang, Maolin Ye
FR 5:40	<i>What do twin siblings teach each other in early childhood? :considerations for an evolutionary basis of education</i> Juko Ando
FR 6:00	<i>Infants' sound production as a playing behavior</i> Yohko Shimada, Shoji Itakura

**6:20-8:20 PM Poster Session**

**Intl. Conf. Hall III**

## Saturday, June 7

**9:00-9:30 AM Coffee**

**9:30-10:30 AM Morning Plenary by Nicholas Humphrey**

**Centennial Hall**

***The Necessity of Consciousness: Why Human Zombies  
Would Be an Evolutionary Dead End***

**10:30-10:50 AM Break**

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### Saturday Morning Sessions

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Session G-1: **Symposium: Cultural Phylogenetics: Cultural Evolution** Intl. Conf. Hall I  
**Branches Out (Part 1)**  
Chair: Thomas Currie

SA 10:50	<i>Pacific settlement and Austronesian language phylogenies</i> Simon Greenhill, Russell Gray
SA 11:10	<i>The Uto-Aztecs: foragers from the North or farmers from the South?</i> Robert Ross, Russell Gray, Lyle Campbell
SA 11:30	<i>"The Social Lives Of The Ancestors": Phylogenetic methods can reconstruct the kinship systems of Proto-Austronesian society</i> Fiona Jordan, Ruth Mace
SA 11:50	<i>The Evolution of Political Complexity: Investigating a major trend in human history</i> Thomas Currie

Session G-2: **Symposium: Half a Century of Research on the Behavior & Evolution of the Arashiyama Macaques** Intl. Conf. Hall II  
Chair: Paul Vasey

SA 10:50	<i>Female homosexual behaviour in the Japanese macaques at Arashiyama: implications for the evolution of non-conceptive sex in humans</i> Paul Vasey
SA 11:10	<i>A historical perspective on Arashiyama's role in primatological research</i> Michael Huffman
SA 11:30	<i>Paternity and female mate choice in Japanese macaques</i> Eiji Inoue
SA 11:50	<i>Thirty years of stone handling tradition in Japanese macaques at Arashiyama: implications for stone-tool use evolution</i> Jean-Baptiste Leca, Michael Huffman

Session G-3: **Symposium: The Evolutionary Dynamics of Kinship and Parental Investment** Conference Room III  
Chair: Siobhan Mattison

SA 10:50	<i>Correlates of divergence from matrilineal norms among the Na of Southwest China</i> Siobhan Mattison
SA 11:10	<i>Breastfeeding strategies in the context of differing kinship ecologies in N.E. India</i> Donna Leonetti
SA 11:30	<i>Parental investment decisions in rural Malawi: a comparison of matrilineal and patrilineal populations</i> Rebecca Sear
SA 11:50	<i>Does investment in the sexes differ when fathers are absent? The impact of fathers &amp; maternal kin on child survival &amp; growth in a patrilineal Ethiopian population</i> Mhairi Gibson

Session G-4: **Symposium: Adaptations for Welfare Tradeoffs** Centennial Hall  
Chair: Andrew Delton

SA 10:50	<i>The welfare tradeoff system as an adaptation for integrated allocational decision-making</i> John Tooby, Leda Cosmides, Aaron Sell, Andrew Delton, Daniel Sznycer, Julian Lim, Theresa Robertson
SA 11:10	<i>An evolved internal regulatory variable for making welfare tradeoffs</i> Andrew Delton, Theresa Robertson, Daniel Sznycer, Julian Lim, Leda Cosmides, John Tooby
SA 11:30	<i>Emotions and the recalibration of welfare tradeoff ratios: gratitude as a case study</i> Julian Lim, Daniel Sznycer, Andrew Delton, Theresa Robertson, Leda Cosmides, John Tooby
SA 11:50	<i>Humans accurately estimate others' welfare tradeoff ratios</i> Daniel Sznycer, Julian Lim, Andrew Delton, Theresa Robertson, John Tooby, Leda Cosmides

**12:10-1:20 PM Lunch Break**

**12:15-1:15 PM Student Bento Box Lunch Discussion**

**Intl. Conf. Hall I**

Session **New Investigator Competition Finalists**

Centennial Hall

SA 1:20	<i>Genetic diversity predicts attractiveness of male and female faces</i> Hanne Lie, Gillian Rhodes, Leigh Simmons
SA 1:40	<i>Producing sons reduces lifetime reproductive success of subsequent offspring in pre-industrial Finns</i> Ian Rickard, Andrew Russell, Virpi Lummaa
SA 2:00	<i>Microbes, mating, and morality: individual differences in three functional domains of disgust</i> Josh Tybur, Debra Lieberman, Vidas Griskevicius

Session **Postdoctoral Competition Finalists**

Centennial Hall

SA 2:20	<i>Interpersonal threats generate motivation-specific encoding benefits</i> Vaughn Becker, Steven Neuberg, Jon Maner, Jenessa Shapiro, Joshua Ackerman, Mark Schaller, Douglas Kenrick
SA 2:40	<i>Evolved distance perception mechanisms</i> Russell Jackson, Lawrence Cormack
SA 3:00	<i>Chimpanzees are rational maximizers in an ultimatum game</i> Keith Jensen, Josep Call, Michael Tomasello

**3:20-3:40 PM Break**


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## Saturday Afternoon Sessions

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Session H-1: **Attractiveness II**  
Chair: Ian Stephen

Intl. Conf. Hall I

SA 3:40	<i>Skin pigment colouration signals health in human faces</i> Ian Stephen, David Perrett
SA 4:00	<i>Visual attention to variation in female facial skin colour distribution</i> Bernhard Fink, Paul Matts
SA 4:20	<i>The influence of body shape on perceptions of age, sex, social status, health, and attractiveness: a morphometrics analysis of an ecologically valid range of stimuli</i> Aaron Blackwell, Lawrence Sugiyama
SA 4:40	<i>Beauty may be in the right hemisphere of the beholder</i> Seda Dural, Hakan Çetinkaya, Seda Can, Evrim Gülbetekin
SA 5:00	<i>The effect of axillary hair shaving on odor attractiveness</i> Jan Havlicek, Dagmar Kohoutova, Anna Kotrcova

Session H-2: **Symposium: Cultural Phylogenetics: Cultural Evolution** Intl. Conf. Hall II  
**Branches Out (Part 2)**

Chair: Ruth Mace

SA 3:40	<i>Horizontal transmission and phylogenetic cross-cultural comparative methods</i> Ruth Mace
SA 4:00	<i>On the shape and fabric of human history</i> Russell Gray
SA 4:20	<i>Language phylogeny trumps geography in lexical semantic variation</i> Michael Dunn, Asifa Majid
SA 4:40	<i>Using phylogenetic methods to arrive at more accurate patterns of cultural history on the Pacific Northwest Coast</i> Sean O'Neill

Session H-3: **Applied Evolutionary Psychology**  
Chair: Pete Welch

Conference Room III

SA 3:40	<i>Microeconomics and evolutionary psychology: similarities, differences, and implications</i> Pete Welch
SA 4:00	<i>Why do humans not understand the economy?</i> Detlef Fetchenhauer, Alexandra Haferkamp
SA 4:20	<i>The evolutionary psychology of consumer shopping experiences</i> Daniel Kruger, Maryanne Fisher, Anthony Cox, Dreyson Byker
SA 4:40	<i>When less is more—on the intuitive perceptibility of leadership qualities</i> Mareike Hoffmann, Detlef Fetchenhauer
SA 5:00	<i>Size effects in the Life-Death Decision Hypothesis</i> Kazumi Shimizu, Daisuke Udagawa

Session H-4: **Cooperation IV**  
Chair: Julia Pradel

Centennial Hall

SA 3:40	<i>Are Love and Friendship blind or accurate? The perception of altruism in close relationships</i> Julia Pradel, Detlef Fetchenhauer
SA 4:00	<i>Can cooperation overcome ethnic boundaries? A case study from Tamil Nadu, India</i> Timothy Waring
SA 4:20	<i>Cultural group selection and the evolution of collective action</i> Ruud Koopmans, Susanne Rebers
SA 4:40	<i>The evolution of human cooperation: ecological and intra-cultural variation in normative behaviour</i> Shakti Lamba

**5:20-6:35 PM Keynote Address by Richard D. Alexander**  
***Evolution and Human Society***

**Centennial Hall**

**6:35-7:25 PM Transfer by bus**

**7:25-9:25 AM Banquet**

**Tokasaikan**  
**(Chinese Restaurant)**



## Sunday, June 8

<b>9:00-9:30 AM</b>	<b>Coffee</b>	
<b>9:30-10:30 AM</b>	<b>Morning Plenary by Toshio Yamagishi</b>	<b>Centennial Hall</b>
	<i>Social preference and strategy in in-group love and out-group hatred</i>	
<b>10:30-10:50 AM</b>	<b>Break</b>	

### Sunday Morning Sessions

Session I-1: **Culture** Intl. Conf. Hall I  
 Chair: Christine Caldwell

SU 10:50	<i>Experimental models for testing hypotheses about cumulative cultural evolution</i> Christine Caldwell, Ailsa Millen
SU 11:10	<i>Ecological versus evolutionary explanations for cultural differences: How do “developed” and “developing” countries differ?</i> Lesley Newson, Peter Richerson
SU 11:30	<i>Social learning in the laboratory: roles of payoff information and spatial heterogeneity</i> Peter Richerson, Richard McElreath, Mark Lubell, Adrian Bell, Vicken Hillis
SU 11:50	<i>Horizontal and vertical transmission in adoption: a data-driven compartmental model approach</i> Megan Carney
SU 12:10	<i>Spread of costly status-seeking behavior by social learning: mathematical models</i> Yasuo Ihara
SU 12:30	<i>A cultural evolutionary theory of normativity</i> Theodore Seto

Session I-2: **Mating IV** Intl. Conf. Hall II  
 Chair: Susan Brown

SU 10:50	<i>Sexual behavior and orientation: relations to IgA and cortisol levels</i> Susan Brown
SU 11:10	<i>Perceptions of current and former romantic partners conceptualized as adaptive mating-relevant biases</i> Glenn Geher, Ryan Bloodworth, Joseph Mason, Christopher Stoaks, Heather Downey, Kristin Renstrom, Juan Romero
SU 11:30	<i>Genes predisposing to homosexuality increase mating success in heterosexuals</i> Brendan Zietsch, Katherine Morley, Sri Shekar, Karin Verweij, Matthew Keller, Stuart Macgregor, Margaret Wright, Nicholas Martin

Session I-2: **Groups II** Intl. Conf. Hall II  
 Chair: Kingsley Browne

SU 11:50	<i>Trust and cohesion: integration of women into military combat units</i> Kingsley Browne
SU 12:10	<i>Chinese golden monkey and its multi-level societies</i> Peng Zhang, Kunio Watanabe
SU 12:30	<i>Documenting the online expression of universal behaviours</i> Anthony Cox, Chantel Burkitt, Maryanne Fisher

Session I-3: **Religion** Conference Room III  
Chair: Stephen Sanderson

SU 10:50	<i>Adaptation, evolution, and religion</i> Stephen Sanderson
SU 11:10	<i>Japan's cultural inoculation—A Darwinian account of the radiation and retreat of firearms and Christianity, 1543-1700</i> Bret Beheim

Session I-3: **Symposium: The Nature of Narrative** Conference Room III  
Chair: Marcus Nordlund

SU 11:50	<i>Romantic love: a folk tale project and its implications</i> Marcus Nordlund
SU 12:10	<i>How do we get from here to there? Anthropomorphized topography, spatial cognition, and verbal information processing</i> Michelle Scalise Sugiyama, Lawrence Sugiyama
SU 12:30	<i>Fictional meaning: evolution and implication</i> Brian Boyd

Session I-4: **Hormones** Centennial Hall  
Chair: Mark Flinn

SU 10:50	<i>Sex steroid hormones, environmental stressors and adolescent adjustment</i> Hans Vermeersch, Guy T'Sjoen, Jean-Marc Kaufman, John Vincke
SU 11:10	<i>Is father-child resemblance variability associated to a mixed reproductive strategy in fathers?</i> Alexandra Alvergne, Charlotte Faurie, Michel Raymond
SU 11:30	<i>Trust, preferences, and social dilemmas: does the hormone Oxytocin interact with gender and social value orientation to affect cooperation?</i> Carolyn Declerck, Toko Kiyonari, Christophe Boone
SU 11:50	<i>Testosterone is associated with mating success but not attractiveness or masculinity in human males</i> Marianne Peters, Leigh Simmons, Gillian Rhodes
SU 12:10	<i>Testosterone in romantically involved men</i> Steven Gangestad, Randy Thornhill, Christine Garver-Apgar
SU 12:30	<i>Do cortisol profiles respond adaptively to social events during child development?</i> Mark Flinn

## POSTER SESSION

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Posters will be displayed continuously from Thursday in the **International Conference Hall III** until the end of the conference. Poster authors will be present for discussion **from 6:20-8:20PM on Friday**.

- |           |                       |  |
|-----------|-----------------------|--|
| <b>1</b>  | Bishop et al.         | <i>Differential cousin contact as a function of paternity uncertainty</i>  |
| <b>2</b>  | Gladstone et al.      | <i>Status as social responsibility or strategic advantage: social values within status hierarchies</i>   |
| <b>3</b>  | André                 | <i>The evolution of reciprocity. A situationist view</i>   |
| <b>4</b>  | Masudab et al.        | <i>Third party punishment on deception</i>   |
| <b>5</b>  | Oda et al.            | <i>Does the altruism level of perceivers affect their detection of altruism?</i>   |
| <b>6</b>  | Hromatko et al.       | <i>Can humans be divided in "Doves" and "Hawks"? An evolutionary medicine perspective</i>  |
| <b>7</b>  | Schug et al.          | <i>Self-disclosure as a costly signal of commitment: the effects of culture, social structure, and domain</i>  |
| <b>8</b>  | Nakashima et al.      | <i>When we remember faces of other people: Defectors are memorable when they are rare; altruists when they are NOT</i>   |
| <b>9</b>  | Horita and Yamagishi  | <i>Group-based reciprocity as an adaptive strategy for generalized exchange</i>  |
| <b>10</b> | Mashima and Takahashi | <i>How do we treat givers to free-riders in indirect reciprocity settings?: an experimental study to examine strategies in indirect reciprocity settings</i>       |
| <b>11</b> | Tanida et al.         | <i>Cooperators tend to see human faces in abstract figures</i>   |
| <b>12</b> | Kruger                | <i>Young adults attempt exchanges in reproductively relevant currencies</i>  |
| <b>13</b> | Ichinose and Arita    | <i>Punishment in the spatial ultimatum game</i>  |
| <b>14</b> | Shinada et al.        | <i>Are there nonverbal cues to cooperation? An experimental study using a prisoner's dilemma game</i>  |
| <b>15</b> | Moya                  | <i>Perceptions of social categories' ingroup homogeneity</i>   |
| <b>16</b> | Yokota and Yuki       | <i>Does the existence of the outgroup mean contamination to females but an obstacle to males?: sex differences in the perception of intergroup threat</i>          |
| <b>17</b> | Mifune and Yamagishi  | <i>Sex difference of ingroup bias in minimal groups</i>  |
| <b>18</b> | Stirrat and Perrett   | <i>Dominance and dinner dates: Who pays the bill?</i>  |
| <b>19</b> | Maia                  | <i>MPI predicting family conflicts in matrilineal and patrilineal societies</i>  |
| <b>20</b> | Blake and McCullough  | <i>Religion and self-control: empirical findings</i>   |
| <b>21</b> | Nomura et al.         | <i>Mind reading and cultural identity</i>  |
| <b>22</b> | Yamamoto et al.       | <i>Tool sharing in chimpanzees: helping behavior with non-food objects</i>   |
| <b>23</b> | Bryson                | <i>Imitation is not consummation: the role of bias and modularity in cultural inheritance</i>  |
| <b>24</b> | Shikishima et al.     | <i>Familial transmission of authoritarian conservatism: genetic inheritance or cultural transmission?</i>  |
| <b>25</b> | Sato et al.           | <i>The 'evoked culture' approach to cultural variations in the importance of self-esteem (1): a cross-national comparison</i>                                      |
| <b>26</b> | Takemura and Yuki     | <i>The 'evoked culture' approach to cultural variations in the importance of self-esteem (2): a secondary data analysis</i>  |
| <b>27</b> | Siriattakul           | <i>Development of a causal relationship model for sense of coherence of undergraduate students: an application of the multiple group structural equation model</i> |
| <b>28</b> | Lohmann               | <i>Why Johnny drops out of higher education and Jill fails to excel in science: the evolutionary social psychology of universities and scientific networks</i>     |
| <b>29</b> | Ye et al.             | <i>Female crimes in view of evolutionary psychology</i>  |

- 30** Wu et al. *The association between teasing experiences and health among junior high school students in Taiwan*
- 31** Mori and Yukihiro *Bargaining behavior in children with autistic spectrum disorders*
- 32** Inoue et al. *Deficiency of theory of mind in 'revolving-door' patients with schizophrenia*
- 33** Miyakoshi et al. *ERP study on the right-hemisphere dominance in self-relevant recognition*
- 34** Zacher and Niemitz *Quantitative evaluation of motor milestones*
- 35** Hashiya and Kobayashi *Typical development in the response to being imitated by others in childhood -A way to find "others' intention"-*
- 36** Schechter *Life history theory, expected lifespan and attitudes towards risk behaviors and future life events*
- 37** Nishiyama *Women's perspectives on their life stories in maternal kinship: using the images drawing method*
- 38** Turmel *Climate, seasons and evolution of the human body, mind and behavior*
- 39** Boutros *Environmental variability and the evolution of the capacity for culture*
- 40** Tamura *"Smile" as "honest signal": measuring handgrip while expressing smile*
- 41** Ozawa *Comparative study of facial expressions of laughter appearing in remake movies using automatic smile-detection software*
- 42** Blackwell et al. *Gender is not perceptually separable from displays of anger and happiness*
- 43** Ikeda and Hasegawa *Electrophysiological responses towards untrustworthy face*
- 44** Yildirim et al. *Gender differences in the change detection Of facial expression*
- 45** Komatsu and Hakoda *Interference between facial expression and identity in face recognition: the effect of happy faces*
- 46** Smith et al. *Individual differences in the effect of relationship context on women's preferences for sexual dimorphism in male face shape*
- 47** Yamaguchi and Aoki *Preference for women with fair skin*
- 48** Sorokowski and Pawlowski *Cross-cultural study on preferences for relative leg length in a potential partner*
- 49** Stephen et al. *Carotenoids, skin colour and health*
- 50** Forrester et al. *Friends and rivals: effects female dominance and physical attractiveness for female-female competition*
- 51** Nojo et al. *Parental influence on mate choice*
- 52** Oishi *Mate preferences of the Baka hunter-gatherers and adjacent Bantu farmers in South-East Cameroon*
- 53** Lassek and Gaulin *Costs and benefits of fat-free muscle mass in men: relationship to mating success, dietary requirements, and natural immunity*
- 54** Hrgovic *Children of war: testing sex ratios before, during, and after the homeland war in Croatia*
- 55** Sykora *The Nike swoosh logo shape of age-specific abortion ratios in modern Slovakia*
- 56** Khan and Todd *Increasing stress reduces the left cradling bias in males holding a "crying" doll*
- 57** Takahashi et al. *BIS/BAS as hypothesized risk factors to anxiety and depressive symptoms*
- 58** Harter and Leonetti *Costs and possible benefits of delayed weaning in Northeast India*
- 59** Serin and Sullivan *Perceptions of natural in the domains of food and medicine*
- 60** Sakurai *Derivations of preferences and changes of preferences by computer simulations from a Darwinian view point*
- 61** Tsuyuki and Aoki *Evaluation of moral wrongness on third-party sibling incestuous behavior among Japanese college students*
- 62** Ioelu et al. *The evolution of male androphilia in Samoan fa'afafine*
- 63** Kaya et al. *Sex differences in responses to homosexual and heterosexual infidelity*
- 64** van Hoof *The application into the affective domain of mechanisms relevant to the organization of counterintuitive movements: the origin of the genus Homo*
- 65** Tsuji et al. *Differential effects of phonological interference: are females more sensitive to phonological information than males?*

- 66** Yeung and Harber *Psychosocial resources shape threat detection*
- 67** Nakamura et al. *Discussion on the relationships between global/local perceptual processings and illusory perceptions with the Ebbinghaus-Titchener circles*
- 68** Sakai and Fujita *Evolution of cast shadow processing: from a comparison between humans and New World monkeys*
- 69** Dogan et al. *Change detection in phylogenetic and ontogenetic threat-related stimuli*
- 70** Atmaca et al. *Keeping track of multiple agents vs. objects*
- 71** Lin and Yeh *Examining the role of cultural approval for femininity visual consumption in the early Taiwan medicine ads*
- 72** Ko *Representations of femininity and masculinity in Jimmy Liao's picture books*
- 73** Lin et al. *The cross-culture analysis of female role portrayal depiction in Taiwanese print ads*
- 74** Lipo and Madsen *Seriation methods and social network structure*
- 75** Mercier et al. *The argumentative theory of reasoning and cross-cultural psychology*
- 76** Watanabe et al. *Angle judgment by Japanese people: Are they good at relational judgment?*
- 77** Inukai and Takahashi *Decisions under ambiguity: effects of sign and magnitude*
- 78** Lauharatanahirun et al. *Conjunctive errors as a by-product of ecological rationality*
- 79** Komuro et al. *The human's risk preference for variable-time choice: Why humans and animals are risk-prone?*
- 80** Murata et al. *What motivates men to risk-seeking behavior?*
- 81** Kruger et al. *Time perspective is a mediator of risky behavioral strategies rather than a byproduct*
- 82** Bayly *Was expansion out of protolanguage motivated by the internal reward from concept-matching?*
- 83** Kobayashi et al. *Spontaneous regulation of the synchronized actions with humans by a chimpanzee*
- 84** Poh and Fiddick *Memory for cheaters: faces or rules?*
- 85** Watanabe et al. *Can a victim's anger be appeased by a transgressor's voluntarily accepting an apology cost?*
- 86** Ohtsubo and Watanabe *Are females sensitive to potential deceptions in males' courtship signals?*
- 87** Takimoto et al. *An experimental analysis of the basis of inequity aversion: sensitivity to others' reward in capuchin monkeys (*Cebus apella*)*
- 88** Murakami et al. *Self awareness for emotion regulation and genetic modulation*
- 89** Kawano et al. *Disgust and avoidance for stigmatic persons as reversed mate preference*
- 90** Pivonkova et al. *Objectively assessed masculinity and it's correlation with Cattell's Personality Traits*
- 91** Ho and Fiddick *The adaptive significance of honesty-humility, agreeableness and conscientiousness*
- 92** Nawata and Yamaguchi *Escalation from individual harmful behavior to intergroup conflict - experimental study of intergroup vicarious retribution -*
- 93** Hess and Hagen *Women's coalitional aggression: the influence of allies and competition on gossiping*

# KEYNOTE AND PLENARY ABSTRACTS

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## Keynote–Saturday, June 7      Clock Tower Centennial Hall

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### *Evolution and Human Society*

**Richard D. Alexander**

**Emeritus Professor & Emeritus Curator of the Museum of Zoology  
University of Michigan**

Darwin's fabulous intellect implanted the concept and general nature of evolution permanently in the minds of humans willing to think seriously about it. His several challenges included demonstrating that evolution tends to save only traits that contribute to reproduction, that evolution continues via what he called "numerous, successive, slight modifications," and that traits carried by sterile individuals can be furthered if relatives of the sterile individuals are sufficiently and appropriately aided.

In 1930, Sir Ronald A. Fisher elaborated on Darwin's arguments by explaining factors affecting rates of evolution, how such traits as allelic dominance, sex ratio selection, heroism, and runaway sexual selection could evolve, and how kin selection can be quantified.

The arguments of Darwin, unfortunately, were not sufficient, and those of Fisher too late, to cause the social and medical sciences, and of course religion, to accept the evolutionary process, combined with the succession of evolutionary environments, as the key to profound explanations of virtually everything about life. The building blocks were there, but the willingness and necessary vision were not.

As a consequence, the human-oriented sciences generated and elaborated the strategies, practices, and principles of their societies in a virtual absence of contributions from evolution-based science. For more than a century evolutionary biology was largely restricted to studies of pattern rather than process, amassing data from fossils and comparisons from phylogenies and genealogies of species. In the early and middle 20th century, mathematical versions of the evolutionary process, via population genetics, primarily considered the evolutionary process to be focused on increasing the average fitness of populations, until Alice Brues, in 1964, explained as J.B.S. Haldane's "Dilemma" his claim that too many rare beneficial alleles would render the average fitness of a population so low as to threaten its extinction.

This general state of affairs was not alleviated until George C. Williams (1966) put together the arguments that (1) life is organized hierarchically, (2) selection can operate at many levels simultaneously, (3) selection can be reversed at different levels, and (4) selection is most likely to be potent at the lowest levels of organization.

The resulting chaos of conflicts was most traumatic for the already established human-oriented disciplines. Social scientists, medical scientists, philosophers, religious people, and those in the arts and literature for the most part vigorously rejected (or avoided) the intrusive revival of Darwinian and Fisherian arguments, and, even more forcefully, the establishment – by such as George C. Williams, Robert L. Trivers, and William D. Hamilton – of a "new" science of evolutionary adaptation with consequences for human understanding apparent in every direction.

The objections will continue. They are bolstered by ideological, moral, and ethical systems that seem to conflict with evolution as an approach and with science as the vehicle. They are aided immensely by our continuing – and, unfortunately, to-be-long-continued – ignorance of the incredibly complex, largely uncharted, and all-too-often unyielding processes of ontogeny and learning.

It is easy to be hostile toward evolution as the background of adaptive forces that conflict with current ethical views. It is easy to be skeptical, or even fearful, of oversimplified ontogenetic and experiential hypotheses, assumptions, and biases. It is tempting to assume or accept that human society is doing just fine, and that if it is not, an evolutionary perspective is not likely to help matters.

During the last century, between 50 and 150 million people were reported killed in warfare and genocides – an average of ca. 1400-4000 per day for 100 years. If data on current conflicts are accurate and relevant, up to hundreds of times as many people as were killed were maimed physically, mentally, or emotionally, often permanently. On this single basis, we can make no claim to be doing just fine. We are beginning to face global problems that will require global cooperation to be solved. There is reason to believe that we have not evolved to solve global problems by global cooperation, and that we have never accomplished such. Indeed, the most important and frightening of all human adaptations is likely our stubborn and perhaps unique manner of alternating our most intense emotional expressions between the two extremes of amity and enmity within our own species. We need every tool available to understand such things about ourselves. These are reasons why the Human Behavior and Evolution Society is potentially the most important scientific organization in the world.

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A hydrogen bomb is an example of mankind's enormous capacity for friendly cooperation. Its construction requires an intricate network of human teams, all working with single-minded devotion toward a common goal. Let us pause and savor the glow of self-congratulation we deserve for belonging to such an intelligent and sociable species. (Robert S. Bigelow, 1969. *The Dawn Warriors*)

The challenge of Darwinism is to find out what our genes have been up to and to make that knowledge widely available as a part of the environment in which each of us develops and lives so that we can decide for ourselves, quite deliberately, to what extent we wish to go along. (Richard D. Alexander 1979. *Darwinism and Human Affairs*)

Heredity is particulate, but development is unitary. Everything in the organism is the result of the interactions of all genes, subject to the environment to which they are exposed. What genes determine are not characters, but rather the ways in which the developing organism responds to the environment it encounters. (Theodosius Dobzhansky 1961. In: *Insect Polymorphism*, John S. Kennedy, editor)

Kindness and generosity arise spontaneously when the otherness of others goes away. (Barry R. McKay, 3 August 2007 letter to the *Ann Arbor News*)

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**Invited Talks**
**Clock Tower Centennial Hall**


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**Thursday Morning Plenary, 9:30 AM**
***Chimpanzee Mind: Studies in the Field and the Laboratory***
**Tetsuro Matsuzawa**
**Primate Research Institute**
**Kyoto University**

Fieldwork and laboratory work need to go hand in hand to provide us with a complete picture of the life and mind of the chimpanzee. I have called this discipline Comparative cognitive science. A community of 14 chimpanzees of 3 generations inhabits an enriched, semi-natural environment at KUPRI. My research partner is named "Ai", a 31-year-old female chimpanzee. I have been working with Ai since 1977. My colleagues and I have covered various topics in cognition; visual acuity, form perception, face recognition, auditory-visual cross-modal matching, short term memory, imitation, deception, mother-infant interaction and so forth. A community of 13 chimpanzees of 3 generations inhabits the forests at Bossou, Guinea, West Africa. Bossou chimpanzees are well known to use a pair of stones as hammer and anvil to crack open nuts. Since 1986, I have explored developmental changes in tool use technology. The combination of laboratory and field studies has revealed a unique mode of social learning in chimpanzees, called "Education by master-apprenticeship", 1) Infants' prolonged exposure to adult behavior based on the strong mother-infant bond, 2) Lack of active teaching (no formal instruction, and no positive/negative feedback from the mother), and 3) The infants' intrinsic motivation to copy the mother's behavior and the high tolerance of the mothers toward the infants. Through education by master-apprenticeship, chimpanzees seem able to pass knowledge and skills from one generation to the next, thereby maintaining their community's cultural repertoire.

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**Thursday Afternoon Plenary, 1:40 PM**
***Alone Among Apes: Cooperative Breeding and Human Cognitive Evolution***
**Carel van Schaik**
**Director of the Anthropological Institute & Museum**
**University of Zurich**

Despite sharing a recent common ancestor, humans have cognitive abilities that are markedly different from those of other great apes. The main difference involves shared intentionality, which is made possible by spontaneous prosociality (also strikingly absent in chimpanzees). However, evolutionary scenarios still struggle to explain how this difference arose. Here we suggest human prosociality may be linked to cooperative breeding. Spontaneous prosociality, in the form of food and information donation, is also found in the common marmoset, a member of the only other primate lineage to show cooperative breeding, and may also be present in other cooperatively breeding mammals. A comparison of callitrichids with their independently breeding sister taxon shows an increase in social cognition but not non-social, including physical cognition, and a similar pattern may hold in other cooperative breeders. Moreover, cooperative breeders tend to have larger relative brain sizes than other mammals. Hrdy's Cooperative Breeding Model suggests that extensive allomaternal care may also have had a major effect on human cognitive evolution. When cooperative breeding arose in the hominin lineage, spontaneous prosociality was added to an already ape-level cognitive system, which enabled the emergence of shared intentionality by a simple extension of spontaneous prosociality from donation of food and information to a willingness to share mental states as well. Various other derived features of human cognition can also be explained under this model.

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**Friday Morning Plenary, 9:30 AM*****The Scope of Culture in Chimpanzees, Humans and Ancestral Apes*****Andrew Whiten****Professor of Evolutionary and Developmental Psychology****University of St. Andrews**

Culture is often seen as what sets our species apart from the rest, so pervasive in humans that it largely frees us from the influences of evolutionary biology that shape other creatures. In recent times, however, particularly in the last decade or so, more continuity has been recognized. As long-term field studies have come to fruition and new methods developed, evidence for cultural transmission of behaviour has become increasingly common in a wide range of fish, birds, cetaceans and primates. The scope of culture in our closest living relatives, the great apes, is now known to be more human-like in several respects than was generally suspected. In the present talk I review these commonalities and use them to reconstruct the scope of culture in our most recent common ancestry, drawing on new evidence concerning (i) the patterning of different traditions in time and space, across Africa; (ii) mechanisms of social learning, such as teaching, imitation and emulation; and (iii) the contents of culture, such as tool use. The new, richer sources of evidence are also deployed here in the complementary work of identifying and understanding the distinctive cultural traits that appear to distinguish the two sister-species, such as the human capacity for cumulative cultural evolution. The results of these comparative analyses can in turn be coordinated with key aspects of the archaeological record, significantly revising our understanding of factors that may explain why our more recent ancestors took such an extraordinary, heavily cultural, evolutionary pathway.

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**Friday Afternoon Plenary, 1:40 PM*****Mate Choice Influenced by Histocompatibility Genes*****Wayne Potts****Department of Biology****University of Utah**

Disassortative mating preferences based on MHC (major histocompatibility complex) genotype have been demonstrated in humans and numerous other vertebrates. The molecular basis of MHC-mediated odor signals has recently been elucidated revealing a remarkable convergent coevolution between odorant receptors and MHC molecules; the unique peptide binding properties of a given MHC allele are matched by odorant receptor subsets. This provides the molecular logic of how the MHC genotype of individuals can be olfactorily perceived by others. It also explains how diversifying and balancing selection acting on polymorphic MHC genes can operate through either pathogens or MHC-mediated behaviors. Disassortative mating preferences have at least three possible functions: (1) to produce disease resistant MHC heterozygous offspring, (2) to produce disease resistant offspring by providing a head start in the host/pathogen molecular arms race or (3) to avoid inbreeding and associated genetic diseases. These functions are not mutually exclusive and all three are supported by direct evidence. This story has captured the public eye with the advent of commercial dating services that match couples for MHC compatibility. There are many practical reasons to understand human MHC mate choice, which has been associated with variability in fertility, child health and relationship satisfaction. MHC mate choice is perhaps the premier example of a complex behavior with an established genetic basis where many of the intervening mechanisms are elucidated, including molecular, neurosensory, immunological, imprinting and kin recognition mechanisms. I will attempt to interpret the complex data sets bearing on these intriguing behaviors and their functions.

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**Saturday Morning Plenary, 9:30 AM*****The Necessity of Consciousness: Why Human Zombies Would Be an Evolutionary Dead End*****Nicholas Humphrey****Centre for Philosophy of Natural and Social Science****London School of Economics**

The hard problem of consciousness is to explain where the phenomenal feel comes from - why it's "like something" to experience sensations, and what biological purpose this being-like-something serves. I will propose an entirely new solution, by arguing as follows: 1. Sensations don't have to have a phenomenal feel to them in order to serve their basic role; indeed, in the early stages of evolution, sensations were surely non-phenomenal. 2. Phenomenality must have been added by natural selection as a quite peculiar design feature, probably relatively late in evolution (and possibly only in mammals). 3. It will have been selected because the psychological changes that the experience of phenomenality brings about in the conscious subject are highly adaptive. 4. Arguably these changes were and –are – nothing less than an enhanced sense of self and a new enchantment with the world outside. 5. Even if phenomenal consciousness is present in other species, human beings have built on it in ways none others have. 6. It has allowed humans to occupy what I call the "soul niche", that's to say, the cultural and biological territory, rich with almost unlimited opportunities, that must have opened up for our ancestors once they first began to think of themselves as spiritual beings.

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**Sunday Morning Plenary, 9:30 AM*****Social Preference and Strategy in In-Group Love and Out-Group Hatred*****Toshio Yamagishi****Center for the Sociality of Mind****Hokkaido University**

In-group favoring behavior—cooperating more with members of one's own group than with outsiders—seems ubiquitous in the human society. From the game-theoretic point of view, this involves no surprise. The "shadow of the future," which is more prominent in relations with members of the same group than with outsiders with whom one may not see again in the future, is a prerequisite for cooperation among fitness-enhancers. What is surprising, however, is the finding that such in-group bias exists even in the minimal group — a collection of individuals who share a seemingly trivial social category while lacking interpersonal interactions and interdependence of interest. Aside from the social identity account of this finding which is based on an arbitrary assumption that all humans aspire to maintain high self-esteem, two approaches have been proposed to explain the seemingly ubiquitous disposition toward in-group love and out-group hatred. The first is the social preference approach, according to which humans are viewed to be endowed with a domain-general psychological driving force—i.e., other-regarding social preferences—that have been selected through some forms of group selection. The second is the reputation management approach, which views such behavioral disposition as a reflection of a reputation management mechanism that regulates human behavior in the domain of social exchange. In my talk, I will present evidence that 1) cooperation in Prisoner Dilemma and related games is a function of whether the game is defined as an instance of social exchange, 2) spiteful behavior toward the out-group never occurs in the minimal group studies, 3) in-group favoring behavior does not occur in the minimal group unless indirect or generalized "return" for one's cooperation is expected from the in-group. Based on these evidence, I argue that in-group favoring behavioral pattern that are often observed in the minimal group studies can be interpreted as a reflection of the "default strategy" that promotes one's reputation and makes one to qualify as a target of "gift-giving" in a system of generalized exchange.

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# SESSION TALK ABSTRACTS

## Thursday, June 5

### Thursday Morning Sessions (A1-A4)

#### Session A-1 *Emotions*

International Conference Hall I, Chair: Debra Lieberman

TH 10:50AM

DIFFERENT DOMAINS OF DISGUST MEDIATE STIGMATIZATION OF DIFFERENT GROUPS

*Debra Lieberman, Josh Tybur*

Psychologists have long been interested in the processes regulating stigmatization, discrimination, and prejudice. Recently, researchers have started investigating the role disgust plays mediating these processes. However, research on the relationship between disgust and stigmatization has focused on only one type of disgust, pathogen disgust. An evolutionary perspective suggests and evidence indicates there are two other disgust domains: sexual and moral disgust. This raises new questions about the relationship between disgust and stigmatization. For instance, does general disgust sensitivity mediate stigmatization or is the relationship between the types of disgust and stigma more specialized? We report findings from studies evaluating the relationship between the types of disgust and attitudes towards various stigmatized groups including the obese and homosexuals. Data indicate that different types of disgust relate to attitudes directed toward particular groups. Further, we found that males and females differed in the types of disgust mediating reactions toward particular stigmatized groups.

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TH 11:10AM

WHAT DOES DOMESTICATION OF THE SILVER FOX HAVE TO DO WITH THE EVOLUTION OF THEORY OF MIND?

*James Chisholm*

While it is widely accepted that theory of mind is, if not unique to humans, at least more highly developed in our species than any other, it is not clear how it was exposed to selection and thus capable of evolving. Attempting to fill this gap, I review data showing that more than 40 years of artificial selection for "tameness" (i.e., nonaggression) in silver foxes resulted in neoteny through prolonged development. In particular, tame silver foxes have a significantly longer "period of primary socialization" than their wild counterparts. In turn, the first principles of life history theory and comparative primate life history data suggest that hominid evolution was characterized by selection for prolonged development. By reverse analogy, I propose that this prolonged development increased hominid "tameness" which, in combination with the existing mammalian/primate attachment system, fostered the evolution of theory of mind.

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TH 11:30AM

## FACIAL MIMICRY IN UNDERSTANDING OTHER PERSON'S EMOTIONAL STATES

*Hisamichi Saito, Tatsuya Kameda*

There is a theory that facial mimicry, the spontaneous imitation of other individuals' emotional facial expressions, helps us understand other's emotional states. (Blairy, Herrera, & Hess, 1999; Niedenthal, 2007). If this theory holds, then facial mimicry should be elicited more often when participants are motivated to understand other's emotional states than otherwise. To examine this hypothesis, we presented participants with a morphing movie showing 7 kinds of emotional facial expression. Some participants were explicitly asked to infer the emotional states of the target person in the movie ("asking condition"), while the other participants were not ("not-asking condition"). We used electromyography (EMG) to record participants' facial muscle activities. In the asking condition, facial muscle activities when seeing the sad and surprise expressions were significantly higher than those in the not -asking condition. Our results supported the hypothesis that facial mimicry helps us understand other's emotional states.

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TH 11:50AM

## ASSOCIATIONS AMONG COMPONENTS OF EVOLVED EMOTION MECHANISMS

*Achim Schuetzwohl*

Darwin (1872) proposed that certain emotional states are associated with emotion-specific facial displays. This association was hypothesized to be attributable to phylogenetically determined discrete emotion mechanisms that comprise motor programs for emotion-specific facial displays as core components (see also Cosmides & Tooby, 2000). Two experiments tested this hypothesis for the emotion of surprise. In Experiment 1, an announced firework was displayed while participants silently read a text either encouraging or discouraging facial displays. In Experiment 2, a „new“ room was rapidly constructed in front of the lab. Thus, when leaving the lab, participants found themselves in this new room instead of the original corridor. In the new room either a familiar, an unfamiliar or no person was sitting in an armchair. In both experiments, participants rated the event's unexpectedness and their surprise feeling. Facial expressions were unobtrusively videotaped. The results will be presented and their implications for Darwin's hypothesis discussed.

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**Session A-2 Kinship I****International Conference Hall II, Chair: Heidi Colleran**

TH 10:50AM

## REPRODUCTIVE STRATEGIZING IN A NATURAL FERTILITY POPULATION IN POLAND: A HUMAN BEHAVIOURAL ECOLOGY APPROACH

*Heidi Colleran, Ruth Mace*

Humans appear to breed cooperatively, and kin support of reproduction seems ubiquitous in human populations. However, cross-cultural variation in cultural, ecological and socio-economic dynamics governs which kin are available to help, and those in a position to influence fertility are often unrelated to reproducing females. Thus observed fertility can be the outcome of a number of conflicting or converging reproductive strategies, not merely those of the reproducing female. Research into reproductive scheduling is often confounded by pervasive use of contraception in contemporary populations, so data collected from women living under relatively 'natural' conditions is important for our understanding of kin effects.

I present some preliminary analyses of kin effects on fertility in a high fertility, low contracepting population in rural Poland. Maternal and paternal kin appear to have consistently opposing effects, with maternal kin decreasing and paternal kin increasing fertility, in line with a possible quantity-quality trade-off in reproductive strategizing.

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TH 11:10AM

PROXIMAL MEDIATORS OF KIN-BASED ALTRUISM AND PROSOCIAL BEHAVIOR: WHY OBJECTIVE SOCIAL CONTACT IS MORE IMPORTANT THAN SUBJECTIVE CLOSENESS

*Gregory Webster, Courtney Rocheleau, Angela Hendricks, Angela Bryan*

What are the most important proximal variables that facilitate inclusive fitness? In 5 studies, we examined the relationship between genetic relatedness and resource allocation (Studies 1-4), or willingness to donate a kidney (Study 5), and the extent to which it was mediated by various proximal variables. A series of multilevel multiple mediation models, in which the proximal variables were pitted against one another to explain variance in the outcome variable, revealed that social contact variables (i.e., cohabitation and social interaction) were stronger mediators of inclusive fitness than self-report measures (i.e., felt responsibility, emotional closeness, and self-other overlap). Remarkably, in none of the analyses was the direct effect of genetic relatedness reduced to non-significance. The present results suggest that objective measures of living and interacting with kin may be more fundamental in explaining the psychological mechanisms underlying inclusive fitness than subjective measures of emotional closeness (cf. Korchmaros & Kenny, 2001).

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TH 11:30AM

PARENTAL RESEMBLANCE OF THE NEWBORN: DO NEWBORNS ACTUALLY RESEMBLE THEIR FATHER?

*Sevgi Kocaman, Hakan Cetinkaya, Sonia Amado*

We aim to find out if babies actually resemble their fathers or are the mothers attempting to influence the father's perceptions of paternity, to overcome paternity uncertainty and to encourage male parental investment in the child. In Study1, mothers, fathers, and relatives of 65 newborn babies were interviewed. Majority of mothers and relatives, except the fathers responded that the baby looks like the father more than the mother. In Study2, objective raters evaluated resemblance, and most women tend to think babies resemble their fathers more than the mothers, while men don't. The Study3, objective raters were given "match-the-baby" task. No significant differences were found between real fathers and real mother's correct identification rate, which were not significantly higher than chance level. In conclusion, the bias in how mothers remark resemblance does not reflect actual resemblance and may be an evolved response to assure domestic fathers of their paternity.

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TH 11:50AM

TRADE-OFFS IN MODERN PARENTING: A LONGITUDINAL STUDY OF SIBLING COMPETITION FOR PARENTAL CARE

*David W. Lawson, Ruth Mace*

Using extensive longitudinal data recording parent-child activities from birth to 10 years (n=14,000+), we explored family configuration effects on childcare investments in contemporary British families. We simultaneously track maternal and paternal behaviours, and consider variation across time and between distinct population subgroups. Parental wealth and time-investments were positively correlated, and high investing mothers tended to pair with high investing fathers. However, maternal care was consistently higher and less facultative than paternal care, with unrelated father-figures providing the lowest investment. Maternal care was slightly biased towards daughters and paternal care strongly biased towards sons. Larger family size was traded-off against investment per offspring, representing the strongest explanatory variable in our analysis. Large sibships were particularly costly for laterborn offspring. We tested for a buffering effect of wealth on family size trade-offs, finding mixed effects. Results are discussed in relation to life history theory and evolutionary models of the modern family.

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TH 12:10AM

GRANDPARENTS GIVE MORE CHILDCARE TO THEIR DAUGHTERS' CHILDREN

*Ralf Kaptijn*

Humans' extreme longevity, compared to other primates, most likely evolved because long-living grandparents can enhance the successful reproduction of their children. Since grandparents' sons face paternity uncertainty, maternal grandparents are expected to invest more in their grandchildren than paternal grandparents. Recent research indicates that grandparents' babysitting indeed positively affects the reproductive success of their children. However, differences in investment in childcare in sons' versus daughters' children were not yet investigated. Here, we study this differential investment using regular babysitting as a direct measure of assistance in childcare. We use a representative sample of the Dutch older population born between 1913 and 1937 which contains information about babysitting of more than 1000 grandparents of both sexes. We performed a logistic multilevel analysis to estimate the odds of doing regular babysitting on daughters' children compared to sons' children. First results show that maternal grandparents give significantly more childcare than paternal grandparents.

Department of Sociology, VU University/ [rwj.kaptijn@fsw.vu.nl](mailto:rwj.kaptijn@fsw.vu.nl)**Session A-3****Symposium: Precursors of Morality****Conference Room III, Chair: Farah Focquaert & Katinka Quintelier**

*A variety of emotional and cognitive mechanisms contribute to what it entails to act morally: emotional contagion, empathy, theory of mind, perspective taking, helping behavior, cheater detection, having a sense of fairness, moral disgust, and many more. Some of these mechanisms, or slight variations on them, exist in non-human animals, and can be described as precursors to morality. Research on any one of these processes may result in important contributions to our understanding of morality. This symposium mainly focuses on two elements of moral behavior, in humans and non-human animals: cooperative behavior and empathy. The different presentations cover the following topics: sex differences in nepotism, the evolutionary paradox of 'low empathy', cooperative behavior in chimpanzees and bonobos, bottom-up versus top-down models of altruistic behavior and how this relates to different moral systems.*

TH 10:50AM

LACKING EMPATHY: PSYCHOPATHOLOGICAL OR AT THE EDGE OF THE MALE EMPATHY DISTRIBUTION?

*Farah Focquaert*

Empathy affects almost every aspect of our social interaction (e.g. mother-infant bond, morality), and instances of extreme low-empathy can be devastating to an individual's social life. From an evolutionary point of view, the prevalence of disorders that are characterized by extreme low-empathy, such as autism spectrum conditions, is hard to grasp. Which brings us to the following question: Are we facing an evolutionary paradox? First of all, based upon Baron-Cohen's (2006) hyper-systemizing theory of autism, I argue that attempts at systemizing the social world may lower the costs of extreme low-empathy. Secondly, I argue that there might be evolutionary benefits to 'low empathy'. Possibly, 'low empathy', or at least the ability to selectively turn off one's empathic reactions, was selected for during male evolutionary history (Focquaert, 2009). I will briefly present DTI data on normal men with high systemizing and low empathizing traits (Focquaert et al., in preparation).

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TH 11:10AM

## HOW MUCH OF OUR COOPERATIVE BEHAVIOUR IS HUMAN?

*Brian Hare*

Many forms of cooperation are unique to our species and may in part explain why our species is so different from other animals. However, field studies reveal that both chimpanzees and bonobos engage in joint activities that suggest that our closest relatives might also possess sophisticated cooperative skills. I report on experiments probing the cooperative problem solving skills of chimpanzees at a mechanistic level. From these experiments we have learned that chimpanzee cooperation can best be characterized as helpful or collaborative, however we continue to struggle to understand how the psychological mechanism that allow for such flexibility in humans and chimpanzees may differ in critical ways. I will argue that to fully understand the evolution of human cooperation we will not only need to continue our examination of chimpanzee cooperation, but also our other more tolerant relative the bonobo.

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TH 11:30AM

## SEX DIFFERENCES IN NEPOTISM

*Katinka Quintelier*

Certain data suggest that women are more nepotistic than men (e.g. Neyer and Lang, 2003; Faulkner and Schaller, 2007). This is consistent with evolutionary theory: (1) Hamilton's rule predicts that helping behavior is preferentially directed to more closely related individuals, when the benefit is higher or when the cost of helping is lower. (2) The theory of sexual selection predicts a sex difference in the pay-off in helping kin since men incur a cost of lost mating opportunities and men also face paternity uncertainty. Therefore, women will show more willingness to help kin than men. However, research on the proximate mediators of nepotism does not always find consistent sex differences in helping behavior towards kin. I will present data on sex differences in nepotism and interpret these data in light of inclusive fitness theory, sexual selection and hypotheses about the mental mediators of nepotism.

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TH 11:50AM

## TWO ROADS FROM EMPATHY TO MORALITY

*Jelle De Schrijver*

Empathy - a sense of similarity in feelings experienced by the self and the other - is commonly regarded as a key motivating factor for altruistic behaviour. Based on primate, psychological and neural studies, different models have been introduced to explain altruistic motivation: (1) top-down models focus on the role played by explicit perspective taking and theory of mind as proximate causes of altruism, while (2) bottom-up models focus on adaptive automatic emotional responses. I will argue that these models describe two more or less independent systems that are the result of different adaptive challenges: reciprocity and kin selection respectively. Moreover, I will argue that each system results in different moral intuitions, the former stressing reciprocity and the latter stressing care. Thus, the occurrence of multiple pathways to altruism could explain some of the variety in moral systems.

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TH 12:10AM

IMITATION, PRETENCE, DECEPTION, AND ALTRUISM IN CHIMPANZEES

*Tetsuro Matsuzawa*

This talk aims to introduce the evolutionary basis of various aspects of human social intelligence. Chimpanzees in laboratory and in wild showed the evidence of imitation, pretence, deception, altruism and so forth. The talk will focus on the video-recorded episodes obtained in the more-than-30-years long-running studies done in Primate Research Institute, Kyoto University, and also in Bossou in West Africa. There is a community of 14 chimpanzees of 3 generations in PRI while there is another community of 13 chimpanzees of 3 generations in Bossou. In the parallel efforts, the video-recorded episodes have been accumulated. Video-recording allows us to see the episodes repeatedly, that is different from simple anecdotes. The video-recorded episodes may illuminate the uncovered aspects of social intelligence shared by humans and chimpanzees. In the view point of Comparative cognitive science, this talk summarizes the developmental stages of social intelligence, from neonatal imitation to the understanding other's mind.

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**Session A-4 Vocal Attractiveness**  
**Centennial Hall, Chair: Benedict Jones**

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TH 10:50AM

INTEGRATING CUES OF SOCIAL INTEREST AND VOICE PITCH IN MEN'S PREFERENCES FOR WOMEN'S VOICES

*Benedict Jones, David Feinberg, Lisa DeBruine, Anthony Little, Jovana Vukovic*

For evolution to sustain multiple ornaments of the same underlying quality, each ornament must (a) express the quality to similar degrees; and (b) be used by perceivers in similar fashion. Research has demonstrated that men with attractive voices tend to have attractive faces supporting (a). Here we provide evidence that both men and women who prefer masculine faces also prefer masculine voices in support of (b). These effects were found to be modified by hormonal contraceptives such that correlations between preferences for voice and face masculinity were not present in users of hormonal contraceptives, and vocal masculinity preferences of these women are greatly reduced in comparison to naturally cycling women. These results suggest that indeed voice pitch and facial masculinity are not only expressed to similar degrees, but that they are used in a fashion similar enough that they may qualify as multiple ornaments of the same underlying quality.

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TH 11:10AM

SELF-RATED ATTRACTIVENESS INFLUENCES WOMEN'S PREFERENCES FOR MASCULINE MEN'S VOICES

*Jovana Vukovic, David Feinberg, Benedict Jones, Lisa DeBruine, Lisa Welling, Anthony Little, Finlay Smith*

Masculine physical traits may signal men's genotypic condition and are associated with indices of men's reproductive fitness. We show that preferences for masculine pitch in men's voices are positively related to self-rated attractiveness among women who are not using hormonal contraceptives. This relationship between masculinity preferences and self-rated attractiveness occurred when women judged the attractiveness of men's voices that were played forward, but was not present when women judged the attractiveness of men's voices played backward. Such variation in women's preferences for masculinized men's voices may be adaptive if attractive women are better able to attract or retain masculine mates. No significant relationships between preferences for masculinized men's voices and self-rated attractiveness occurred among women using hormonal contraceptives, complementing previous studies in which potentially adaptive variation in masculinity preferences was also absent among women using hormonal contraceptives.

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TH 11:30AM

## HOW AND WHEN DO WOMEN ENHANCE THEIR VOCAL ATTRACTIVENESS?

*Greg Bryant, Martie Haselton, Elizabeth Pillsworth*

In a previous study, we documented an ovulatory effect on vocal pitch such that, when speaking a simple introductory sentence, women's pitch increased during high- as compared to low-fertility. This increase varied as a function of proximity to ovulation—the closer women were to ovulation within the fertile window, the greater the difference between their high- and low-fertility vocal pitch. This pattern did not occur when the same women produced vowels. The current study was designed to further examine the social component of vocal shifts in women. Thirty women produced an introductory sentence under various conditions, including one in which they were told their voice would be judged for attractiveness by men. We found a significant effect of social context: when women were told their voices would be judged, they both increased their pitch and slowed their speech significantly from baseline.

UCLA Department of Communication Studies/ gabryant@ucla.edu

TH 11:50AM

## FACIAL AND VOCAL ATTRACTIVENESS, MASCULINITY-FEMININITY AND SEXUAL ORIENTATION IN MALES

*Jaroslava Valentová, Jan Havlíček*

The purpose of this study was to test a possible link between the ratings of perceived male attractiveness (A), masculinity-femininity (M-F) and sexual orientation (SO) based on separated facial and vocal information. Using the zero acquaintance method, facial photos and vocal recordings of 28 homosexual and 34 heterosexual males were rated for their A, M-F and SO by 60 women and 60 homosexual men. We found significant inter-rater and inter-sex agreement for all rated traits in both facial photos and vocal recordings. Faces and voices rated as homosexual were rated as feminine and voices rated as homosexual and feminine were rated as attractive by all raters. However, no correlation was found between visual and vocal ratings on corresponding traits. Moreover, actual SO did not correlate with rated SO. This suggests that traits according to which people rate A, M-F and SO vary between facial features and vocal cues.

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TH 12:10AM

## HORMONAL CONTRACEPTIVE USE AND CORRELATED PREFERENCES FOR VOCAL AND FACIAL MASCULINITY

*David Feinberg, Lisa DeBruine, Benedict Jones, Anthony Little*

For evolution to sustain multiple ornaments of the same underlying quality, each ornament must (a) express the quality to similar degrees; and (b) be used by perceivers in similar fashion. Research has demonstrated that men with attractive voices tend to have attractive faces supporting (a). Here we provide evidence that both men and women who prefer masculine faces also prefer masculine voices in support of (b). These effects were found to be modified by hormonal contraceptives such that correlations between preferences for voice and face masculinity were not present in users of hormonal contraceptives, and vocal masculinity preferences of these women are greatly reduced in comparison to naturally cycling women. These results suggest that indeed voice pitch and facial masculinity are not only expressed to similar degrees, but that they are used in a fashion similar enough that they may qualify as multiple ornaments of the same underlying quality.

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## Thursday Afternoon Sessions (B1-B4)

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### Session B-1 *Cooperation I* International Conference Hall I, Chair: Frank Marlowe

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TH 3:00PM

FROM ROUSSEAU TO HOBBS: MORE "ALTRUISTIC" PUNISHMENT IN LARGER SOCIETIES

*Frank Marlowe, Colette Berbesque, Abigail Barr, Clark Barrett, Alex Bolyanatz, Juan Camilo Cardenas, Jean Ensminger, Michael Gurven*

Based upon economic experiments, some argue human cooperation is explained by strong reciprocity. If individuals will cooperate with cooperators, and punish non-cooperators, even at a cost to themselves, strong reciprocity could minimize cheating. Second-party punishment is when you punish someone who defected on you; third-party punishment is when you punish someone who defected on someone else. Third-party punishment is an effective way to enforce the norms of strong reciprocity and promote cooperation, but how universal is it? Here we use data from a cross-cultural experimental games project to analyze the variation in third-party punishment. We test the hypothesis that population size (and complexity) predicts level of third-party punishment and show that people in larger societies engaged in more third-party punishment than people in small-scale societies. We suggest that third-party punishment increases in larger societies because they face an increasing number of collective action problems that must be solved.

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TH 3:20PM

PROSOCIAL EMOTIONS, CONFLICT AND COOPERATION. A CROSS-CULTURAL STUDY ON SHAMING-PUNISHMENTS IN HISTORICAL SOCIETIES

*Joerg Wettlaufer*

Shame has recently come into the focus of evolutionary line of reasoning with respect to the origins of cooperation. In the last decade, shame in evolutionary anthropology has been treated as a prosocial emotion with important impact on conflict and cooperation in smaller groups (e.g. Fessler & Haley 2004, Fessler 2007). In this talk I will review the current discussion about the social functions of shame and compare the existing model with evidence as found in medieval and early modern Europe and Asia and traditional societies (HRAF).

In particular, I will examine the usage of shaming punishments as punishments for defection in cooperative behaviour in medieval and early modern European and Asian societies (Germany, China, Japan). Furthermore, I will investigate the semantic field of shame-words in historical societies and in how far these words include different aspects of the emotion shame.

History Department, University of Kiel/ JWettlaufer@email.uni-kiel.de

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TH 3:40PM

EVOLUTION OF SOCIAL CONTRACTS IN THE LABORATORY

*Pontus Strimling, Kimmo Eriksson*

Ken Binmore has proposed an evolutionary and game-theoretic account of society and morals. In this account, people coordinate on a particular equilibrium through a social contract that regulates behavior. We have conducted an experimental study of the evolution of diverse social contracts. We have created a model in the form of a repeated social dilemma, the behavior of which is regulated by a social contract that stipulates: first, how much players are expected to contribute to the public good; second, the punishment of people who are discovered to contribute too little; third, the reward to people who report on cheaters. Players renegotiate the social contract through voting on each of the three parameters. Here we present the results of the experimental study focusing on three questions: Can social contracts uphold cooperation? What social contracts will evolve? How does the players' behavior compare to the Nash equilibrium?

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TH 4:00PM

REVISITING "THE EVOLUTION OF RECIPROCITY IN SIZABLE GROUPS."

*Masanori Takezawa, Michael Price*

Reciprocity is considered the most likely explanation for the evolution of cooperation among non-kin. Nevertheless, in a highly influential model, Boyd & Richerson (1988) suggested that reciprocity cannot evolve in a repeated n-person prisoner's dilemma game. We show that a simple modification to their model – replacing their binary reciprocity strategy (contributes either 0 or 1) with a continuous reciprocity strategy (contributes continuously from 0 to 1) – significantly changes the results. In this modified mathematical model, when individuals continuously adjust their level of cooperation in response to the average contribution of other group members, the basin of attraction for reciprocators gets much larger, and reciprocity becomes likely to evolve even when groups are large (e.g.,  $n > 100$ ). Further, we found a strong synergetic effect between assortative interaction and reciprocity, whereby a very small amount of assortative interaction (e.g., Hamilton's  $r < 1/64$ ) enlarges the parameter region in which continuous reciprocity can evolve.

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TH 4:20PM

STABILITY-DEPENDENT COOPERATION, STATUS, AND "UPPING THE THREAT LEVEL"

*Pat Barclay, Stephen Benard*

A successful strategy for balancing within- and between-group selection pressures would be to cooperate when one's group is threatened and compete for relative within-group position when not threatened. If people show such "stability-dependent cooperation", then others (especially high status people) can benefit from manipulating perception of group threat to promote cooperation and suppress competition. Participants did a cooperative group task with a fluctuating risk of group failure (i.e. all earn zero), where cooperation reduced this risk but non-cooperation increased participants' relative status (i.e. relative endowment) within the group. As predicted, participants cooperated more when the group threat was higher and paid to manipulate others' perception of the threat level by increasing rather than decreasing the perceived threat level. High status group members spent more on this manipulation than did low status members. These findings have implications for the evolution of group cooperation, status, and politics.

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## **Session B-2 Cognition I**

### **International Conference Hall II, Chair: Thomas Suddendorf**

TH 3:00PM

THE EVOLUTION OF MENTAL TIME TRAVEL

*Thomas Suddendorf*

Mental time travel (MTT) refers to the human ability to disengage from the present situation and imagine past and future events (e.g. Suddendorf & Corballis, 1997; 2007). The relation between memory and foresight has finally been widely recognized as illustrated by Science magazine's election of this topic as one of the top 10 scientific breakthroughs of 2007. Here I review evidence for these links and evidence for MTT in nonhuman animals. I further discuss what is known about the evolution of the human capacity and its role in human survival strategies.

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TH 3:20PM

## EXTENSIVE ALLOMATERNAL CARE AND COGNITIVE EVOLUTION

*Judith Burkart, Carel van Schaik*

The most pronounced differences between humans and our closest living relatives, the great apes, concern cognitive abilities. Hrdy's Cooperative Breeding Hypothesis implies these differences are due to reliance on extensive allomaternal care. To test this model, we assessed the impact of cooperative breeding on cognitive abilities in nonhuman primates, by comparing cooperatively breeding callitrichids to their independently breeding sister taxa. The analysis revealed that cooperative breeding is consistently associated with increased cognitive functioning in the social, but not in the non-social domain. Furthermore, food donation experiments suggest that prosocial motivational predispositions are present in cooperatively breeding primates but absent in chimpanzees. Preliminary analyses for other mammals point in the same direction. We discuss how prosociality in hominins could lead to joint intentionality, intentional teaching, and even the evolution of language. Thus, we conclude that extensive allomaternal care played a crucial role in the evolution of our cognitive abilities.

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TH 3:40PM

## DOES MAN'S MIND INTERPRET WOMAN'S AND MAN'S MINDSET IN A DIFFERENT WAY?

*Evrin Gülbetekin, Hakan Cetinkaya, Seda Dural, Alp Giray Kaya*

Theory of Mind (ToM) refers to the ability to make inferences about others' mindset and emotions. The present study hypothesized that man's mind has evolved in a way to readily interpret vague cues from women as an opportunity of mating. Male participants (N=30) watched three video-clips in which either a man, a woman with neutral style, or the same woman with attractive style was talking to the camera (to the participant) in a bar setting. Since the participants were not able to hear the talk, they were asked to guess what the person in the clip thinks/feels, and also asked to guess what the person in the clip thinks/feels about the participant's thoughts/feelings. Electrodermal responses, response times, and response choices were recorded. Overall, our data indicate that encountering with a female, activates a mating related theory of mind set in men readily.

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TH 4:00PM

## DEVELOPMENTAL AND EVOLUTIONARY ORIGINS OF COGNITION: THE CASE OF NUMBER

*Claudia Uller*

Research shows that human adults have a symbolic representation of number that bears an intrinsic relationship with the uniquely human linguistic faculty. For example, we express number in language as counting sequences ('one', 'two', 'three') but number can also be found in grammar ('both players', 'they got married', 'one gray cat, another gray cat'). One prediction that stems from these considerations regards the possibility that human numerical representations are uniquely human. Recently, studies provide support for roots of human numerical abilities: pre-verbal babies and non-linguistic animals may not do calculus and geometry, but they engage in (symbolic) numerical reasoning. In this paper, we will discuss the evolutionary relevance of numerical concepts for animals. We will show new data on numerical experiments with a variety of species (Uller, Krusche & Dicke, under review; Uller & Lewis, under review) and we will speculate that number is an evolved cognitive system.

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TH 4:20PM

**THE MALE WARRIOR HYPOTHESIS: EVOLUTION, GENDER, AND THE PSYCHOLOGY OF INTERGROUP CONFLICT**

*Mark Van Vugt, Dominic Johnson, Rick O’Gorman*

Intergroup relations are a fundamental aspect of human social psychology. There are various reasons to suggest that men might be more “intergroupish” than women, given their greater involvement in coalitionary conflict throughout our evolutionary history (Alexander, 1987; Tooby & Cosmides, 1988)—we have dubbed this the male warrior hypothesis (Van Vugt, De Cremer, & Janssen, 2007).

To test this hypothesis, and its robustness to context, we have collected evidence from a range of experiments and surveys. Experimental findings reveal that, relative to women, men are more likely in intergroup competitions to: (1) sacrifice for ingroups, (2) show confidence in intergroup competitions, (3) attack outgroups, and (4) inhumanize outgroup members. Additional survey data reveal that men, relative to women, (5) recall competitive intergroup interactions more clearly, (6) score higher on social dominance orientation, (7) show greater support for wars in opinion polls, and (8) have an aesthetic preference for war-related materials (films, books, pictures).

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**Session B-3 Physiology & Neurosciences  
Conference Room III, Chair: Roger Sullivan**

TH 3:00PM

**REVEALING THE PARADOX OF DRUG REWARD IN HUMAN EVOLUTION**

*Roger Sullivan, Edward Hagen, Peter Hammerstein*

Neurobiological models of drug abuse propose that drug use is initiated and maintained by rewarding feedback mechanisms. However, the most commonly used drugs are plant neurotoxins that evolved to punish, not reward, consumption by animal herbivores. Reward models therefore implicitly assume an evolutionary mismatch between recent drug-profligate environments and a relatively drug-free past in which a reward center, incidentally vulnerable to neurotoxins, could evolve.

We will discuss emerging insights from plant evolutionary ecology and the genetics of hepatic enzymes, particularly cytochrome P450, which suggest that animal and hominid taxa have been exposed to plant toxins throughout their evolution. Specifically, evidence of conserved function, stabilizing selection, and population-specific selection of human cytochrome P450 genes indicate recent evolutionary exposure to plant toxins, including those that affect animal nervous systems.

We discuss potential resolutions to this paradox, including the possibility that humans may have evolved to counter-exploit plant neurotoxins.

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TH 3:20PM

**HUMAN COUNTER-EXPLOITATION OF PLANT NEUROTOXINS: TOWARDS RESOLVING THE PARADOX OF DRUG REWARD**

*Edward Hagen, Roger Sullivan, Peter Hammerstein*

On first exposure to commonly used plant neurotoxins such as nicotine, arecoline (betel-nut), and caffeine, most people have aversive reactions, including nausea and vomiting. It is therefore puzzling that many first-time users continue to consume these ‘recreational’ drugs. Numerous invertebrates and vertebrates, however, sequester dietary toxins for their own chemical defense against predators. Some recreational drugs attack human pathogens. Of the world’s three most popular plant drugs, for example, two – nicotine and arecoline (in the form of nicotine sulphate and arecoline hydrobromide) – are commercial anthelmintics used in livestock, and orally ingested nicotine and arecoline are seen as efficacious anthelmintics in humans. Modern anthelmintics and recently developed ‘neonicotinoid’ flea-control agents similarly target nicotinic receptors. Hence, the widespread recreational use of plants producing cholinergic toxins such as nicotine and arecoline could be an evolved response to endemic infections of helminths, or other parasites with cholinergic receptors, in ancestral human populations.

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TH 3:40PM

## NEUROECONOMICS OF TEMPORAL AND PROBABILITY DISCOUNTING

*Taiki Takahashi*

In order to parameterize impatience and irrationality in temporal and probability discounting, we developed q-exponential discount models. By utilizing hyperbolic and q-exponential discounting models, we demonstrated (i) addictions were associated with impulsivity in temporal discounting, (ii) hormones were associated with patience, (iii) intertemporal choice for others was more time-inconsistent and impulsive than that for self, (iv) depression was associated with exacerbated time-inconsistency and impatience, (v) although certainty for delayed rewards decayed hyperbolically, temporal discounting was not attributable to aversion to uncertainty, and (vi) time-inconsistency in temporal discounting may be attributable to psychophysics of time-perception. The findings help develop evolutionary and neuroeconomic theories incorporating uncertainty and impulsivity into hyperbolic discounting.

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TH 4:00PM

## PRIMATE BRAIN ARCHITECTURE AND SELECTION IN RELATION TO SEX

*Patrik Lindenfors, Charles Nunn, Robert Barton*

Social and competitive demands often differ between the sexes. This difference should be expected to produce variation in the relative sizes of various brain structures. Sexual selection on males can be predicted to influence brain components handling sensory-motor skills or neural pathways involving aggression. Because female fitness is more closely linked to ecological factors and social interactions, social selection on females should select for brain components important for navigating social networks. Data are presently unavailable on sex-specific sizes of brain structures, but effects of sexual and social selection should leave a signal in average sizes of brain structures. We found male intrasexual selection to be positively correlated with structures involved in autonomic functions, sensory-motor skills, and pathways relating to aggression. Relative neocortex size was positively correlated with female social group size. Sexual selection on males and social selection on females have thus exerted different effects on primate brain architecture.

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TH 4:20PM

## NOVEL PROPORTIONATE SKELETAL SEXUAL DIMORPHISMS IN HOMO SAPIENS

*Jeremy Atkinson*

Proportionate Skeletal Sexual Dimorphisms (PSSD) continue to be discovered in humans (Fessler et al. 2005)(Whitcome et al. 2007). Studying them allows a deeper understanding of the selective forces that humanity has undergone. Based on the endurance running (ER) hypothesis, an ultimate functionalist theory explaining the shape of the human skeleton (Bramble and Lieberman, 2004), this study predicted the existence of several PSSD that were hypothesized to correlate with phenotypic fitness. For example a shorter ulna increases ER efficiency but curtails throwing ability, thus ulnar length was predicted to be sexually dimorphic, with proportionately shorter ulnas positively correlating with facial attractiveness in females but negatively in males. A suite of anthropometric and fitness proxy measurements were taken from participants (N=200). Many predicted PSSD were found, with some strongly correlating with fitness measures, including proportionate ulnar and tibial lengths. These findings have many implications for mate choice theory and understanding recent human evolution.

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**Session B-4 Mating I**  
**Centennial Hall, Chair: Lisa Welling**


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TH 3:00PM

SEX DRIVE IS POSITIVELY ASSOCIATED WITH WOMEN'S PREFERENCES FOR SEXUAL DIMORPHISM IN MEN'S AND WOMEN'S FACES

*Lisa Welling, Benedict Jones, Lisa DeBruine*

Sex drive may be a generalized energizer of women's sexual responses or may energize responses to potential mates only. Here we show that reported sex drive is positively associated with heterosexual women's preferences for sexual dimorphism in both men's and women's faces (Studies 1 and 2). These findings for associations between reported sex drive and women's preferences for sexual dimorphism implicate sex drive as a possible source of individual differences in women's face preferences and present novel evidence that sex drive is a generalized energizer of women's sexual behaviours and responses. Since masculinity is associated with both health and anti-social personality traits among men, increased attraction to masculine men when sex drive is high (and mating is therefore more likely to occur) may function to increase the possible benefits to women of their mate choices.

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TH 3:20PM

QUALITY AND CHOICE: CONTEXT-DEPENDENT PREFERENCES FOR FACIAL DIMORPHISM IN A RURAL MALAYSIAN POPULATION

*Isabel Scott, Viren Swami, Steven Josephson, Ian Penton-Voak*

Transactional models of mate choice suggest that high (physical) quality should be desirable across contexts, but that preferences are constrained by competition from other mates. To investigate this, we measured preferences for masculinized and feminized faces in a rural Malaysian population. Consistent with previous research, female preferences were affected by relationship context but male preferences were not (i.e. women preferred masculinized faces more for short-term than for long-term relationships whereas men preferred feminized faces equally in both). In a long-term context, however, both male and female preferences were predicted by the observers' own physical health. We also found that for both sexes, highly sex-typical faces were perceived as more healthy and fecund, while masculine faces were perceived as 'nasty' and feminine faces were perceived as 'nice'. Perceptions of health differed from certain findings from Western populations, which may be attributable to the harshness of the participants' environment.

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TH 3:40PM

CARVING NATURE A NEW JOINT: INTERSEXUAL MATE COMPETITION IN HUMANS

*Doug VanderLaan, Paul Vasey*

Darwin characterized mate competition as occurring intrasexually, between members of the same sex. However, homosexual behavior is not infrequent in humans, making it possible for mate competition to occur intersexually, between members of opposite sexes, as well. We collected 58 written descriptions of real-world instances of intersexual mate competition from heterosexual, homosexual, and bisexual men and women. These descriptions indicate that intersexual mate competition in humans is a true phenomenon. We hypothesize that intersexual mate competition is a behavioral by-product of psychological mechanisms that evolved to facilitate intrasexual mate competition. We provide a preliminary evaluation of this by-product hypothesis by assessing whether the competitive tactics men and women employ during intersexual mate competition resemble those that previous research has shown men and women employ during intrasexual mate competition. Discussion also focuses on how examining intersexual mate competition can inform understanding of the stimulus cues that influence mate competition behavior.

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TH 4:00PM

**COSTLY MATE CHOICE TRAITS SHOULD BE FAIRLY RARE AND PARTICULARLY ATTRACTIVE TO MEMBERS OF THE OPPOSITE SEX***Ned Kock*

Costly mate choice traits are attractive traits that have a survival cost, where the cost presumably ensures that the traits are honest indicators of fitness to members of the opposite sex. It will be shown that costly traits used in mate choice by humans should be fairly rare and particularly attractive, more so than non-costly ones. Contrary to Zahavi's handicap principle, however, it will be argued that mate choice traits do not always have to be costly to be reliable. These arguments build on a comparative mathematical analysis of the evolution of costly and non-costly mate choice traits. Price's covariance equation is combined with Wright's path analysis method, reducing the mathematical analysis to simple algebraic operations that can be understood and extended by evolutionary psychologists with limited mathematical training.

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TH 4:20PM

**DECISIONS ABOUT SEXUAL BEHAVIOR ARE AFFECTED BY THE HEALTH OF RECENTLY SEEN FACES***Lisa DeBruine, Benedict Jones, Falko Sniehotta*

Decisions about sexual behavior involve tradeoffs between short-term outcomes (e.g. physical pleasure) and long-term outcomes (e.g. the risk of contracting sexually transmitted diseases). Varying perceptions of the proportion of ill individuals in the population may shift the perceived likelihood of contracting diseases through sexual behavior. We show that attitudes and intentions conducive to condom use were lower after viewing healthy opposite-sex faces than after viewing relatively unhealthy opposite-sex faces, suggesting that the health of potential mates affects decisions about sexual behavior in a potentially adaptive way. A second study showed no effect of viewing faces with attractive, smiling expressions or unattractive, angry expressions, suggesting that the previous effect was not a result of increased future discounting after viewing attractive faces (*sensu* Wilson & Daly, 2004).

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**Thursday Evening Sessions (C1-C4)****Session C-1 Kinship II****International Conference Hall I, Chair: Tih-Fen Ting**

TH 5:00PM

**FERTILITY PREFERENCES IN REVOLUTIONARY CHINA***Tih-Fen Ting*

Compared to females, male reproductive success is more heavily influenced by the availability of resources in general. Therefore, according to the Trivers-Willard hypothesis, when conditions are good, parents favor sons; when conditions are poor, parents favor daughters. China is well known for its strong son preference; particularly, after the early 1980s with the wide availability of technology for prenatal sex detection, the "missing girl" problem became more significant. Nonetheless, no study has specifically investigated, from a Darwinian point of view, the variations in fertility preferences among Chinese women during the first 35 years of history of the People's Republic of China when many of the government policies were of the sorts that alter reproductive costs and benefits. My study examines the effects of those political events, such as Great Leap Forward, the Culture Revolution, and the onset of One Child Policy on fertility preferences among rural and urban Chinese women.

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TH 5:20PM

## INDIVIDUAL VARIATION IN THE CRADLING BIAS: A LONGITUDINAL OBSERVATION OF MOTHERS IN THE FIRST FOUR MONTHS AFTER DELIVERY

*Brenda Todd*

Careful observation and experimentation fails to explain the left-cradling bias in terms of infant's preferred head position or proximity to heart sounds. Association with handedness may be complex and depend on situational demands. One promising explanation of the bias relates to right-hemisphere processing of emotional information.

A longitudinal study of 24 primiparous mothers holding their infants over repeated trials at four time points demonstrated the expected bias to the left but also revealed individual variation in the stability of holding preferences over time, with a minority of mothers showing no clear bias.

Examination of the left-cradling bias with reference to infant age and exact holding position (e.g. face visible/invisible to mother) may indicate elements of specialised right hemisphere functions. Findings are consistent with explanations relating to fluctuating asymmetry, implicating individual variation in the degree to which auditory and visual pathways can sustain optimal decoding of emotional communication.

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TH 5:40PM

## EVOLUTION OF HUMAN SOCIAL MONOGAMY BY MAXIMIZATION OF INCLUSIVE FITNESS

*Laura Fortunato, Marco Archetti*

Monogamous marriage is prescribed in approximately 15% of human societies, and its current distribution is typically viewed as a consequence of the diffusion of Christianity. The significance of this practice is however poorly understood: ethnographic evidence shows that monogamous marriage rarely, if ever, corresponds to monogamous mating; further, legally required limitations on number of spouses appear in the earliest written records.

We present a game theory model incorporating assumptions about the effect of inherited resources on individual fitness. Results indicate that, depending on the nature of the resources, monogamous marriage may maximize inclusive fitness. We suggest that human social monogamy represents an adaptive strategy that evolved where females grant monogamous males a high probability of paternity, in exchange for exclusive investment of heritable resources in their offspring. We discuss this model in light of the historical and ethnographic evidence, and test its predictions with comparative analyses of cross-cultural data.

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TH 6:00PM

## WITHIN-FAMILY CONFLICT IN AGE-STRUCTURED POPULATIONS

*Joonghwan Jeon*

Within-family conflict is bound to occur over the flow of parental investment from parents to offspring. According to Trivers, each offspring will require a disproportionate share of parental resources for itself, yet the parent will favor equal allocation across all offspring. Here I show that within-family conflict in age-structured populations is radically different from Trivers' findings. Under close age spacing between two sibs, each sib competes for a greater amount of parental investment for itself whereas parents favor a moderately biased allocation toward the senior sib. As the age spacing increases, all family members increasingly favor biased allocation toward the senior sib, but to a different extent for each member. Surprisingly, this implies that under wide age spacing even the junior sib will demand less parental investment for itself than for the senior sib. The results shed new light on sibling conflict and parent-offspring conflict in the human family.

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TH 6:20PM

**HUMAN BEINGS AS EVOLVED NEPOTISTS: EXCEPTIONS TO THE RULE AND EFFECTS OF COST OF HELP***Steve Stewart-Williams*

Evolutionary principles suggest that individuals will help kin more than nonkin. Among humans, however, friends and mates are apparent exceptions to this rule. The present study compared the level of help given to friends and mates with that given to siblings, and sought to reconcile the findings with an evolutionary explanation for human altruism. Participants (163 males and 156 females) completed a questionnaire about help given to a sibling, friend, or mate. Overall, participants gave friends and mates as much or more help than they gave siblings. However, as the cost of help increased, siblings received a progressively larger share of the help given, whereas friends and mates received a progressively smaller share - despite the fact that participants were closer emotionally to friends and mates than they were to siblings. These findings help to reconcile the relative standing of friends and mates with kinship theory.

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**Session C-2 Life History****International Conference Hall II, Chair: Catherine Salmon**

TH 5:00PM

**LIFE HISTORY STRATEGY AND DISORDERED EATING BEHAVIOR***Catherine Salmon, Lindsey Woodburn, Aurelio José Figueredo*

A sample of female undergraduates completed a packet of questionnaires consisting of the Arizona Life History Battery, a modified version of the Eating Disorders Inventory (EDI-2), a Parental Readiness measure, and two measures of Female Competition. We examined the relationships among life history traits, eating disordered behavior, reproductive suppression, distinguishing between competition for mates and for status because previous studies have revealed a stronger link between anorexic behavior and competition for status, while bulimic behavior has been more closely linked to competition for mates. Anorexia often entails reproductive suppression through amenorrhea, whereas bulimia generally does not. Life history strategy controls the allocation of bioenergetic resources among the different fitness components of survival and reproduction. Anorexia, but not bulimia, should therefore be more common among individuals pursuing a slower life history strategy. Anorexic patterns of perfectionism, high achievement orientation, and competitiveness also match a slower life history strategy.

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TH 5:20PM

**CROSS-VALIDATION OF LIFE HISTORY MODEL USING QUASI-POPULATIONS***Barbara Brumbach, Aurelio Jose Figueredo*

Previous research used The National Longitudinal Study of Adolescent Health data to test life history (LH) strategy that subsequently supported a structural model where early environment predicted LH during adolescence and young adulthood. A methodologically innovative way to cross-validate models is by using "quasi-populations." Large datasets allow one to approximate real-life replication by dividing individuals into meaningful quasi-populations (geographic region, population density). If the original LH model is truly representing general human LH, then the model fit and parameter estimation should be the same across samples. We tested the original structural model across seven quasi-populations: Northeast, Midwest, South, West; Urban, Suburban, Rural. The model fit and parameter estimation were essentially identical across the selected quasi-populations. This cross-validation is a more stringent test of the model and is rarely done successfully. Our successful replications indicate that we are measuring something important and relevant to understanding human life history.

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TH 5:40PM

## CULTURE ACROSS THE LIFESPAN: THE ONTOGENY OF ESSENTIAL TSIMANE' SKILLS AND ABILITIES

*Eric Schniter*

Unlike most animals which live only as long as they can reproduce and take care of themselves, humans live past their reproductive years, experience significant declines in production, and often become dependent on support of others for their survival. Older adults' contributions to traditional culture –essential to survival among indigenous populations—could help explain past selection for longevity. This study explores the ontogeny of traditional culture among Tsimane', a small-scale forager-horticulturalist group. A better understanding of the growth, experience, and reproductive investments moderating the ontogeny of culture provides insight into human life-history characteristics. Results indicate that among Tsimane', it takes an especially long time to develop complex skills, and nearly a lifetime to become an expert. Older kin instruct, encourage, and provide examples for the learning of traditional culture, suggesting that the capacity for culture transmission to younger kin has been made possible by extension of the human lifespan.

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TH 6:00PM

## A LIFE HISTORY MODEL FOR THE EVOLUTION OF HUMAN OCCUPATIONAL BEHAVIOR

*Mark Hudson, Mami Aoyama*

Although occupational therapy has achieved considerable clinical success, the concept of "occupation" is problematic from an evolutionary perspective since it appears to include non-maximizing behavior wherein work is "enjoyed" for its own sake. In this paper we argue that human occupational behavior shares similarities with the "contra-free-loading" described for many zoo and other captive animals where animals choose to work for food, even when the same food is freely available. In zoo biology it has been argued that information collecting is a major factor behind contra-free-loading and we suggest that the highly-developed occupational nature of humans is a co-evolutionary adaptation to the learning requirements of human life history patterns.

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TH 6:20PM

## WHEN FECUNDITY DOES NOT EQUAL FITNESS: EVIDENCE OF AN OFFSPRING QUANTITY VS. QUALITY TRADEOFF IN PRE-INDUSTRIAL HUMANS

*Duncan Gillespie, Andrew Russell, Virpi Lummaa*

Maternal fitness should be maximised by the optimal division of reproductive investment between offspring number and quality. While evidence for this is abundant in many taxa, there have been fewer tests in mammals, and in particular, humans. We used a dataset spanning three generations from pre-industrial Finland to test how increases in maternal fecundity affect offspring quality and maternal fitness in contrasting socio-economic conditions. We found that for 'resource-poor' landless families, but not 'resource-rich' land-owning families, there were diminishing maternal fitness returns beyond the population mean maternal fecundity. This was due to reduced offspring recruitment with increased maternal fecundity. However, in land-owning families, subsequent offspring fecundity increased with increasing maternal fecundity. Thus, maternal fitness returns did not decline in favorable socio-economic conditions due to increased subsequent offspring fecundity. We show that this is consistent with an offspring quantity-quality trade-off in the lifetime reproduction of humans from poor socio-economic conditions.

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**Session C-3 Aggression & Conflict I**  
**Conference Room III, Chair: Leif Edward Ottesen Kennair**

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TH 5:00PM

CONFLICTING TASTES: MOTHERS' AND DAUGHTER'S RATINGS OF DAUGHTER'S IDEAL LONG TERM PARTNER

*Leif Edward Ottesen Kennair, Robert Biegler*

Mothers and daughters differ in their views of the ideal long-term partner for the daughter. They share the aim that the daughter has children with as high fitness as possible. Trivers' parent-offspring conflict theory predicts that there will also be differences in what motives mothers and daughters have for choosing a partner for the daughter. 133 adjectives describing men were independently rated by pairs of mothers and daughters (age 18-20). Data is still being collected. Preliminary results suggest: T-tests for all adjectives showed that 30 adjectives were differently rated by mothers (N 50) and daughters (N 50) at  $p < 0.001$  (Bonferroni corrected). Factor analysis of these adjectives suggests two factors for daughters (sexually and socially attractive) and one for mothers (hard working). At the same time the rank order correlation between mothers and daughters was  $r = 0.78$ ,  $p < 0.001$ . As predicted there is both significant similarity and highly significant and systematic differences.

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TH 5:20PM

SEXUAL CONFLICT OVER SPOUSAL OBLIGATIONS REVEALED THROUGH AUDIENCE EFFECTS

*Bria Dunham, Lee Cronk, Shannon Steadman*

Although interview data are underutilized within evolutionary studies of behavior due to concerns about their reliability, anthropologists may better understand motivations and social norms by attending to situational differences in interview responses. Questions related to mate choice and mate guarding may be of particular interest to behavioral ecologists. The Honduran island of Utila is characterized by a remittance economy, extended male absence, and low rate of divorce. The people of Utila thereby present an intriguing population for the investigation of interview effects regarding sexual fidelity and the disposition of resources. Among the 133 participants interviewed for this study, both the content and rhetorical domineeringness of responses regarding obligations within a marriage varied between individuals interviewed in the presence of their spouses as compared to individuals interviewed alone. Systematic discrepancies in content and vocal characteristics between different interview conditions may illuminate the transmission of verbal and nonverbal signals within Utilian marriages.

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TH 5:40PM

APPLYING EVOLUTIONARY THEORY TO THE CRIME DROP: VARIATION IN CRIME RATES AS VARIATION IN RISK-TAKING

*Sandeep Mishra, Lalumière Martin*

Crime rates dropped unexpectedly and dramatically in the U.S. and Canada in the 1990s. Several criminological explanations have been proposed for this drop, but none satisfactorily account for its magnitude or for temporal variations in crime. Evolution-minded thinking suggests that crime is simply an extreme manifestation of risk-taking, and thus, that risk-taking and crime should covary. We examined associations between homicide and risk-taking in several disparate domains (e.g., accidents, sexual behavior, substance use) in the U.S. and Canada. Results indicate that (1) risk-taking declined in the 1990s, and (2) homicide rates and risk-taking covary over long periods of time. Our findings suggest that criminological explanations of the crime drop focus too narrowly on crime itself, and neglect the broader category of behavior that crime belongs to, specifically, risky behavior that may have enabled the acquisition of material resources, status, and mates.

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TH 6:00PM

**SOCIOSEXUAL ORIENTATION AND SEXUAL HARASSMENT: A STUDY OF RISK FACTORS IN MALE AND FEMALE UPPER SECONDARY SCHOOL STUDENTS***Mons Bendixen, Leif Edward Ottesen Kennair*

Are young males and females with an unrestricted sociosexual orientation more prone to harass others sexually as well as being sexually harassed? The analyses of the sexual harassment prediction include 1272 heterosexual students cross-checked for valid and trustworthy responses. Predictors were Sexual Orientation Index (SOI), Sex Risk Behavior (SRB) and Frequency of Exposure to Pornography (FEP). The results showed that SOI was moderately associated with a 13-item variety index of being sexually harassed ( $r = .31$  for males and  $r = .36$  for females). A 13-item variety measure of sexually harassing others was somewhat stronger associated with SOI for males ( $r = .30$ ) compared to females ( $r = .22$ ). Hierarchical regression analyses showed that SOI remained a significant predictor of being sexually harassed as well as harassing others when controlling for the effect of SRB and FEP. The results suggest that individual differences in SOI may be associated to a variety of unwanted sexual incidents.

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TH 6:20PM

**ON THE URGENCY AND POSSIBILITY OF AN INTEGRATED THEORY OF RAPE CAUSATION***Griet Vandermassen*

In the last few decades a multiplicity of perspectives on the etiology of rape have emerged, such as the psychiatric perspective; the developmental psychological perspective; the feminist perspective; the cognitive perspective; and the evolutionary perspective. Two things are striking about this proliferation of explanatory frameworks. First, the degree to which research on rape remains disciplinarily inbred. There is a virtual absence of models that try to incorporate multiple levels of analysis, ranging from evolutionary, genetic, cultural, developmental, personality and situational factors. Malamuth's Confluence Model of Sexual Aggression is a notable exception. Second, attempts at interdisciplinary communication tend to be characterized by their lack of productivity—the hostility between feminists and evolutionists being the most notorious example. I will consider this state of affairs from a philosophy of science perspective and discuss the urgency and possibility of synthesizing multiple accounts of rape, with a focus on feminist and evolutionary explanations.

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**Session C-4 Mating II**  
**Centennial Hall, Chair: Boguslaw Pawlowski**


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TH 5:00PM

**MEN'S ATTRACTION TO WOMEN'S BODIES CHANGES SEASONALLY***Boguslaw Pawlowski, Piotr Sorokowski*

Humans exhibit seasonal variation in hormone levels, behaviour and perception. Here we show that men's assessments of women's attractiveness change also seasonally. In five seasons (from winter 2004 to winter 2005) 114 men were asked to assess the attractiveness of the same stimuli: photos of a female with different waist-to-hip ratio; photos of female breasts and photos of average-looking faces of young women. For each season, the scores given to the stimuli of the same category (body shape, breast and face) were combined. We found significant changes for body shape and breast attractiveness assessments across the seasons but no changes for face ratings. The highest scores for attractiveness were given in winter and the lowest in summer. We suggest that the observed seasonality is related to the "contrast effect". More frequent exposure to women's bodies in warmer seasons might increase men's attractiveness criteria for women body shape and breasts.

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TH 5:20PM

## PARENTAL INFLUENCE ON SEXUAL PREFERENCES: THE CASE OF ATTRACTION TO SMOKING

*Hanna Aronsson, Stefano Ghirlanda, Magnus Enquist*

Animal studies show that a mechanism for learning mate preferences, sexual imprinting, has evolved in birds and mammals. During an early sensitive period the phenotype of, preferably, parents are learned and later used as a template for mate recognition. Employing Internet surveys, we investigate if support for the existence of a similar mechanism can be found in humans. Specifically, we examine whether an association can be found between parental smoking habits and a preference for smoking partners. We find that maternal smoking correlates with increased attraction to smoking, independent of respondent sex and self-reported sexual orientation. Paternal smoking, in contrast, appears associated with a slight increase in attraction to smoking only in males and females who prefer male partners. Our data are consistent with the hypothesis that sexual imprinting exists in humans. Finally, the adaptive value of sexual imprinting is discussed.

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TH 5:40PM

## THE IMPLICATIONS OF PARENTAL CONTROL OF MATE CHOICE: AN EMPHASIS ON WOMEN'S CHASTITY AND POSSESSIVE JEALOUSY

*Abraham Buunk, Justin Park*

In many cultures, parents select the spouses of their off-spring, usually by directly arranging the marriages of their children, but also by exerting various forms of direct and indirect pressure. We tested the hypotheses that such parental control over mate choice implies, first, that parents will observe the chastity of their daughters more closely, and, second, that married people will have to engage in more mate guarding as their partners did not marry them out of love. In three independent studies, including 242 Argentinean individuals, 197 young people from Kurdistan (Iraq), and 80 students from 30 different countries studying in The Netherlands, the hypotheses were confirmed. Higher perceived levels of parental control of mate choice were associated with more emphasis on women's chastity, and with more possessive jealousy.

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TH 6:00PM

## WHO IS WORTH REMEMBERING: DOES RECALLING THE ROMANTIC RIVAL DEPEND ON THE JEALOUSY EVOKING CHARACTERISTICS

*Mert Tekozel, Aysun Yilmaz*

In this study, manipulating the attractiveness and social dominance of the romantic rival which was presented to the participants, we hypothesized that, depending upon the participants' social comparison orientation and perceived mating value, their recall performances of the personality cues about the rival could be changed as the function of jealousy evoking characteristics of him. Participants were 18-25 aged male university students. After assessment of Social Comparison Orientation (SCO) and Self Perceived Mating Value (MV), high and low comparison oriented participants who were also high and low on mating value were randomly assigned to 4 experimental conditions. After presentation of the rival, participants have had a surprise recall test on the personality cues about the rival which was supplied before and contain irrelevant info with both attractiveness and dominance of them. Results, in general, supported the proposed hypothesis and its evolutionary implications were discussed.

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TH 6:20PM

**MALE DOMINANCE AND FEMALE FACIAL ATTRACTIVENESS MODULATE MALE BEHAVIOURS IN TRUST GAMES***Michael Stirrat, David Perrett*

Male behaviour in economic games has been interpreted as sexual display. Male display should therefore be modulated by female attractiveness and male quality. We predicted that male dominance rank and female attractiveness would interact with participant behaviour in trust games. 1) Female attractiveness should predict behaviour. 2) Less dominant males encounter increased risks and are likely to make more effort both in display and in focusing display toward attractive females. Male participants played trust games with strangers (with standardised facial images of counterparts). 1) Participants treated female attractiveness both as a 'halo,' i.e. attractive is trustworthy, but also as an intrinsic good. 2) Less dominant males discriminate on female attractiveness more than do high dominant males when making 'trust' decisions. In conclusion: male behaviour in trust games is modulated by female attractiveness and male dominance rank; male behaviour is modulated by intra-sexual competition and has components of sexual display.

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**Friday, June 6****Friday Morning Sessions (D1-D4)****Session D-1 Cooperation II****International Conference Hall I, Chair: Jude Higgins**

FR 10:50AM

**ONE-SHOT DICTATOR GAME & ALTRUISM AT ONE WORLD CAFÉ: A UNIQUE POPULATION OR A UNIQUE ATMOSPHERE?***Jude Higgins, Mercedes Ward, Scott Martin*

One World Café is a unique restaurant (only recently non-profit) in Salt Lake City, Utah, where patrons decide for themselves what to pay. Patrons insert their payment through a slit in a locked box, thus minimizing opportunity for on-lookers to see what was paid. Despite this degree of anonymity in payment, the restaurant has survived four years. To understand better why this restaurant has survived, we asked the following research question: are patrons of One World more altruistic by nature, or do patrons behave differently in the context of this restaurant's unique atmosphere? Anonymous, one-shot dictator games were played by patrons both inside and outside the café and by non-patrons. The results of these dictator games were analyzed to determine if patrons at One World Café differ from the general population in their altruistic tendencies, or if One World Café has a framing effect, which prompts altruistic behavior.

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FR 11:10AM

**DOES INTENTION MATTER? A COMPARISON BETWEEN PUBLIC GOOD AND COMMON RESOURCE DILEMMA GAMES WITH POSITIVE AND NEGATIVE SANCTIONS IN ONE-SHOT INTERACTIONS***Toko Kiyonari, Carolyn Declerck, Christophe Boone, Thomas Pollet*

We compared sanctioning behavior and the occurrence of second-order sanctions in two mathematically equivalent games: common resource dilemma games (CDG) and public goods games (PGG). In CDG defection (overuse of common resources) is a behavior by commission and thus a salient behavior which may be perceived as intentional, whereas in PGG cooperation (contribution to commons resources) is by commission and defection is by omission. We thus predicted that punishing defectors would be more prominent in CDG,

while rewarding cooperators would be more common in PGG. We found that cooperators in CDG punished defectors more than did those in PGG, whereas rewards given to cooperators did not differ between the two games. The second-order sanctions (punishment of non-punishers and rewarding of rewarders) did not vary between the two games. In either game, rewarders who rewarded cooperators received more benefits compared to non-rewarders, whereas punishers did not since non-punishers were hardly punished.

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FR 11:30AM

RETURN OF THE LOST LETTER: EXPERIMENTAL FRAMING DOES NOT ENHANCE ALTRUISM IN AN EVERYDAY CONTEXT

*Daniel Fessler*

Debate surrounds the interpretation of results documenting prosocial behavior in experimental games. Skeptics of the thesis that humans possess an evolved propensity for noncontingent altruism have speculated that such findings reflect the presence of information indicating that the given situation entails reputational consequences. Such information potentially includes propositional knowledge that one is participating in an experiment. To examine the effects on prosocial behavior of overt awareness that research is being conducted, return rates were measured on apparently lost envelopes that had been surreptitiously dropped in public areas of Los Angeles; some of these envelopes carried the message that they had been dropped as part of an investigation. Return rates were not enhanced by such messages, indicating that explicit awareness that one is in an experiment does not increase prosocial behavior.

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FR 11:50AM

MULTI-GAME APPROACH: EVOLUTION OF LINKED GAME STRATEGIES IN SOCIAL AND PRISONERS' DILEMMAS

*Motoki Watabe, Yoshiyuki Ueda, Gen Masumoto, Koh Hashimoto*

Most of solutions for social dilemma (SD) proposed by past researches had a common feature. That is the solution by adding another kind of games to SD (e.g., punishment game, meta-punishment game, indirect reciprocity game, and mutual aid game). Many studies argued that non-cooperators in SD should lose benefits in added games for the achievement of mutual cooperation in SD. We, in this study, explored the solution for SD with PD as the added game because PD is one of the most fundamental games in our social life. Using computer simulation and mathematical analysis, we found that a particular set of different strategies can work together for achievement and maintenance of mutual cooperation in SD. The strategy set roughly consists of two types; "punisher strategy" who does not cooperate in PD against a non-cooperator in SD, and "pardon strategy" who cooperates in PD toward "punisher strategy".

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FR 12:10PM

A THEORETICAL STUDY ON THE EVOLUTION OF RECIPROCITY WITH GOSSIP-BASED IMAGE-SCORING: THE EFFECTS OF DELAY AND VARIATION IN INFORMATION

*Motohide Seki, Mayuko Nakamaru*

Indirect reciprocity, one of explanations for the evolution of cooperation, has been investigated, starting with the image-scoring study. We consider the new assumption that reputations gradually spread through mouth-to-mouth communication. An individual *i*'s personal image score of an individual *j* is modified either when *i* directly observes *j*'s behavior (cooperating or defecting) or when he receives a gossip about *j* from someone. Based on the score, *i* either cooperates with or defects on *j* and spreads a good or bad gossip about *j*. We found that conditional altruists could dominate free-riders even when one's action is observed



only by its recipient. We also found that a conditional gossip-receiving strategy analogous to the STANDING could maintain long-term reciprocal relationships among its followers in the presence of bad-mouthing free-riders. However, it was inferior to an unconditional gossip-receiving strategy analogous to the SCORING in the capability of identifying free-riders within a few interactions.

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**Session D-2 Groups I**  
**International Conference Hall II, Chair: Theresa Robertson**

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FR 10:50AM

**MAKING THE BEST OF A BAD SITUATION: RECALIBRATIONAL ADAPTATIONS FOR SOCIAL EXCLUSION**

*Theresa Robertson, Andrew Delton*

Exclusion from a social group has large fitness implications. It implies that one is entering a world with less social support and more physical and social dangers. Consequently, one faces greater vulnerability to starvation, lower probability that others will care about one's welfare, and greater exposure to predators and hostile humans. Experiencing exclusion should lead a number of psychological mechanisms to be recalibrated for this more dangerous world. This implies that excluded people should be more likely to buffer variance in resource acquisition by storing food on their body as fat, to force others to take their welfare into account by using aggression instead of relying on interpersonal affection, and to protect themselves from predation by increasing vigilance. We test the first two predictions using existing research. Moreover, our own research indicates that experimental exclusion or self-perceived lack of inclusion are associated with greater fear of predators.

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FR 11:10AM

**THE ROLE OF GENDER IN THE PERSISTENCE OF LEARNED FEAR TO A SOCIAL OUTGROUP**

*Carlos David Navarrete, Andreas Olsson*

Research on fear conditioning shows that humans and other primates strongly associate negative outcomes more readily with danger-relevant stimuli such as spiders and snakes, than with non danger-relevant stimuli such as birds and butterflies. Such fear biases may extend to human groups as a recent study demonstrated that a conditioned fear response to faces of persons of a racial outgroup resists extinction whereas fear towards a social ingroup is more readily extinguished. We present results that replicate the finding and extend the evidence that the prepared fear response is not affected by racist attitudes. Of key importance we demonstrate that (a) the fear extinction bias between ingroup and outgroup faces occurs solely when the exemplars are male, and that (b) the prepared learning effect is related to behavioral traits related to fearfulness among female research participants and aggression and social dominance among males.

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FR 11:30AM

**MAGNETIC PERSONALITIES: OSTRACISM AND DISEASE CONCERNS PRODUCE ATTRACTIVE AND REPULSIVE, FUNCTIONALLY BIASED FIRST IMPRESSIONS**

*Chad Mortensen, Vaughn Becker, Joshua Ackerman, Steven Neuberg, Douglas Kenrick*

Many standard psychological models predict that people experiencing negative states will concordantly make evaluations that are more negative, or derogate others to restore positive self-regard. However, an evolutionary approach suggests that people should perceive traits functionally correspondent to their own current states. In one study, we primed disease or ostracism concerns within participants and asked them

to make personality judgments of photographed others. Results reveal a pattern of functionally-biased perceptions: People primed with disease concerns perceived others as more undesirable and likely to approach (motivating repulsion from the group). People primed with ostracism concerns perceived others as more desirable and approachable (motivating attraction to the group). Further studies demonstrate similar group attraction and repulsion caused by other fundamental motives, with mating concerns leading to repulsion from group opinions and popular locations, but self-protection concerns leading to attraction to group opinions, repulsion from desolate locations, and the use of coalitional in-group/out-group distinctions to categorize others.

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FR 11:50AM

**CAN RACE BE ERASED IN POLITICS? THE PSYCHOLOGY OF POLITICAL COALITIONS**

*Oliver Curry, David Pietraszewski*

In the 2008 US presidential election, American voters will, for the first time, have the choice of either a black or female president. To what extent do people categorise other individuals by their sex and race, and to what extent by their political affiliation? Which cues do people use to identify others' political affiliations? And crucially, as theory predicts and previous research suggests, does categorisation by political coalition reduce categorisation by race? Here we report experiments using a 'who said what' paradigm showing that, as predicted, cues of political coalition reduce categorization by race but not by sex. We discuss the implications of the result for the present presidential election, and for our understanding of the psychology of political coalitions.

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FR 12:10PM

**HUMOR, SOCIAL NETWORKS AND INTERPERSONAL EVALUATION IN RURAL BRAZIL**

*Thomas Flanson*

The Encryption Theory of humor proposes that the structure of humorous production provides a channel for the honest signaling of personal features, which is proposed to have evolved to aid within-group assortment for long-term interaction partners such as friends or mates. Drawing on ethnographic observations, quantitative studies and in-depth interviews conducted on a collective farm in rural Brazil, this talk will present results exploring the relationship between the interpersonal evaluations of humor ability, other individual differences (such as friendliness, trustworthiness, and public respect), and the formation and maintenance of social networks. These results suggest that evaluations of humor are well-correlated with the structure and distribution of social relationships, demonstrating the relationship between humor and within-group assortment predicted by Encryption Theory, and casting doubt on theories of humor production which claim it indexes an absolute difference in cognitive abilities.

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**Session D-3 Personality & Individual Differences  
Conference Room III, Chair: Chris von Rueden**

FR 10:50AM

**THE EFFECTS OF MALE SOCIAL STATUS ON REPRODUCTIVE SUCCESS AND HEALTH:  
EVIDENCE FROM THE TSIMANE OF BOLIVIA**

*Chris von Rueden, Michael Gurven*

High social status often translates into higher fertility and/or improved survivorship of self and offspring. Among adult men of the Tsimane forager-horticulturalists of Bolivia, we explore the reproductive and health correlates of four measures of social status: winning dyadic fights, getting one's way in a group, community-wide influence, and respect. Wife's attractiveness and in-pair fertility are best predicted by winning dyadic

fighters, and extra-marital affairs and in-pair surviving offspring are best predicted by community-wide influence. While all four status measures correlate negatively with wife's age at marriage, the latter measure does not mediate the status-fertility relationships. Blood-markers of health suggest that men with greater fighting ability and influence have better nutrition and that fathers with more influence and respect have offspring with reduced parasitic infection. Understanding status acquisition in different social contexts is crucial because the rewards may vary with the form of status acquired.

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FR 11:10AM

**GENDER AND ATTACHMENT STYLE INFLUENCES ON JEALOUSY AROUSAL AND RESPONSE**

*Vera Roquemore, Thomas Robinson*

This study examined the differential effects of gender and adult attachment style on imagined emotional and sexual infidelity by the romantic partner as well as the types of tactics employed to retain the relationship under these conditions. Participants were 320 university students who completed infidelity items along with measures of Buss' Mate Retention Tactics Inventory and Simpson's Adult Attachment Questionnaire. Gender, but not attachment style, was found to be strongly related to partner's infidelity threat. Alternatively, attachment style, but not gender, was strongly related to type of retention tactics employed when the relationship is under threat. And, it was anxiously attached men who were significantly more likely to employ such tactics as mate guarding, emotional manipulation, and derogation of competitors, among others. Thus, gender defines who is susceptible to different forms of threatened infidelity whereas attachment style prescribes the response to such threat.

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FR 11:30AM

**MATING STRATEGIES: POSSIBLE NICHE RESULTING IN THE EXTRAVERSION CONTINUUM**

*Naomi Pike*

The reason for the existence of genetic variation in the personality trait extraversion has not been determined. Natural selection may have created niches for both extraverts and introverts. Extraversion has been linked to higher achievement, but also to risky behaviors. Risk-taking in extraverts may have increased resources available to mates involved in short-term relationships, making this facet of extraversion desirable, while injury that accompanies risk-taking may have contributed to reduced ability to invest in young, which is typically desired in long-term, monogamous relationships. In the present study, extraversion levels were manipulated by descriptions of photographs given to participants to rate on general, short and long-term attraction. As expected, women rated male extraverts as more attractive for short-term relationships, whereas introverted males were rated as more attractive for long-term relationships. Male participants followed a similar pattern when rating females. There was no support for differential mate attraction based on extraversion similarity.

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FR 11:50AM

**AN ADAPTIVE INDIVIDUAL DIFFERENCE PERSPECTIVE ON THE DARK TRIAD**

*Peter Jonason, Norman Li, Gregory Webster, David Schmitt*

This study (N = 200) found that characteristics known as the Dark Triad: narcissism, psychopathy, and Machiavellianism, were correlated with various dimensions of short-term mating. In addition, the link between the Dark Triad and short-term mating was stronger for men than for women. These findings are consistent with a view that the Dark Triad reflects an adaptive strategy that promotes a particular mating strategy in males. A path analysis demonstrates how the Dark Triad partially mediates relationships between the sex of the participant and short-term mating behaviors, attitudes, and reproductive outcomes. Findings are discussed in the broad context of how an evolutionary approach to personality psychology can enhance our understanding of individual differences.

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FR 12:10PM

**THE "DARK TRIAD" OF PERSONALITY ACROSS 57 NATIONS: THE EVOLUTION OF SEX DIFFERENCES AND CULTURAL VARIATIONS IN ANTI-SOCIALITY**

*David Schmitt*

Three personality traits—Machiavellianism, Narcissism, and Psychopathy—are considered the “Dark Triad” of anti-sociality. Previous studies suggest men have evolved to score higher on all three dimensions of the Dark Triad, and those who score higher on the Dark Triad tend to adaptively engage in more unrestricted mating strategies, including short-term mate poaching. To date, no previous study has examined the Dark Triad and its relationship to mating strategies in non-Western samples. In the current study, new findings from a cross-cultural survey of over 35,000 people across 57 nations demonstrate that those who score higher on Dark Triad dimensions generally do tend to engage in more unrestricted mating strategies. However, only sex differences in Psychopathy were culturally universal. Among nations with high levels of cultural stress (e.g., high pathogen load, poor resource availability), sex differences in Narcissism and Machiavellianism were somewhat attenuated.

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**Session D-4 Attractiveness I**  
**Centennial Hall, Chair: Claire Conway**

FR 10:50AM

**EVIDENCE FOR ADAPTIVE DESIGN IN HUMAN GAZE PREFERENCE**

*Claire Conway, Benedict Jones, Lisa DeBruine, Anthony Little*

Many studies have investigated the physical cues that influence face preferences. By contrast, relatively few studies have investigated the effects of facial cues to the direction and valence of others' social interest (i.e., gaze direction and facial expressions) on face preferences. We found that participants demonstrated stronger preferences for direct gaze when judging the attractiveness of happy faces than when judging disgusted faces and that this effect was particularly pronounced for judgements of opposite-sex faces (Study 1). By contrast, no such opposite-sex bias in preferences for direct gaze was observed when participants judged the same faces for likeability (Study 2). Collectively these findings for a context-sensitive opposite-sex bias in preferences for perceiver-directed smiles, but not perceiver-directed disgust, suggest gaze preference functions, at least in part, to facilitate efficient allocation of mating effort, and evince adaptive design in the perceptual mechanisms that underpin face preferences.

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FR 11:10AM

**PERCEPTION OF GAZE DIRECTION IS INFLUENCED BY CHARACTERISTICS OF THE OBSERVED FACE**

*Robbie Cooper, Charlotte Tye, Chris Benton, Ian Penton-Voak*

The ability to accurately determine another's gaze direction is fundamental to human interaction. Accordingly, we are able to detect the onset and offset of mutual gaze with a high degree of accuracy. These gaze signals are necessarily seen in the context of different faces, each of which contains other behaviourally relevant information (e.g., attractiveness, dominance) that will elicit either approach or avoidance motivations in the viewer. To date, however, no research has addressed whether individual characteristics of an observed face will influence perception of gaze direction. We present data from a psychophysical task in which 80 participants (40 female) decided whether or not different faces (attractive/unattractive, male/female; each with identical eyes) were gazing directly at them. Regardless of viewer sex, male faces were more likely to be perceived to be gazing at the viewer than were female faces. Effects of attractiveness and possible mechanisms are discussed.

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FR 11:30AM

## EFFECT OF MANIPULATING SEXUAL DIMORPHISM ON ATTRACTIVENESS IN DYNAMIC FACES

*Edward Morrison, Andrew Clark, Bernard Tiddeman, Ian Penton-Voak*

Most studies of facial attractiveness have relied on pictures or photographic composites. However, the ecological validity of such static stimuli is questionable since real faces are dynamic. We aimed to apply established facial-morphing techniques to videos of faces. Using a semi-automatic delineation process, we transformed facial shape in each frame of several videos, resulting in masculinised and feminised versions of each video which were rated for attractiveness. There was a clear preference for feminisation in female videos, but no preference either way for male videos. These effects are similar to preferences for static faces. Although including dynamic information did not alter preferences for sexual dimorphism, this new technique seems to be valid and opens the door for moving stimuli to be used in future studies of facial morphing.

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FR 11:50AM

## SMILING THE WRONG WAY: IT ONLY MATTERS TO MEN

*Andrew Clark, Fiona Reeve, Ian Penton-Voak*

Previous facial attractiveness studies have found interactions between gaze and expression but no sex differences. This is somewhat surprising because the intended direction of socially relevant facial signals may matter more for males than females. Males, who are assumed to pay higher mating effort costs, may place greater weight on proceptive signals directed toward themselves as opposed to other males. In contrast, these signals may be ubiquitous for females and may be discounted as a result. We reduced ambiguity in our stimuli by manipulating head orientation and including an opposite sex 'other' as a potential direct cue to competition. We found that males preferred smiling female faces presented directly and neutral female faces presented in profile. Females, on the other hand, did not alter preference as a function of direction. These results will be contrasted with those obtained in the absence of cues to competition (the presence of the 'other').

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FR 12:10PM

## THE IMPACT OF ATTRACTIVENESS ON COMPETITOR DEROGATION

*Maryanne Fisher, Anthony Cox*

Research on social transmission of information suggests that the attractiveness of individuals who relay the information impacts the responsiveness of others to that information. We predicted that the opinions of highly attractive models will be taken more seriously than those of less attractive models. In an effort to explain why women verbally derogate other women, we explored changes in men's ratings of female faces when an attractive versus unattractive female commented in a positive, negative, or neutral manner about the face being evaluated. Men significantly increased ratings of female faces when the attractive model made a positive comment, and significantly decreased ratings when she made a negative comment. There were no significant changes however due to comments made by the unattractive model. Therefore, women might be derogating rivals with the intention of influencing their mate, but this strategy will only be successful for attractive women.

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## Friday Afternoon Sessions (E1-E4)

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### Session E-1 Cooperation & Punishment III International Conference Hall I, Chair: Rick Goldberg

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FR 3:00PM

THE ENIGMATIC RELATIONSHIP BETWEEN COOPERATION AND COMPETITION EXPLAINED BY COSTLY SIGNALING THEORY

*Rick Goldberg*

Cooperation among unrelated individuals and the competitive behaviors of sexual selection are domains of great interest to evolutionary thinkers. Research in our field assumes that cooperation and competition are mutually exclusive, proportionally displacing one another in the dynamic of human sociality. This paper suggests a novel approach—that cooperation and competition interact synergistically as mutually dependent enablers of social behavior. To explain this apparent paradox, costly signaling theory is applied to three well-known behaviors to model the dialectical relationship between cooperation and competition. First explored are professional and trade organizations, looking especially at how cooperative events like periodic conferences help enable the distrustful relationship among business competitors. Second, I focus on team sports, whose competitive drama is made viable only by the cooperatively developed and enforced rules of play. My third example is the charitable fundraising event, characterized by altruists who engage their peers in competitive generosity.

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FR 3:20PM

THE EFFECT OF THE HETEROGENEOUS LATTICE-STRUCTURED POPULATION ON THE COEVOLUTION OF COOPERATION AND PUNISHMENT

*Takuya Sekiguchi, Mayuko Nakamaru*

The evolution of cooperation is one of the hottest topics from the evolutionary perspective. The previous studies show that punishment promotes the evolution of cooperation in the lattice-structured population where players occupy all the lattice sites. Here we assume the heterogeneous lattice-structured population where the vacant sites exist, are produced by the death of players and colonized by players. We found that the heterogeneity affects the evolutionary dynamics in the score-dependent viability model, where the game score only affects the survivorship. If all the sites are occupied, only the spiteful aspect of punishment controls the evolution of cooperation because it reduces the survivorship of neighboring defectors. However, if the population has vacant sites, not only the spiteful aspect but also the cooperation benefit between cooperators affects the dynamics because the cooperation can raise the survivorship and the vacant sites among neighboring cooperators are not produced easily.

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FR 3:40PM

PUNISHMENT AND REWARD TO LINGUISTIC AND FACIAL SIGNALS

*Hiroki Ozono, Motoki Watabe, Sakiko Yoshikawa*

Smiling works as a useful signal to judge others' trustworthiness because smiling is difficult to fake. We suggest, on the other hand, that linguistic information, which is easier to fake, can also work as a true signal of trustworthiness because hypocrites telling themselves as trustworthy will owe much cost by punishment or bad reputation if their saying turns out to be wrong. We examined whether hypocrites owe much cost using Trust Game. Participants, always assigned as donors, were shown the partner's answers for a set of questions indicating that the partner is trustworthy. They then decided how much they give to the partner. After declaring the partner's decision, they had opportunity to punish or reward for the partner. Results were consistent with the prediction. We also examined the effects of smiling and non-smiling expression. Some results were consistent with the results of linguistic information, some were not.

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FR 4:00PM

**STRICT-AND-SEVERE PUNISHMENT PROMOTES THE EVOLUTION OF COOPERATION LEVEL IN THE SPATIAL GAME***Mayuko Nakamaru, Ulf Dieckmann*

Punishment to defectors is one of important factors for the evolution of cooperation and maintaining social norm, and we investigate the evolution of psychological response function of punishment, which defines who is a defector or a cooperator, assuming the continuous traits of cooperation level and punishment level in order to see if a defector who never punishes others could evolve to be a cooperator who punishes others defined as a defector. The strict-and-severe punishment can promote the evolution of the cooperation level especially when the cooperation cost function is high decelerating in the lattice-structured population. Our result also provides a hypothesis that people psychologically respond to the opponent's cooperation level by the strict-and-severe punishment.

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FR 4:20PM

**THE RISE OF BEHAVIOURAL MODERNITY***Nathalie Gontier*

Palaeontologists divide the human species into anatomically archaic and anatomically modern variants. Archaeologists further divide anatomically modern humans into behaviourally archaic and behaviourally modern species. Klein, Mellars and Ambrose argue that behavioural modernity was reached in the Later Stone Age and European Upper Palaeolithic. Brooks and McBreathy, Henshilwood, d'Errico and Vahaeren, on the contrary, argue that behavioural modernity was reached by archaic humans, both in the Middle Stone Age as well as the Eurasian Middle Palaeolithic. Moreover, an increasing group of scholars argue that behavioural modernity is not an exclusive human trait, rather other hominins (Neanderthals and Homo erectus) already portrayed behaviour that is characterized as modern.

In the talk, the criteria that are used to define behavioural modernity are examined from within an anthropological and epistemological position. It will be demonstrated that these criteria are guided by 3 old dichotomous discussions: the nature/culture, continuity/discontinuity and quantitative/qualitative debate.

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**Session E-2 Mating III****International Conference Hall II, Chair: Lynne Honey**

FR 3:00PM

**INTERACTIVE EFFECTS OF FEMALE DOMINANCE AND PHYSICAL ATTRACTIVENESS FOR MATE CHOICE***Lynne Honey, Cassie Preston, Krista Alyn, Deanna Forrester*

Female attractiveness has been systematically studied as an important factor in mate choice, but is clearly not the only cue that males use to evaluate the quality of potential mates. In this study, we examined the impact of both physical attractiveness and behavioural dominance as cues about female mate quality. Participants viewed a photograph (moderately or highly attractive) and read a paragraph (high or low dominance) about a target female and then rated her on several items, including those related to mate value. Heterosexual male participants gave higher ratings to dominant females (regardless of attractiveness) for short-term mating. For long-term relationships, however, there was a clear interaction between attractiveness and dominance that suggests a potential trade-off between those two factors. Males may prefer a mate who is either dominant or highly attractive, but not both. We will discuss these results in the context of 'necessities and luxuries' of mate-choice decision-making.

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FR 3:20PM

## MALE SEXUAL PREFERENCES FOR FEMALE BREAST MORPHOLOGY IN PAPUA NEW GUINEA, SAMOA AND NEW ZEALAND

*Barnaby Dixson, Katayo Segata*

There has been interest in whether sexual selection via male preferences has influenced female breast size. However, breast morphology is more complex than size alone and nipple shape, areola pigmentation and breast symmetry may also have been enhanced by sexual selection as signals of reproductive status and phenotypic quality. Hypotheses concerning the evolution of human mate preferences are challenging and require cross-cultural evidence. Four studies were conducted quantifying the preferences of men from Papua New Guinea, Samoa and New Zealand for images varying in breast volume, areola size, areola pigmentation and breast symmetry. In all three cultures, images depicting large breast volume, darker areolas and symmetrical breasts were preferred. Cross-cultural differences in areola size were found, with larger areolas preferred in Papua New Guinea and smaller areolas preferred in Samoa and New Zealand. The potential for sexual selection to have influenced breast morphology will be discussed.

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FR 3:40PM

## COPYING AND CONTRAST IN HUMAN MATE PREFERENCE

*Anthony Little, Robert Burriss, Lisa DeBruine, Benedict Jones, David Feinberg, Christine Caldwell*

Humans extract information from the environment that might influence their mate preferences. In non-human animals studies demonstrate that females tend to copy the choices of other females for specific males. We present data, for both men and women, that pairing with an attractive partner increases the attractiveness of opposite-sex faces for long-term relationship decisions demonstrating the social transmission of face preference in humans. Alongside copying, humans may also be influenced by their perception of the availability of high quality partners. Consistent with this, we show that exposure to attractive faces decreases the attractiveness of subsequently seen faces of the same-sex and that presentation alongside attractive same-sex faces also decreases the attractiveness of target faces. Both results suggest that individuals take into account information about alternative potential mates. Our studies overall demonstrate that mate preference is influenced by visible cues in the environment and highlight the flexibility of human mate choice.

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FR 4:00PM

## SEX DIFFERENCE IN PREFERENCE FOR SIMILAR SPEECH PATTERNS IN HUMANS AND ITS ADAPTIVE FUNCTION

*Gen Sakurai, Kazuhide Hashiya*

This study investigates the role played by vocal difference, upon mate choice and choice of co-operative partners. We conducted an experiment upon 178 subjects, where subjects were played, various voice stimuli together with being shown a corresponding head-and-shoulders photo. Subjects gave a score for both attractiveness and the linguistic similarity of the stimuli. When scoring the same sex stimuli, the male and female subjects preferred the stimuli with a higher degree of similarity to their own voice. When scoring the different sex stimuli, males showed similar tendencies as same sex, however, female subjects preferred a stimuli with only a 'moderately' high linguistic similarity. Such results add support that humans are likely to show a tendency to prefer speech patterns closer to their own, betraying the requirement of a high degree of adaptation their own environment. However the moderate result for females may indicate the avoidance of inbreeding.

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FR 4:20PM

**ASTROLOGY DOES NOT PREDICT MARITAL OR EVOLUTIONARY SUCCESS***Virpi Lummaa, Ian Rickard, Rachel Dexter-Spooncer*

Western natal astrology is a multi-million dollar industry, and a belief-system to which a third of Americans subscribe. It predicts that birth timing affects individual personality and the compatibility of partners, and influences the success of relationships. However, no evidence exists on whether individuals actually follow horoscope recommendations in their partner preferences and whether these preferences translate to partnership success. We investigate the predictions that certain combinations of partner star sign are more successful than others, and place this prediction in an evolutionary mate-choice context by including relationship 'reproductive success' as one of our outcomes. We present unequivocal evidence using two large datasets from Finland that the compatibility predictions of astrology are not supported. Partnerships recommended by horoscopes are not more common than expected by chance and not more successful in terms of marriage longevity, numbers of children or numbers of grandchildren produced than those marriages not recommended by horoscopes.

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**Session E-3 Game Theory**  
**Conference Room III, Chair: Shinsuke Suzuki**


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FR 3:00PM

**WHY DO PEOPLE PREFER MUTUAL COOPERATION?***Shinsuke Suzuki*

Evolution of cooperation is a fundamental problem in biology and evolutionary psychology. It has often been studied using Prisoner's Dilemma games (PD). Although defection is a dominant choice in PD, Kiyonari et al. (2000) showed that people prefer mutual cooperation to receiving cooperation unilaterally. Furthermore, recent neuro-imaging study (Rilling et al., 2002) supports the result, reporting that mutual cooperation is associated with activation in brain regions linked with reward processing. In this study, using an evolutionary PD model, we analyze the evolution of the preference for mutual cooperation. In our model, individuals have their own preference and their behavior is modulated by simple Reinforcement Learning based on their preference (note that different individuals have different preference). The mathematical analysis reveals that natural selection favors the preference for mutual cooperation and that the resulting evolutionary dynamics displays periodic oscillation.

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FR 3:20PM

**REPRODUCTIVE DISCOUNT OF THE FUTURE: EFFECTS OF SEXUAL AROUSAL***Hakan Cetinkaya, Seda Dural, Osman Iyilikci, Evrim Gülbetekin, Sonia Amado*

Reproductive discount occurs when a less desired mating partner was chosen over a more desired one in the expense of imminent reproductive turnout. Present study examined the effects of sexual arousal on the reproductive discount of men in the pursuance of long-term or short-term affair using a computer game. Participants (N=128) first evaluated erotic women or landscape pictures for their appeal, then rank ordered nine women pictures to the extent to which they prefer to offer long-term relationship or short-term affair. Next, they discovered that the first ordered woman has the lowest probability of acceptance, while the ninth has the highest. Then, they made their final decision to choose one of the nine women as long- or short-term mate. Amount of discount was measured by calculating how low they could go in their final decision. The results indicated differential discount levels as the function of sexual arousal and mating strategy.

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FR 3:40PM

## TEST OF THE INDUCED VALUE THEORY

*Ryohei Haitani, Sobei Oda*

This paper describes how people are motivated in economic experiments. The authors did (A) Bertrand duopoly game and (B) Cournot-Stackelberg duopoly game with and without monetary rewards.

Experiment (A): With monetary rewards most students followed the unique Nash equilibrium strategy if their utility was regarded as their profit (=monetary rewards); without monetary rewards many students chose such a price that is the unique Nash equilibrium strategy if their utility was the difference between their own profit and their opponents'.

Experiment (B): With monetary rewards most pairs of students chose such outputs that would realise the Subgame-perfect Nash equilibrium, where the fast-mover earned much more than the second-mover did; in the laboratory a majority of pairs continued to change their outputs. The above-mentioned results confirm the induced value theory (Smith 1976): monetary rewards prevent subjects from finding their own goal by themselves, making them play seriously.

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FR 4:00PM

## CULTURE OR GENES: IDENTIFYING THE MOST PLAUSIBLE INHERITANCE MECHANISM IN GROUP SELECTION

*Adrian Bell, Peter Richerson, Richard McElreath*

Cultural variation is essential for many cultural evolutionary forces to work. In the case of group selection, adequate between-group variation must be present for group-selective behaviors to arise (i.e. altruism). We present the use of F-statistics as a quantitative measure of cultural variation applied to the evolution of group-selective behaviors.  $F_{st}$ , commonly used in measuring genetic population structure, highlights the ratio between group to total variation, and hence the scope for group selection. Both a cultural  $F_{st}$  and a genetic  $F_{st}$  can be compared when deciding whether one or the other inheritance mechanism is most likely responsible for behaviors under group selection. While recent work has focused on genetic mechanisms behind the evolution of altruism, we show, using cross-cultural data sets, that between-group cultural variation is generally greater than genetic variation and therefore offers a more plausible inheritance mechanism for the evolution of group-selective behaviors in humans.

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FR 4:20PM

## SIGNALING IN RISK COMMUNICATION: PRIORITY AND CONSISTENCY OF VOCAL, FACIAL AND VERBAL CUES

*X.T. Wang, M.L. Yang*

We apply evolutionary theories to the studies of risk communication and risky choice using a 2 x 2 x 2 experimental design of positive and negative vocal tones, facial expressions on photos of the messenger, and verbal framings of expected outcomes in a risky choice problem. An evolutionary hypothesis based on cheater-detection and the handicap signaling principles were tested against an interference hypothesis based on contingency theories of learning. Consistent with the evolutionary hypothesis, the participants reacted against inconsistency between vocal and facial signals with a stronger risk-seeking preference; discounted the both signals and resorted to the verbal cue, showing a significant framing effect. We also predict and found a modality-specific pattern of signaling where vocal tone was the most effective in a hiking scenario of distant signaling, facial emotions most effective in an in-group life-death problem, and verbal cues most effective in an evolutionarily novel stock investment situation.

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**Session E-4 Cognition II**  
**Centennial Hall, Chair: Jessica Pass**


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FR 3:00PM

ALL YOU NEED IS LOVE: IS THE SOCIOMETER ESPECIALLY SENSITIVE TO ONE'S VALUE AS A MATE?

*Jessica Pass, Justin Park, Siegwart Lindenberg*

Self-esteem has been proposed to serve as a sociometer, a gauge of one's value as a relationship partner. We hypothesized that, especially among young adults, the sociometer may be particularly sensitive to information pertaining to one's mate value. In Study 1, participants received no feedback (control) or negative feedback regarding their value as a mate or as a friend. Although participants in both mate and friend conditions felt rejected, only those in the mate condition exhibited significantly lower self-esteem. In Study 2, participants were given no feedback (control) or negative feedback regarding their mate value: Some were told that their low mate value is due to their physical appearance; others were told it is due to their competence and status. Consistent with evolutionary approaches to mate value, among females, self-esteem was lower only in the appearance condition, and among males, self-esteem was lower only in the competence and status condition.

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FR 3:20PM

EVOLUTIONIZING THE STUDY OF CONCEPTUAL KNOWLEDGE

*Max Krasnow, Danielle Truxaw, Leda Cosmides, John Tooby*

A major aspect of human nature that has been relatively ignored by the evolutionary sciences is the rich set of mechanisms enabling human conceptual knowledge. These mechanisms subserve the uniquely human capacities for learning, communication, innovation, etc. Tooby, Cosmides & Barrett (2005) demonstrate that no amount of factual knowledge is sufficient to infer valuation; more briefly, one cannot derive an 'ought' from an 'is'. Therefore, ontogenetic learning processes alone are incapable of reliably producing fitness-promoting behavior. This implies that the mind must contain a set of innate, value-based conceptual entities that are expressed in any domain of conceptual knowledge with a dimension of valuation. We will present direct evidence of this claim from a study using, as examples, the domains of gatherable foods and tools. These were chosen because of their high fitness-relevance over human evolution and because they are organized by distinctly different dimensions of valuation.

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FR 3:40PM

PRICING CLOSENESS

*Margo Wilson, Sandra Thomson, Martin Daly*

How much money is one willing to forego, in payments to self, in order to bestow a given sum on someone else? We asked subjects to make a series of choices (e.g. 5 for yourself versus each for yourself and your sibling), with a real chance that one such choice would be paid off. The results closely match "cheap talk" ratings of "closeness": the degree of relatedness predicted money foregone in choices involving relatives; close friends were treated like siblings; and romantic partners trumped all other relationships. The data provide no indication that responses to relatives versus other intimate interactants are qualitatively distinct.

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FR 4:00PM

**ADAPTATIONS FOR COMPUTING PERSONALITY TRAITS: CO-EVOLVED FUNCTIONS OF EPISODIC RECALL AND SUMMARY REPRESENTATIONS***Leda Cosmides, Stanley Klein, John Tooby*

Social interaction often requires split second decisions, some best made by taking into account the personality traits of the parties involved. Human memory stores trait summaries (e.g., Susan: Usually friendly), which provide decision rules with fast access to relevant generalizations; it also maintains a database of episodes from which these summaries can be inferred. Why have both? We show that (1) exposure to a single episode about a novel individual triggers the formation of nuanced trait summaries, even among people who are no longer able to recall the facts present in that episode—that is, among people who are amnesic for those facts. (2) Being amnesic for these facts prevents people from re-evaluating these hastily formed impressions in light of new information. (3) New information primes facts from past episodes that might allow trait revision. Design features of the systems that compute trait summaries and retrieve episodic memories are discussed.

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FR 4:20PM

**THE HOT HAND PHENOMENON AS A COGNITIVE ADAPTATION TO CLUMPED RESOURCES***Clark Barrett, Andreas Wilke*

'Hot hand' refers to subjects' expectation of 'streaks' in sequences of events whose probabilities are, in fact, independent (e.g. coin tosses, free throws). We conjectured that hot hand reflects an evolved adaptation to resources that are clumped, and used an experimental computer task to explore when American undergraduates and Shuar hunter-horticulturalists expected clumps in sequences of foraged fruits, coin tosses, and other resources. Overall, subjects tended to expect clumps in sequences that were, in fact, random, with interesting population differences. Shuar have substantial foraging experience but little experience with coin tosses, while Americans are the opposite. Americans showed a clumped expectation for fruits but less for coins, whereas Shuar showed a clumped expectation for both. We suggest that this reflects a default expectation of clumps that is still present for Americans in a foraging context, but is reduced (though not eliminated) by experience with genuinely independent random phenomena like coin tosses.

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**Friday Evening Sessions (F1-F4)****Session F-1****Symposium: Cross-Cultural Differences and Similarities: Cultural and Evolutional Perspectives****International Conference Hall I, Chair: Kai Hiraishi**

*When traveling abroad, we are often struck by the similarity between ourselves and people living thousands miles away from our house. At the same time, it also happens quite often that we are struck by the cultural differences in thinking style, social norms, emotional expressions etc. This symposium is planned to provide an opportunity for researchers from two distinctive fields to meet each other; evolutionary psychologists who tend to be attracted to the similarities, and cultural psychologists who are more attracted to the differences. Even though both fields have their merits, it can happen that evolutionary psychologists overlook important cultural differences in their cross-cultural data whereas cultural psychologists overlook hidden similarities. Gathering researchers from the two fields, we believe we will have better understandings of how universal human nature produces differences among people, and how the differences affect human nature in return.*

FR 5:00PM

## THE PERCEIVED IMMORALITY OF INFIDELITY: CROSS-CULTURAL INVESTIGATIONS

*Laurence Fiddick, Francis (Kum Chew) Chan, Eileen (Hiang Khim) Tan*

Cross-culturally, people display considerable consistency in the perceived immorality of acts of infidelity (Fiddick, 2007). However, individual differences do exist in the degree to which people moralize acts of infidelity. We present the results of a cross-cultural study conducted in Australia and Singapore that seeks to explore the attributes of those who moralize third-party infidelity. As we predicted, it is older females who are particularly prone to moralizing infidelity, especially acts of emotional infidelity. However, this was primarily observed in the Singaporean sample. Why the results should diverge across cultures given previously observed cross-cultural consistency in perceptions of infidelity will also be considered.

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FR 5:20PM

## CULTURE, SELF, AND FRIENDSHIP: RECIPROCITY MONITORING IN JAPANESE AND AMERICAN CONTEXTS

*Yukiko Uchida, Shinobu Kitayama, Batja Mesquita*

We hypothesized that normative expectations on what friends are to do to one another will vary across cultures. In particular, we expected that in interdependent cultural contexts friends would try to maintain close reciprocity of supportive acts (thereby affirming each other's interdependence); whereas in independent cultural contexts, friends would try to maintain each other's self-esteem (thereby affirming each other's independence). As predicted, mutual friends in Japan showed a substantial agreement about the kind and the timing of supportive acts that were exchanged between them, but those in the U.S. showed virtually no such agreement (Studies 1, 2, and 3). In contrast, supportive acts offered by Americans were far more effective than their Japanese counterparts to repair threatened self-esteem of their friends (Study 4). Implications for the cultural construction of self and social relations are discussed.

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FR 5:40PM

## HINDSIGHT BIAS AND A DUAL PROCESS MODEL: A CROSS-CULTURAL STUDY

*Hiroshi Yama, Ken Manktelow, Mercier Hugo, Jean-Baptiste Van der Henst, Kyung Soo Do, Yayoi Kawasaki, Kuniko Adachi*

Choi and Nisbett (2000) reported that Koreans showed stronger hindsight bias than Americans and explained the results using the distinction between analytic cognition (Westerners) and holistic cognition (Easterners). The purpose of this study is to test my 'two-level accessibility to working models' hypothesis that supposes implicit level access and explicit level access to the working models that generate hindsight. According to this hypothesis, the hindsight bias is caused by implicit level access to working models, and this access is more active among Easterners. French, British, Japanese, and Korean participants were asked to do probabilistic judgment in a scenario. As the results, Easterners showed greater hindsight bias generally, Westerners did less implicit access to working models that generated hindsight, but also that they showed resistance to being affected by the unexpected outcome information.

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FR 6:00PM

**CONTROL AND AMBIGUITY ON PROBABILITY JUDGMENTS: CROSS-CULTURAL STUDY***Kuniko Adachi, Hiroshi Yama, Jean-Baptiste Van der Henst, Hugo Mercier, Minoru Karasawa, Yayoi Kawasaki*

This study focused on the cultural control between French and Japanese participants. The present study also examines whether the comparative ignorance hypothesis in probability judgments is universally applicable or not. We established conditions for examining primary and secondary control and asked participants how much they would be willing to pay to bet that Ellsberg's "two-color" problem. Each participant evaluated lotteries with both clear and vague probabilities in Experiment 1. Different participants evaluated each lottery in isolation in Experiment 2. As expected, the control effect was found with Japanese in comparative condition. However, it was not found with French. This finding with French participants was inconsistent with the cultural control. The ambiguity aversion was found both experiments. This finding with French and Japanese participants was not consistent with the comparative ignorance hypothesis, and was contrary to findings with American participants. We discuss the counterintuitive finding on culture and probability judgments.

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**Session F-2 Foraging & Physiology****International Conference Hall II, Chair: Steven Gaulin**

FR 5:00PM

**SEX DIFFERENCES IN THE INFLUENCE OF DIETARY FATTY ACIDS ON COGNITION IN CHILDREN***William Lassek, Steven Gaulin*

A flexible molecular structure makes n-3 fatty acids, especially DHA, critical in neural membranes. Despite its scarcity in non-aquatic environments, DHA comprises about 10% of mammalian brain solids, thus constraining neurodevelopment especially in large-brained species like Homo. Females are differentially burdened because they must acquire enough DHA to build both their own and their offspring's brains. Several predictions follow: 1) dietary supplies of n-3 should positively predict cognitive performance, 2) dietary supplies of n-6 may have opposite effects on cognitive performance since they are currently over-supplied relative to n-3 and compete with n-3 for necessary synthetic enzymes, and 3) these effects should be stronger in girls. Despite the normally greater fragility of boys, data from the third National Health and Nutrition Examination Survey support these predictions in 6-16 year old children. In girls the positive effect of n-3 is of larger magnitude than the negative effect of serum lead.

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FR 5:20PM

**FOOD PREFERENCES OF THE HADZA HUNTER-GATHERERS***Julia Berbesque, Frank Marlowe*

Food preferences are an important part of understanding foraging behavior. In studying human foragers, we have the advantage of being able to ask them which foods they prefer. Surprisingly, no such studies exist. Here, we report on the food preferences of Hadza hunter-gatherers in Tanzania. We used photographs of the five major food categories in their diet: honey, meat, berries, baobab, and tubers. For both sexes honey was the highest ranked and tubers the lowest ranked, while baobab ranked third, however, females ranked berries second and meat fourth, while males ranked meat second and berries fourth. We investigate whether these sex differences are related to sex differences in dietary requirements or rather in the motivation to seek out different foods as part of a cooperative foraging effort. We explore the implications of food preferences for the origin of the uniquely human sexual division of foraging labor.

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FR 5:40PM

**SUBSISTENCE CHOICE AS LONG-TERM PARENTAL INVESTMENT***Steven Josephson*

Tjimba men stop foraging because Tjimba women prefer guys with cattle. The Tjimba of northwestern Namibia have been eroding into their pastoralist Himba neighbors for generations as individuals acquired cattle but it isn't clear why they choose to do so. For men, acquiring cattle is a difficult and uncertain process, but those who succeed have more children primarily because they have more wives and girlfriends. Tjimba women who marry men with cattle don't increase their own fertility but do position their children to benefit in the future. Neither men's nor women's reproductive strategies can be understood without reference to how their choices affect their children's reproductive prospects.

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FR 6:00PM

**LIFE HISTORY, BODY MORPHOLOGY AND HEALTH IN A NATURAL FERTILITY POPULATION: IMPLICATIONS FOR ATTRACTIVENESS ASSESSMENT PSYCHOLOGY***Lawrence Sugiyama, Aaron Blackwell*

Hypotheses about the cognitive design of body attractiveness assessment depend on assumptions about how bodies vary in relation to important life history variables: assumptions primarily based on Western populations. We collected data on male and female body morphology, health, age-specific fertility, age of first reproduction, and offspring growth and health for 65 adult and 84 juvenile Shuar Amerindians from Ecuadorian Amazonia. Results suggest that the relationships between WHR, body fat, fertility, age, and health-related factors differ from Western populations. While female WHR decreases with age after puberty, body fat remains relatively constant from the end of puberty until menopause, then decreases. Body fat and WHR are not significantly correlated, and the relationship between WHR, body fat, and peak reproductive value appears to vary as well. We discuss the implications of these findings for understanding the design of sexual attractiveness assessment psychology.

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**Session F-3 Teaching & Methods  
Conference Room III, Chair: Seda Can**

FR 5:00PM

**AN INVESTIGATION OF SEX BIAS IN THE SELF-PERCEIVED MATING SUCCESS (SPMS) SCALE BY APPLICATION OF DIFFERENTIAL ITEM FUNCTIONING (DIF)***Seda Can, Seda Dural, Hakan Cetinkaya, Alp Gray Kaya*

Revealing of the sex differences is important in evolutionary studies. The sex differences must be accounted only by the differences exist between the sexes; not by the bias of the items in the measurement tools. DIF refers to the differences in the statistical properties of an item between groups of equal ability/attribute. DIF items threaten the validity of test scores and may lead serious consequences for the interpretations of test scores. In the present study, DIF detection methods of IRT was applied to Turkish version of SPMS scale, originally developed by Lalumière and Quinsey (1996), to investigate potential sex DIF. In the study, the sample included 195 male and 170 female participants. The data analyzed by PARSCALE and MULTILOG procedures revealed an apparent sex bias in some of the test items. Therefore, the DIF technique is proposed to researchers who study group differences in the framework of the EP methodology.

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FR 5:20PM

## AN INTEGRATED MODEL FOR THEORY DEVELOPMENT AND EVALUATION IN THE BEHAVIORAL SCIENCES

*Gary Brase*

Different behavioral science disciplines have developed partially overlapping, yet distinct, multilevel meta-theoretical frameworks. These include Tinbergen's four questions about a behavioral trait (in biology), Marr's Computational Framework for describing information processing systems (in cognitive science), and Schmitt and Pilcher's recent model for evaluating evolved adaptations. At a certain level of generalization these different frameworks should all be compatible when applied in the context of human behavioral science. The paper presents a model for theory development and evaluation that integrates the above frameworks. The resulting model incorporates the strengths of the earlier individual models and averts a number of their weaknesses.

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FR 5:40PM

## DOES HUMAN BEHAVIORAL ECOLOGY NEED THE PHENOTYPIC GAMBIT?

*Hisashi Nakao*

In this paper, I will focus on and compare the use of the phenotypic gambit (Grafen 1984) in human behavioral ecology and evolutionary behavioral ecology. When human behavioral ecologists use the optimality models to analyze human behaviors, they tend to ignore psychological mechanisms underlying human behaviors because the phenotypic gambit, which has also been used successfully in evolutionary behavioral ecology, allows human behavioral ecologists to do so. Comparing how they use the gambit in two disciplines, however, there appear to be some crucial differences. Therefore I will argue that human behavioral ecology cannot use the phenotypic gambit to ignore psychological mechanisms. These arguments will facilitate the recent collaborative work among human behavioral ecology and evolutionary psychology.

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FR 6:00PM

## 19 TOOLS FOR TEACHING EVOLUTIONARY PSYCHOLOGY

*David Buss*

Teaching evolutionary psychology can be daunting, yet highly rewarding. It is daunting because teachers confront ignorance and ideological resistance. It is rewarding because many students experience profound intellectual enlightenment. Over many years, I developed 19 tools for increasing the effectiveness of teaching evolutionary psychology. These include (#1) conveying a sense of deep time; (#6) describing the interactionist nature of evolutionary psychology; (#8) explaining that humans were not designed to understand the causal processes that created them; (#9) using analogies to the human body; (#11) using illustrations central to student lives such as mating, cooperation, and social conflict; (#12) using thought experiments; (#13) dealing with controversial topics such as sexual conflict and homicide openly and honestly; and (#18) showing how the meta-theory of evolutionary psychology conceptually unites the different branches of psychology and integrates psychology with all of the life sciences. Discussion focuses on successes and failures in implementing these 19 teaching tools.

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## **Session F-4 Kinship III & Development**

### **Centennial Hall, Chair: Huijing Lu**

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FR 5:00PM

THE USELESSNESS OF MEN: TOWARDS EXPLAINING MALE LONGEVITY IN HUMANS

*Andrew Russell, Mirkka Lahdenperä, Virpi Lummaa*

Women can be infertile for half of their adult life. While the evolution of menopause is unclear, post-menopausal women can gain fitness through increasing the survival and reproductive success of their offspring. The question is why do men live almost as long as women? Three possibilities are apparent: (1) male lifespan is an epiphenomenon of selection on female lifespan; (2) like women, male lifespan is influenced by benefits of grandfathering; and (3) male lifespan results from the benefits of reproducing throughout life. First, we use lifetime fitness estimates from a pre-modern population to test the possibility that male lifespan is maintained through benefits of grandfathering. Second, we use current longevity data from monogamous versus polygynous populations throughout the world, to test the possibilities that male lifespan is an epiphenomenon of selection on female lifespan or an evolved consequence of the benefits of reproduction throughout life.

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FR 5:20PM

KINSHIP EFFECT ON SUBJECTIVE TEMPORAL DISTANCE OF AUTOBIOGRAPHICAL MEMORY

*Huijing Lu, Lei Chang, Maolin Ye*

Existing evolutionary studies have shown that people respond to kin and non-kin differently on perceptual, cognitive, and behavioral levels. Memory has not been included in the examination of these differences. The present study examined the potential kinship effect on episodic memory. Ninety-two participants recalled two autobiographical events, one with a cousin and the other with a friend. Forty-one participants recalled generic positive vs. negative events and 51 participants recalled cooperative vs. cheating events where a cousin or friend cooperated with or cheated the participants. The event type  $\times$  person interaction was significant for both the generic event,  $F(1, 38) = 5.77$ ,  $p < 0.05$ ,  $\eta^2 = 0.13$ , and the cooperative event,  $F(1, 49) = 5.93$ ,  $p < 0.05$ ,  $\eta^2 = 0.11$ . These results showed that people felt more temporal distant about negative events in general and about being cheated in specific when dealing with a cousin than involving a friend. This benevolent memorial effect involving kin was discussed within inclusive fitness theory.

The Chinese University of Hong Kong/ luhuijing@cuhk.edu.hk

FR 5:40PM

WHAT DO TWIN SIBLINGS TEACH EACH OTHER IN EARLY CHILDHOOD? :CONSIDERATIONS FOR AN EVOLUTIONARY BASIS OF EDUCATION

*Juko Ando*

Education is a ternary (teacher-learner-material) relationship in social learning situation and one of the most interesting human evolutionary features. How do humans develop teaching behavior in their life history? Twin siblings in early childhood can provide evidence for this question. Twins have small within-pair differences in their experiences in early childhood. If any kinds of "teaching" are observed between young twin sibs, they might be precursors of education and show an innate tendency of teaching. Parental descriptions of twin sib interaction were reported for about 500 pairs of twins from 1.5 to 4 years of age. The earliest "teaching" behaviors were "rule-oriented" indications at 20 months of age, such as inhibition (e.g. to say 'no' when a cotwin tries to do a prank ) or direction (e.g. to tell the place to put something). Age, gender, and zygosity (identical or fraternal) differences and their evolutionary implications will be discussed.

Faculty of Letters, Keio University/ juko@msa.biglobe.ne.jp

FR 6:00PM

INFANTS' SOUND PRODUCTION AS A PLAYING BEHAVIOR

Yohko Shimada, Shoji Itakura

The present study hypothesized that infants produce sound in solitude for the purpose of listening to the sound feedback. When the infants were in comfort states, the mother started the test: 1) the respond condition, where the mother responded naturally to the infant. The other two conditions were started when the infant started to produce sound spontaneously: 2) the no response condition, where the infant was alone in a comfortable state and produced sound spontaneously, and 3) the no response amplified condition, where the infant was alone and got amplified feedback of their own sound from two speakers. The result showed infants continued to produced sound significantly longer in the no-response condition than the respond condition, and in the no-response amplified condition than the no-response condition. The result suggested that the infants' behavior in solitude was promoted by the sound feedback itself.

Kyoto University/ yohko@mmm.mbox.media.kyoto-u.ac.jp

## Saturday, June 7

### Saturday Morning Sessions (G1-G4)

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#### Session G-1

**Symposium: Cultural Phylogenetics: Cultural Evolution Branches Out (Part 1)**  
**International Conference Hall I, Chair: Thomas Currie**

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*Modern cultural evolutionary thinking is coming of age with an expanding body of empirical research. Evolutionary processes and patterns in language, material culture and patterns of social organisation have all been subjected to a range of modern tree- and network-building methods, as well as new comparative methods. "Cultural phylogenetics" allows us to recover and model population history, to examine rates of change in cultural traits, to test co- evolutionary hypotheses and investigate the origins and maintenance of cultural diversity with the same degree of quantitative rigour and control for evolutionary history that biologists employ. This symposium gathers together researchers working in all these areas, across a variety of human populations. The symposium concentrates on work that adds an empirical foundation to an often-theoretical enterprise. We will demonstrate that culture, often portrayed as intractable to evolutionary methods, yields up exciting and stimulating findings from a phylogenetic perspective.*

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SA 10:50AM

PACIFIC SETTLEMENT AND AUSTRONESIAN LANGUAGE PHYLOGENIES

Simon Greenhill, Russell Gray

The settlement of the Pacific is one of the great chapters of human history. This region was settled by the Austronesian people during the last 10,000 years, eventually encompassing the region from Taiwan, to Hawaii, Easter Island (Rapanui), New Zealand, and Madagascar. Along the way, these people carried with them a distinctive "Lapita" culture and one of the largest language families in the world. There are two competing scenarios for this Austronesian expansion: either a rapid tree-like spread from Taiwan beginning around 6000 BP, or an expansion from a deeper Island South-East Asia origin around 17,000 BP. Over the last few years we have built a large comparative database of linguistic information from these languages and have begun using phylogenetic methods to explore Austronesian origins. The results of some phylogenetic analyses on 400 of these languages will be presented, along with what these results tell us about Pacific prehistory.

Department of Psychology, University of Auckland/ s.greenhill@auckland.ac.nz

SA 11:10AM

## THE UTO-AZTECANS: FORAGERS FROM THE NORTH OR FARMERS FROM THE SOUTH?

*Robert Ross, Russell Gray, Lyle Campbell*

Considerable controversy surrounds the claim that early agricultural dispersals are the main factor that has shaped human linguistic, cultural and genetic diversity. One of the most contentious agricultural dispersal scenarios pertains to the Uto-Aztecan language family. According to the Southern Origin Hypothesis the earliest speakers of Uto-Aztecan languages were maize farmers in central Mexico who spread north into the American Southwest. By contrast, under the Northern Origin Hypothesis speakers of Uto-Aztecan languages were originally foragers in the American Southwest who spread south into Mesoamerica where they borrowed agricultural technology from contiguous Otomanguean and Mayan cultures. I will discuss how we are using lexical data and a Bayesian phylogenetic framework to test these competing hypotheses.

Department of Psychology, University of Auckland/ [robross45@yahoo.com.au](mailto:robross45@yahoo.com.au)

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SA 11:30AM

## "THE SOCIAL LIVES OF THE ANCESTORS": PHYLOGENETIC METHODS CAN RECONSTRUCT THE KINSHIP SYSTEMS OF PROTO-AUSTRONESIAN SOCIETY

*Fiona Jordan, Ruth Mace*

How can we know what types of families that existed in the past? Here we show how phylogenetic comparative methods can reconstruct descent systems and post-marital residence rules in Pacific societies as far back as 6000 years. Descent systems express social norms of kinship, and can be traced patrilineally, matrilineally, or bilaterally. Post-marital residence rules describe which kin a couple lives with after marriage. We use Bayesian phylogenetic approaches to construct a linguistic phylogeny of 98 Austronesian societies and estimate the states of descent and residence in ancestral populations. These comparative methods take into account uncertainty about the phylogeny as well as uncertainty about the evolution of the cultural traits. Ancestral state reconstruction shows that matrilineal residence and bilateral descent are the root ancestral states, and that residence changes quicker than descent. Estimates of ancestral states may help integrate discrepancies between mtDNA and Y-chromosome genetic depictions of Austronesian prehistory.

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SA 11:50AM

## THE EVOLUTION OF POLITICAL COMPLEXITY: INVESTIGATING A MAJOR TREND IN HUMAN HISTORY

*Thomas Currie*

One of the central controversies in Anthropology surrounds the evolution of social and political complexity in human groups. Evidence suggests that prior to the development of agriculture human groups were organized only at a local level, however today much of the world's population are members of large-scale states. Arguments rage about whether this pattern is the results of some 'force' favouring the evolution of political complexity and whether or not societies must go through discrete stages prior to reaching a certain level of complexity. I argue that many of the debates result from confusions between pattern and process and misunderstandings about evolutionary theory as applied to cultural behaviour. I show how modern evolutionary theory can illuminate these issues. In this talk I draw on biological evolutionary trend theory and apply phylogenetic comparative methods to test these different hypotheses about the evolution of political complexity.

Department of Anthropology, University College London/ [t.currie@ucl.ac.uk](mailto:t.currie@ucl.ac.uk)

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**Session G-2****Symposium: Half a Century of Research on the Behavior & Evolution of the Arashiyama Macaques****International Conference Hall II, Chair: Paul Vasey**

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*The Arashiyama population of Japanese macaques, which ranges on the northwestern outskirts of the city of Kyoto, is one of the longest, continuously studied primate populations in the world. Since 1954, the Arashiyama macaques have been observed daily by Japanese primatologists and researchers from many Western and non-Western nations. It is likely that few HBES members are aware of the scope and magnitude of the research that has been conducted on this population and its overall significance for wider issues in the area of behavioural and evolutionary studies. In this symposium, we will review the history of long-term research on the Arashiyama macaques. We then highlight recent research at the site on paternity and female mate choice, group specific social traditions and non-conceptive sexuality.*

SA 10:50AM

**FEMALE HOMOSEXUAL BEHAVIOUR IN THE JAPANESE MACAQUES AT ARASHIYAMA: IMPLICATIONS FOR THE EVOLUTION OF NON-CONCEPTIVE SEX IN HUMANS***Paul Vasey*

Female Japanese macaques from the Arashiyama population are unusual, in that, in addition to engaging in heterosexual behaviour, they sometimes prefer same-sex sexual partners when given the simultaneous choice of a sexually motivated, male alternative. Behaviourally, this facultative preference manifests itself as frequent mounting and courtship between females within the context of temporary, but exclusive, sexual relationships called homosexual consortships. Empirical research at this site indicates that female homosexual behaviour is sexually motivated. Numerous studies suggest that female homosexual behaviour does not subserve any socio-sexual function. I present data suggesting that female homosexual behavior in the Arashiyama macaques is a neutral, by-productive of an adaptation; namely, female-male mounting. The Arashiyama research raises the possibility that non-conceptive sexuality in humans might best be conceptualized as an evolutionary by-productive of an adaptation. I briefly discuss male androphilia (i.e., sexual attraction to males) in humans as a case in point.

Department of Psychology, University of Lethbridge, Canada/ paul.vasey@uleth.ca

SA 11:10AM

**A HISTORICAL PERSPECTIVE ON ARASHIYAMA'S ROLE IN PRIMATOLOGICAL RESEARCH***Michael Huffman*

The Arashiyama population of Japanese macaques, located on the western side of Kyoto city, is one of the longest studied primate group in the world. A complete and continuously genealogy of this population has been maintained since 1955. Research at this site reflects a distinctly Japanese approach to primatology. Individual identification and long-term research based on collaborative efforts of multiple generations of researchers has made Arashiyama an important source of our understanding about the role of kinship, dominance hierarchy and male migration on the maintenance of social organization in primates. Over the years a number of key findings have been made by Japanese and foreign researchers at Arashiyama as a consequence of this style of research. Such findings include work on socio-sexual behavior and long-term affiliative non-sexual relationships, the affect of female mate choice and partner preference on male tenure and reproductive success, homosexual behavior and cultural transmission.

Primate Research Institute, Kyoto University/ huffman@pri.kyoto-u.ac.jp

SA 11:30AM

## PATERNITY AND FEMALE MATE CHOICE IN JAPANESE MACAQUES

*Eiji Inoue*

In non-seasonally breeding primates, male dominance rank is positively correlated with the number of infants sired. However, this correlation appears to be absent among seasonally breeding primates such as the Japanese macaque (*Macaca fuscata*). Paternity was analyzed for 23 Japanese macaques infants from the Arashiyama population in relation to males' age, dominance rank, and tenure and females' mate choice. Central, high-ranking adult males sired 2 infants, while peripheral, low-ranking adult males sired 14 infants. Among adult males, tenure was the most important factor negatively affecting male reproductive success. Females who gave birth copulated with central, high ranking males that had a long group tenure only when fertilization was unlikely or impossible. Ovulating females appeared to avoid insemination by central, high-ranking males with long tenure by selecting as their mating partners peripheral, low-ranking males that had a shorter group tenure.

Faculty of Applied Biological Sciences, Gifu University/ e\_inoue@gifu-u.ac.jp

SA 11:50AM

## THIRTY YEARS OF STONE HANDLING TRADITION IN JAPANESE MACAQUES AT ARASHIYAMA: IMPLICATIONS FOR STONE-TOOL USE EVOLUTION

*Jean-Baptiste Leca, Michael Huffman*

Japanese macaques are known for their cultural behaviors, among which is stone handling (SH), a form of solitary object play involving the non-instrumental manipulation of stones. SH by the Arashiyama monkeys is one of the most thoroughly documented behavioral traditions in nonhuman primates. Arashiyama is the first field site where a combination of comparative, longitudinal, and experimental approaches is providing sound evidence for inter-troop variability, long-term maintenance, and social transmission of a single cultural behavior. SH appeared at Arashiyama in 1979 and its diffusion within the group and across generations has been studied at several points in time over a 30-year period. The SH tradition has now reached its transformation phase, with an increase in the SH repertoire and an expansion of the contexts in which SH is practiced. Research on SH as a tool-use precursor provides new insights into the emergence of hominid material culture through stone-tool technology.

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**Session G-3****Symposium: The Evolutionary Dynamics of Kinship and Parental Investment  
Conference Room III, Chair: Siobhan Mattison**

*Kinship systems represent cooperative alliances, likely to be adaptive, that form in response to social and ecological factors. Variation in resource distribution and defensibility, as well as in distribution of mates, are associated with the norms of kinship systems. Yet even within an existing kinship system, individual families differ in aspects of composition and the benefits of membership to individuals. Correspondingly, parental investment strategies can diverge from the normative. By adapting to local changes in the social and ecological environment, divergent strategies may provide the impetus for change in kinship systems. In turn, existing kinship systems may constrain the rate at which individual families adapt by imposing sanctions on or limiting benefits for strategies that are harmful to the larger kinship group/ do not channel resources in normative directions. In this session, we will examine factors affecting individual parental investment decisions and their dynamic interplay with the local kinship system.*

SA 10:50AM

## CORRELATES OF DIVERGENCE FROM MATRILINEAL NORMS AMONG THE NA OF SOUTHWEST CHINA

*Siobhan Mattison*

The existence of matriliney, inheritance passed through daughters, is associated with the absence of defensible resources. This suggests that matriliney may be an adaptive response to social and ecological factors that limit a man's ability to channel resources to his offspring. Until recently, the matrilineal Na of Southwest China were subsistence agropastoralists with few defensible resources. However, the emergence of ethnic tourism in the mid-1980s has created new resources in the form of cash in a market economy. Censuses reveal that households impacted by tourism vary considerably in terms of composition and market share of resources. In this presentation, I will explore variation in household composition, including marriage patterns, to determine whether access to resources can explain divergences from local matrilineal norms.

University of Washington/ smc56@u.washington.edu

SA 11:10AM

## BREASTFEEDING STRATEGIES IN THE CONTEXT OF DIFFERING KINSHIP ECOLOGIES IN N.E. INDIA

*Donna Leonetti*

Breast feeding is a major form of parental investment. Kinship ecologies of breastfeeding are likely to generate varying motivations to continue this costly behavior. A study of 505 Bengali (patrilineal) and 506 Khasi (matrilineal) women with living last offspring under age 5, using Cox proportional hazards analysis, shows the risk of being weaned is significantly higher (H.R.= 3.2,  $p < .001$ ) for Khasi than for Bengali offspring. I hypothesize that for Bengali mothers prolonged breastfeeding may, in part, be a defense mechanism because no nutritional benefit to the infant is evident and all children are treated equally. Residing in a patrilocal household where her energies may largely benefit unrelated individuals contrasts with the matrilocal household of a Khasi mother. She may be guarding her somatic resources to pace new pregnancies as post-partum sexual abstinence is also significantly prolonged compared to Khasi women, and these behaviors would reinforce each other.

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SA 11:30AM

## PARENTAL INVESTMENT DECISIONS IN RURAL MALAWI: A COMPARISON OF MATRILINEAL AND PATRILINEAL POPULATIONS

*Rebecca Sear*

Parents are predicted to allocate their resources non-randomly between offspring dependent on the costs and benefits that result from investing in each child. But parents have various 'resources' at their disposal to allocate including, for example, economic and somatic resources, and time. We compare parental investment strategies in two populations in Malawi to investigate whether parents' allocation decisions are consistent across several resource categories. The first is a matrilineal society in which wealth inheritance is biased towards daughters; the second a patrilineal society in which wealth inheritance is biased towards sons. By analysing the length of birth intervals and educational attainment, we find, as predicted, that parental investment is not random but is modified by sex of child and birth order in each society. However, these patterns do not precisely mirror the allocation of economic wealth to daughters versus sons, suggesting that parents adjust their investment by resource type.

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SA 11:50AM

DOES INVESTMENT IN THE SEXES DIFFER WHEN FATHERS ARE ABSENT? THE IMPACT OF FATHERS & MATERNAL KIN ON CHILD SURVIVAL & GROWTH IN A PATRILINEAL ETHIOPIAN POPULATION

Mhairi Gibson

This study examines child survival and growth in a patrilineal Ethiopian community as a function of father absence and sex. In line with predictions of the Trivers-Willard model for sex-biased parental investment the absence of a father, and associated constraints on household resources, is more detrimental for sons' than daughters' survival in infancy. Father absence doubles a son's risk of dying in infancy, but has a positive influence on the well-being of female members of the household, improving daughter survival, growth and maternal nutritional status. Lack of paternal investment may be compensated by other matrilineal kin, through increased reciprocity between mothers, daughters and sisters.

University of Bristol/ mhairi.gibson@bristol.ac.uk

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### Session G-4

#### **Symposium: Adaptations for Welfare Tradeoffs** **Centennial Hall, Chair: Andrew Delton**

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*Resolving resource conflicts and engaging in mutually beneficial cooperation are fundamental adaptive problems. How does the mind solve them? One goal of these talks is to situate these issues within a larger evolutionary-computational framework. This framework predicts that the mind contains a large set of internal regulatory variables that index adaptively-relevant aspects of the social and physical environment. A second goal is to examine a central element of this set: a variable designed to regulate the welfare tradeoffs inherent in conflict and cooperation—the welfare tradeoff ratio (WTR). We demonstrate the existence of the WTR, the precision of its operation, and the ability to accurately estimate others' WTRs. A third goal is to examine the way emotions calibrate WTRs in one's own mind and in the minds of others. Finally, we seek to demonstrate the profitability of an evolutionary-computational approach for understanding motivation and emotion.*

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SA 10:50AM

THE WELFARE TRADEOFF SYSTEM AS AN ADAPTATION FOR INTEGRATED ALLOCATIONAL DECISION-MAKING

John Tooby, Leda Cosmides, Aaron Sell, Andrew Delton, Daniel Sznycer, Julian Lim, Theresa Robertson

Individuals in social species continually face choices among alternatives that have different impacts on the welfares of self and specific others. Our group has been investigating whether such choices are regulated by an evolved family of neurocomputational variables: welfare trade-off ratios (WTRs). A WTR encodes the relative weight the actor places on own versus other's welfare at any given time—functioning as a decision criterion for which choices to make. A variety of selection pressures have been identified, such as kin selection, power-based bargaining, exchange, and externality valuation, each of which is expected to shape the trade-off function in potentially divergent ways. Yet social partners often simultaneously fall into more than one relevant social category (kin, rival, mate, reciprocity partner, engagement partner). This selects for a device (the WTR system) that integrates, reconciles, and distills the net impact of multiple social algorithms into a unitary decision-criterion for each person.

University of California, Santa Barbara/ tooby@anth.ucsb.edu

SA 11:10AM

## AN EVOLVED INTERNAL REGULATORY VARIABLE FOR MAKING WELFARE TRADEOFFS

*Andrew Delton, Theresa Robertson, Daniel Sznycer, Julian Lim, Leda Cosmides, John Tooby*

How are conflicts of interest resolved? Many theories in evolutionary biology are designed to predict these resolutions by describing the conditions under which an organism should trade off its own welfare to benefit another. To make these tradeoffs, the mind must estimate a number of tradeoff-relevant features about the self and the potential recipient of aid (for instance, degree of relatedness and quality as a reciprocation partner). We propose that these estimates are integrated into a summary variable—a welfare tradeoff ratio—that is used to regulate social decision-making. By consulting this variable, decision-making algorithms can determine when it is appropriate to cede personal welfare on behalf of another. We describe a novel instrument designed to measure welfare tradeoff ratios. Using this instrument, we obtained experimental, cross-national evidence that humans regulate welfare tradeoff decisions in functional and surprisingly precise ways, thus supporting the welfare tradeoff ratio hypothesis.

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SA 11:30AM

## EMOTIONS AND THE RECALIBRATION OF WELFARE TRADEOFF RATIOS: GRATITUDE AS A CASE STUDY

*Julian Lim, Daniel Sznycer, Andrew Delton, Theresa Robertson, Leda Cosmides, John Tooby*

How does an organism compute how much of its welfare to tradeoff to increase another's welfare? We hypothesize that one part of computing this welfare tradeoff ratio (WTR) is emotional recalibration. Emotions such as gratitude, anger and guilt are evolved cognitive mechanisms for recalibrating internal variables – such as the WTR – and are activated by adaptively relevant cues. One important cue is the WTR expressed towards oneself by others. We show experimentally that gratitude, rather than being a response to someone who has “benevolent intentions” in general, is sensitive to cues that the other was targeting benefits specifically toward the self. Target-specific help elicited more gratitude, more liking of the helper, and more willingness to help back, than non-target-specific help. The evidence suggests that the human motivational system is finely attuned to cues predicting the value of a relationship and is designed to regulate investment accordingly.

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SA 11:50AM

## HUMANS ACCURATELY ESTIMATE OTHERS' WELFARE TRADEOFF RATIOS

*Daniel Sznycer, Julian Lim, Andrew Delton, Theresa Robertson, John Tooby, Leda Cosmides*

The mind is hypothesized to be equipped with an internal regulatory variable that indexes how much of your welfare you will tradeoff to benefit others—a welfare tradeoff ratio (WTR). Adaptive calibration of WTRs requires the integration of fitness-relevant information about self and others. For instance, your WTR for a potential cooperation partner may be up-regulated by genetic relatedness or relative formidability. In addition to estimating these variables, successful negotiation of cooperative relationships also requires estimating the WTR the other person has toward you. We provide evidence that individuals do accurately estimate friends' WTRs toward them. Subjects' estimates are not simply tracking their friends' general level of cooperativeness, but are in fact target-specific. Furthermore, subjects accurately estimate the activation of WTR-recalibration emotions in the minds of their friends. Of course, neither WTR nor emotion is estimated perfectly; however, emotion mis-estimation accounts for WTR mis-estimation in principled ways.

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**New Investigator Competition Finalists**
**Centennial Hall**


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SA 1:20PM

GENETIC DIVERSITY PREDICTS ATTRACTIVENESS OF MALE AND FEMALE FACES

*Hanne Lie, Gillian Rhodes, Leigh Simmons*

From an evolutionary perspective, human facial attractiveness is proposed to signal mate quality. Using a novel approach to the study of the genetic basis of human facial preferences, we investigated whether attractiveness signals mate quality in terms of genetic diversity. Genetic diversity in general has been linked to fitness and reproductive success, and genetic diversity within the Major Histocompatibility Complex (MHC) has been linked to immunocompetence. We photographed and genotyped 161 participants (80 males), using microsatellite markers situated within and outside the MHC to estimate genetic diversity. Genetic diversity within the MHC positively predicted male attractiveness, while genetic diversity at nonMHC loci positively predicted female attractiveness. These relationships were mediated by specific facial characteristics: averageness and symmetry respectively. Thus faces appear to provide visual cues to genetic quality in both males and females, supporting the view that face preferences have been shaped by selection pressures to identify high quality mates.

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lieh01@student.uwa.edu.au

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SA 1:40PM

PRODUCING SONS REDUCES LIFETIME REPRODUCTIVE SUCCESS OF SUBSEQUENT OFFSPRING IN PRE-INDUSTRIAL FINNS

*Ian Rickard, Andrew Russell, Virpi Lummaa*

In humans and other animals, the fitness returns gained by investing in offspring of each sex may not always be equal. If a mother can accurately assess the benefits of producing sons versus daughters, she may bias reproductive investment towards offspring of the more valuable sex. However, whilst the relative benefits of producing male and female offspring has been much discussed, little attention has been given to whether the actual cost of reproduction varies according to offspring sex. Using data from pre-industrial Finland, we investigated differences in the inclusive fitness costs of producing sons and daughters. We found that offspring produced after a son versus a daughter had reduced lifetime reproductive success, a result not influenced by death of the elder offspring. These results suggest there may be hidden costs to producing male offspring, something which should be considered when evaluating the potential net fitness benefits of facultative sex-ratio variation.

University of Sheffield/ i.rickard@sheffield.ac.uk

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SA 2:00PM

MICROBES, MATING, AND MORALITY: INDIVIDUAL DIFFERENCES IN THREE FUNCTIONAL DOMAINS OF DISGUST

*Josh Tybur, Debra Lieberman, Vladas Griskevicius*

What is the function of disgust? Whereas traditional models have suggested that disgust serves to protect the self or neutralize reminders of our animal nature, an evolutionary perspective suggests that disgust functions to solve three qualitatively different adaptive problems related to pathogen avoidance, mate choice, and social interaction. We investigated this three-domain model of disgust across multiple studies, and we introduce the Three Domain Disgust Scale, a new measure of individual differences in disgust sensitivity. Consistent with our predictions, exploratory and confirmatory factor analyses demonstrated that disgust sensitivity partitions into domains related to pathogens, sexuality, and morality. Additionally, the sexes differed in disgust sensitivity between domains in a manner consistent with our perspective. We compare this model with the dominant model of disgust sensitivity, and we discuss the utility of an evolutionary perspective on disgust.

University of New Mexico/ tybur@unm.edu

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**Postdoctoral Competition Finalists**
**Centennial Hall**


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SA 2:20PM

INTERPERSONAL THREATS GENERATE MOTIVATION-SPECIFIC ENCODING BENEFITS

*Vaughn Becker, Steven Neuberg, Jon Maner, Jenessa Shapiro, Joshua Ackerman, Mark Schaller, Douglas Kenrick*

When we encounter other people with the potential to threaten our goals, there is a dilemma: these people may be important to remember, but staring at them too long may be costly. One solution to this dilemma would be an enhanced ability to encode and individuate threats to one's current social goals. To explore this, we primed social goals with brief movie clips and found that (1) non-Black perceivers with activated self-protection goals showed enhanced encoding efficiency of Black males—a group stereotyped as being potentially dangerous—and (2) female perceivers with activated mating goals showed enhanced encoding efficiency of attractive ingroup females—potential rivals in the mating domain. These encoding effects were not mediated by the amount of time participants spent looking at goal-relevant faces. Results suggest that encoding efficiency depends jointly on perceivers' current motivational states and the functional relevance of the social information they encounter.

Arizona State University, Polytechnic Campus/ [vaughn.becker@asu.edu](mailto:vaughn.becker@asu.edu)

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SA 2:40PM

EVOLVED DISTANCE PERCEPTION MECHANISMS

*Russell Jackson, Lawrence Cormack*

This study outlines a previously unknown, large illusory component to one of the most common psychological experiences. The ubiquitous unitary distance perception framework suggests that distance perception should be equal across similar vertical and horizontal surfaces. Evolved navigation theory (ENT) suggests that perceptual and navigational mechanisms reflect navigational costs over evolution. Vertical surfaces pose a distinct cost of falling not present in horizontal navigation. However, horizontal surfaces can form retinally vertical images and researchers often assume that retinal image determines distance perception. We tested ENT-derived predictions suggesting that observers would overestimate surface lengths based on environmental, not retinal, verticality. Participants drastically overestimated environmentally vertical surfaces only and did so at a magnitude related to surface length. These results replicate across multiple settings and methods and are supported by previous studies. Implications of this work include understanding prerequisite costs for most human behavior.

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SA 3:00PM

CHIMPANZEES ARE RATIONAL MAXIMIZERS IN AN ULTIMATUM GAME

*Keith Jensen, Josep Call, Michael Tomasello*

Traditional models of economic decision-making assume that people are self-interested rational maximizers. Empirical research has demonstrated, however, that people will take into account the interests of others and are sensitive to norms of cooperation and fairness. In one of the most robust tests of this finding, the ultimatum game, individuals will reject a proposed division of a monetary windfall, at a cost to themselves, if they perceive it as unfair. Here we show that in an ultimatum game, humans' closest living relatives, chimpanzees (*Pan troglodytes*), are rational maximizers and are not sensitive to fairness. These results support the hypothesis that other-regarding preferences and aversion to inequitable outcomes, which play key roles in human social organization, distinguish us from our closest living relatives.

Max Planck Institute for Evolutionary Anthropology/ [jensen@eva.mpg.de](mailto:jensen@eva.mpg.de)

## Saturday Afternoon Sessions (H1-H4)

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### **Session H-1 Attractiveness II** **International Conference Hall I, Chair: Ian Stephen**

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SA 3:40PM

SKIN PIGMENT COLOURATION SIGNALS HEALTH IN HUMAN FACES

*Ian Stephen, David Perrett*

Skin redness, caused by blood perfusion, is associated with dominance and maturity, and is sexually selected in several primate species. Yellow and red carotenoid-based ornaments signal health and are sexually selected in several bird and fish species. Oxygenated blood is associated with aerobic fitness in humans.  $\beta$ -carotene causes skin yellowing and is associated with reproductive health and immune function. Melanin and deoxygenated blood also contribute to skin colour. We used computer graphics to allow participants to optimise the apparent health of colour-calibrated facial photographs by manipulating redness, yellowness and lightness (CIELab  $L^*$ ,  $a^*$  and  $b^*$ ) axes, and empirically derived melanin,  $\beta$ -carotene, oxygenated and deoxygenated blood colour axes. We find preferences for lightness, redness and yellowness, especially in the form of  $\beta$ -carotene and oxygenated blood colour. These findings show that two pigment-based mechanisms for signalling health and status in trichromatic animals are present—and may be sexually selected—in humans.

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SA 4:00PM

VISUAL ATTENTION TO VARIATION IN FEMALE FACIAL SKIN COLOUR DISTRIBUTION

*Bernhard Fink, Paul Matts*

Recent research has demonstrated that variation in skin color distribution affects visual perception of female facial attractiveness, healthiness and age. In this study, the eye-gaze of 39 men and women aged 13 to 45 years was tracked whilst they viewed images of shape- and topography-standardized stimulus faces that varied only in terms of skin color distribution. We found that the number of fixations and dwell-time were significantly higher when viewing stimulus faces with the homogeneous skin color distribution of young people, compared to those of more elderly people. Facial stimuli with even skin tones were also judged to be younger, and received higher attractiveness ratings. Finally, visual attention measures were negatively correlated with perceived age, but positively associated with attractiveness judgments. We conclude that variation in visible skin color distribution selectively attracts people's attention toward female faces, and this higher attention results in more positive statements about a woman's face.

University of Göttingen/ bernhard.fink@ieee.org

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SA 4:20PM

THE INFLUENCE OF BODY SHAPE ON PERCEPTIONS OF AGE, SEX, SOCIAL STATUS, HEALTH, AND ATTRACTIVENESS: A MORPHOMETRICS ANALYSIS OF AN ECOLOGICALLY VALID RANGE OF STIMULI

*Aaron Blackwell, Lawrence Sugiyama*

Waist-to-hip ratio (WHR) and body mass index (BMI) both contribute to ratings of attractiveness. We previously demonstrated that WHR is related to perceptions of sex, while BMI is related to perceptions of age. Ratings of attractiveness are best predicted by perceived age and sex, rather than directly by WHR or BMI. This study extends these findings with more nuanced measurements of body shape. We standardized for height and masked secondary sexual features in 78 images representing six males and six females at ages 5 - 18. For each, we measured 50 points tracing the outline of the figure and corresponding to anatomical landmarks. Principal components analysis was used to extract eight dimensions of shape variation. Stimuli were then rated by 300 males and females for short and long term attractiveness, perceived age, sex, healthiness, and social status in order to examine the impact of the eight principal components on each.

University of Oregon, Dept. of Anthropology/ ablackwe@uoregon.edu

SA 4:40PM

## BEAUTY MAY BE IN THE RIGHT HEMISPHERE OF THE BEHOLDER

*Seda Dural, Hakan Çetinkaya, Seda Can, Evrim Gülbetekin*

By using a visual half-field technique, hemisphericity in the male brain for judgments of the physical attractiveness of female was investigated on a sample of 96 heterosexual males. Six female figures with different body weights and waist-to-hip ratios were presented to participants' right or left visual fields for 180 milliseconds. The attractiveness ratings and the times spent to rate the figures were recorded. A 2 (hemisphere) x 3 (body weight) x 2 (waist-to-hip ratio) repeated MANOVA indicated a significant hemisphere effect (Wilks'  $\lambda = .74, F(2, 96) = 16.69, p = .00, \eta^2 = .26$ ). The analysis showed that attractiveness ratings in the right hemisphere condition (M=3.84) were significantly higher than the left hemisphere condition (M=3.46), and the time spent to rate the figures in the right hemisphere condition (M=1797.45) was significantly shorter than left hemisphere condition (M=1885.44). The findings are discussed in the framework of the architecture and function of male brain.

Aegean University, Izmir, Turkey/ dseda@mu.edu.tr

SA 5:00PM

## THE EFFECT OF AXILLARY HAIR SHAVING ON ODOR ATTRACTIVENESS

*Jan Havlicek, Dagmar Kohoutova, Anna Kotrcova*

Armpit hair is proposed to retain chemicals active in communication. In four experiments we tested the effect of axillary hair shaving and its consequent growing on odor hedonics. Samples (cotton pads worn for 24h) were provided by men with shaved and non-shaved armpits, rated on 7-point scales for their intensity and attractiveness by women. Experiment I shows the odor of shaved armpits was rated more attractive and less intense compared to unshaved armpits of the same individuals. However, negative results of Experiment II and III suggest the effect of shaving may be fairly minor. Moreover, the influence of one-shot shaving is only transient. There were no differences between unshaved armpits and armpits after one week of hair regrowth; or regularly shaved armpits and armpits after one or three weeks of regrowth. In contrast, the shaved armpits were rated more attractive compared to the armpits regrowing for six or ten weeks.

Department of Anthropology, Faculty of Humanities, Charles University, Prague/  
jan.havlicek@fhs.cuni.cz**Session H-2****Symposium:****Cultural Phylogenetics: Cultural Evolution Branches Out (Part 2)****International Conference Hall II, Chair: Ruth Mace**

SA 3:40PM

## HORIZONTAL TRANSMISSION AND PHYLOGENETIC CROSS-CULTURAL COMPARATIVE METHODS

*Ruth Mace*

Phylogenetic comparative methods, based on methods devised originally in evolutionary biology, have been applied to the study of cultural evolution. Some critics have argued that the horizontal transmission of cultural traits invalidates the use of phylogenetic comparative methods to test cross cultural co-evolutionary hypotheses. Many of these criticisms revolve around misunderstandings about using data to build trees and using data in comparative methods to test for co-evolution, and confusion between horizontal transmission within and between groups, and most of all no clear model of what horizontal transmission actually means in anthropological terms. Here I argue that horizontal transmission of traits between cultural groups can be one of the best methods that we have of detecting correlated cultural evolution, and that simulation models that have been used to argue against the use of phylogenetic comparative methods are not using assumptions relevant to the use of comparative methods in real anthropological studies.

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SA 4:00PM  
 ON THE SHAPE AND FABRIC OF HUMAN HISTORY  
*Russell Gray*

In this talk I will outline two main debates about the nature of human history. The first focuses on the extent to which human history is treelike and the second on the coherence of that history (if every gene has its own history, do words and other cultural traits also chronicle unique pathways?). I will discuss the ability of current phylogenetic methods to address these questions and present the results from combined analyses of Polynesian languages and material culture.

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SA 4:20PM  
 LANGUAGE PHYLOGENY TRUMPS GEOGRAPHY IN LEXICAL SEMANTIC VARIATION  
*Michael Dunn, Asifa Majid*

A central aim of the cross-cultural study of linguistic structure is to find factors motivating the observed variation. Aspects of structure from phonology to lexical semantics have been explained by biological, cultural and environmental factors. We address the lexical semantics of body part terminology. There is a hypothesis that the lexical differentiation of the upper limb into "hand" and "arm" (versus a single undifferentiated term) correlates with distance from the equator. But taking into account the evolutionary perspective we show that the correlation between absolute latitude and hand-arm terminological differentiation is an artifact of the highly skewed distribution of language families. We demonstrate this with two techniques: we use bootstrap sampling by language family to investigate variation within phylogenetically independent samples of languages, and we analyze variation within large families to show that lexical semantics is better predicted by clade membership than geography.

Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands/ Michael.Dunn@mpi.nl

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SA 4:40PM  
 USING PHYLOGENETIC METHODS TO ARRIVE AT MORE ACCURATE PATTERNS OF CULTURAL HISTORY ON THE PACIFIC NORTHWEST COAST  
*Sean O'Neill*

Carefully tracking patterns of descent with modification vs. descent by association could revolutionise the way Native American history in this region is practiced and understood. Cross-pollinating theory and methods from evolutionary biology and moving forward with a dual-inheritance model, different strands of data are being developed, combined and tested: material culture, languages, systematic population demographics and genetics are being intertwined in order to weave reliable proxy histories. These predictive methods provide a higher systemic historical resolution than the anecdotal and biased accounts of credulous ethnographers in the post-contact period. Though an 'ethnographic present' of 1870 - 1930 has been established for analysis, it is hoped that the work can have implications for much deeper time scales, and also provide rich new models for understanding other complex forager societies beyond direct observation, such as those of the Upper Palaeolithic in Europe.

AHRC Centre for the Evolution of Cultural Diversity/ mistleytowers@mac.com

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**Session H-3 Applied Evolutionary Psychology**  
**Conference Room III, Chair: Pete Welch**

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SA 3:40PM

**MICROECONOMICS AND EVOLUTIONARY PSYCHOLOGY: SIMILARITIES, DIFFERENCES, AND IMPLICATIONS**

*Pete Welch*

Economics has been referred to as the “queen of the social sciences” and is the only social science having a Nobel Prize. Despite this fact and strong similarities between economics and EP, the two fields are largely ignorant of each other. The analytic building block in both fields involves self-interested individuals (or “selfish genes”) that compete for scarce resources. Both fields derive population-level behavior (e.g., markets) from individual-level behavior. However, EP vertically integrates individual behavior with other aspects of biology (e.g., evolution), whereas economics does not. This presentation will compare the two fields, assess the extent to which economics is aware of EP findings, and discuss implications of EP for it.

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SA 4:00PM

**WHY DO HUMANS NOT UNDERSTAND THE ECONOMY?**

*Detlef Fetchenhauer, Alexandra Haferkamp*

It has always been essential for homo sapiens to successfully navigate his physical and social environment. In recent years it has been shown that to accomplish this goal humans use genetically predisposed concepts that can be described as “folk physics” (e.g., objects fall down to earth), “folk biology” (e.g., the offspring of cats is cats and not dogs) or “folk psychology” (see research on theory of mind). In our talk we will transfer this logic to describe the main elements of “folk economics” (i.e., naïve conceptions of how to understand the economy). Based on four studies with 1.689 participants we will show that humans have a superficial understanding of some basic economic concepts, but lack the ability to understand the dynamics and long-term effects of different economic measures. These biases can be traced back to systematic differences between today’s complex economies and our evolutionary past.

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SA 4:20PM

**THE EVOLUTIONARY PSYCHOLOGY OF CONSUMER SHOPPING EXPERIENCES**

*Daniel Kruger, Maryanne Fisher, Anthony Cox, Dreyson Byker*

An evolutionary psychology framework for understanding consumer behavior was virtually non-existent until the 21st Century. The current study examined whether psychological adaptations to sexually dimorphic foraging strategies result in different shopping experiences and behaviors in male and female shoppers. There is an abundant literature on sex differences in spatial abilities and object location memory consistent with the navigational strategies associated with hunting and gathering in the ancestral environment. We developed scales for the use of Euclidean and object oriented navigation strategies in shopping environments and five additional scales on shopping experiences based on a review of the anthropological literature on hunting and gathering in foraging cultures. We found significant sex differences on all scales in the predicted directions (N = 467). Results indicate that shopping experiences are influenced by sexually divergent adaptations for gathering and hunting, and suggest that shopping may be understood as foraging in the modern consumer environment.

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SA 4:40PM

**WHEN LESS IS MORE—ON THE INTUITIVE PERCEPTIBILITY OF LEADERSHIP QUALITIES***Mareike Hoffmann, Detlef Fetchenhauer*

As inaccurate interpersonal judgments could literally be fatal, humans should have developed adaptations such as a Personality Judgment Instinct (Haselton & Funder, 2006). Inter alia in order to form useful alliances humans should be able to identify the social status of strangers intuitively and readily. To test this hypothesis 85 middle aged stimulus-persons of different professional standing were videotaped (sitting behind a table, introducing themselves and wearing identical clothes). Afterwards their leadership qualities and their professional success were assessed by colleagues, coworkers and superiors. In a next step 100 judges saw silent video-clips of the stimulus-persons. These 20 seconds of nonverbal behavior were sufficient for the judges to identify the professional status of the stimulus-persons. Furthermore, irrespective of the stimulus-persons' formal position, judges were able to identify their professional success and their leadership qualities (as measured by the elaborate ratings of stimulus-persons' colleagues, coworkers and superiors).

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SA 5:00PM

**SIZE EFFECTS IN THE LIFE-DEATH DECISION HYPOTHESIS***Kazumi Shimizu, Daisuke Udagawa*

We examine the mechanisms and dynamics of framing effects in risky choice across three distinct group sizes (i.e., 6, 60, 600 persons). It was hypothesized that subjects' risk preference varied categorically along the group size, because the small size could strengthen their risk seeking attitude (in a small group context, the deterministic outcome of losing two-third of group members may be emotionally unacceptable). As predicted, a small group size increased the proportion of risky choice for both the positive and negative frames. The strongest risk seeking pattern was found in a family size (i.e., 6 persons). The overall choice pattern also showed that subjects' risk preference changes along the interaction of group size and of their social experience –scale of production unit in their real life–. These findings suggest the human decision mechanism is sensitive to both “Nature” and “Nurture”.

Waseda University/ skazumi1961@gmail.com

**Session H-4 Cooperation IV**  
**Centennial Hall, Chair: Julia Pradel**

SA 3:40PM

**ARE LOVE AND FRIENDSHIP BLIND OR ACCURATE? THE PERCEPTION OF ALTRUISM IN CLOSE RELATIONSHIPS***Julia Pradel, Detlef Fetchenhauer*

The „love is blind“ thesis claims that humans are positively biased when evaluating their partners. Indeed, optimistic illusions are generally helpful to maintain stable and happy relationships. However, as wrong perceptions of others' altruism can be extremely costly in terms of reproduction and survival, humans should have developed skills to accurately judge the character of close-bys, especially that of loved partners. To find out whether love and friendship are blind or accurate, we investigated 60 dating couples and 60 comradeships. Measuring altruistic behavior with a dictator game, we asked subjects to divide some money between themselves and another person anonymously. Additionally, they had to predict the decisions of their partners. Estimates of loving partners were clearly above chance level, yet positively biased. Surprisingly, estimates were even more precise for friends. The adaptiveness of different levels of accuracy is discussed.

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SA 4:00PM

## CAN COOPERATION OVERCOME ETHNIC BOUNDARIES? A CASE STUDY FROM TAMIL NADU, INDIA

*Timothy Waring*

Although human cooperation remains incompletely understood, evidence suggests ethnic identity has important implications for cooperation. Recent research suggests that ethnic diversity constrains cooperation, implicating coalition psychology. Indian caste, a unique form of ethnic differentiation entailing a degree of social coordination, poses a challenge to such research. Ethnography and surveys were conducted in 14 villages in Tamil Nadu, where despite a long history of cross-caste cooperation, village-level collective action is declining. The survey uses the village judiciary council and the communal irrigation system to measure the proximate causes of cooperative failure. The results show that cooperative village institutions are damaged more by exogenous influences including market pressure, immigration and corruption than by ethnic diversity. This case study demonstrates that evolved psychological mechanisms favoring cooperation between co-ethnics may hinder village-level collective action less than other psychological mechanisms cued by relative wealth brought on by the forces of globalization.

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SA 4:20PM

## CULTURAL GROUP SELECTION AND THE EVOLUTION OF COLLECTIVE ACTION

*Ruud Koopmans, Susanne Rebers*

Humans often cooperate in large groups to obtain public goods. It has been suggested that this 'collective action' could have evolved through cultural group selection. We describe an experiment designed to test the hypothesis that as a result of this selection process people will contribute more to a public good when the beneficiaries are cultural group members than when they are not. Participants played public goods games with information on two culturally evolved traits of (fictitious) group members; political party preference and religion. Further, we included a trait that has not been subject to cultural evolution; birth season. Group members either had the same trait or a different trait as the participant. We found that participants contributed significantly more to the public good when group members had the same trait than when they had a different trait, but only for culturally evolved traits.

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SA 4:40PM

## THE EVOLUTION OF HUMAN COOPERATION: ECOLOGICAL AND INTRA-CULTURAL VARIATION IN NORMATIVE BEHAVIOUR

*Shakti Lamba*

A major evolutionary puzzle is the existence of co-operation between unrelated individuals in one-shot, anonymous interactions. A cross-cultural games project (Henrich et al, 2004) demonstrated significant differences in normative behaviour between cultural groups. Variation in normative behaviour within cultural groups remains largely unexplained. My research uses demographic and ecological variation within and between populations of a single cultural group to disentangle the effects of properties of (i) individuals and (ii) groups, on cooperative behaviour.

My study populations are villages of the same cultural group – the Pahari Korwa, a central Indian, horticultural society. I played the ultimatum game in different villages and studied its relationship to several individual level variables whilst controlling for inter-village variation in game behaviour. The only predictors of individual game behaviour were the number of, (i) children and (ii) brothers living in the village. My data support the hypothesis that kin selection may influence ultimatum game offers.

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## Sunday, June 8

### Sunday Morning Sessions (I1-I4)

#### **Session I-1 Culture**

**International Conference Hall I, Chair: Christine Caldwell**

SU 10:50AM

EXPERIMENTAL MODELS FOR TESTING HYPOTHESES ABOUT CUMULATIVE CULTURAL EVOLUTION

*Christine Caldwell, Ailsa Millen*

The rapid appearance (over evolutionary time) of the cognitive skills and complex inventions of modern humans has been attributed to "cumulative cultural evolution", the accumulation of knowledge and skills over generations. We have demonstrated cumulative cultural evolution under laboratory conditions, simulating generational succession through the repeated removal and replacement of participants within experimental groups (Caldwell & Millen, in press). We show that information accumulates within the groups such that later generations produce solutions to tasks which are more successful than earlier ones. These methods offer researchers a window to understanding cumulative cultural evolution, allowing for experimental manipulation and hypothesis testing.

Caldwell, C.A. & Millen, A.E. (in press) Experimental models for testing hypotheses about cumulative cultural evolution. *Evolution and Human Behavior*.

University of Stirling/ c.a.caldwell@stir.ac.uk

SU 11:10AM

ECOLOGICAL VERSUS EVOLUTIONARY EXPLANATIONS FOR CULTURAL DIFFERENCES: HOW DO "DEVELOPED" AND "DEVELOPING" COUNTRIES DIFFER?

*Lesley Newson, Peter Richerson*

When populations of the same species exhibit different behaviors, two types of explanations are offered: Ecological: the populations have adopted behaviors appropriate to different ecological challenges. Evolutionary: environmental change initiates a trajectory of change that may eventually result in behavior adapted to the new situation. When countries develop economically, the social environment profoundly changes. In some respects, developing countries begin to resemble those that are already developed but cultural and environmental differences persist. Many ecological explanations for cultural differences have been proposed supported by studies showing variables representing environmental factors (e.g. wealth, education, political institutions) to be correlated with variables representing values and behavior. We have compared these findings with an evolutionary explanation: that the change in the social environment that occurs early in economical development initiates a cultural evolutionary process. The data suggest that development (or "modernization") constitutes a multi-generation pattern of change that is surprisingly similar cross-culturally.

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SU 11:30PM

SOCIAL LEARNING IN THE LABORATORY: ROLES OF PAYOFF INFORMATION AND SPATIAL HETEROGENEITY

*Peter Richerson, Richard McElreath, Mark Lubell, Adrian Bell, Vicken Hillis*

The strategies that individuals use to acquire social information are well described qualitatively but poorly understood quantitatively. Theoretical models show that the details of these strategies will have a very

important impact on the process of cultural evolution, but theorizing to date has been poorly constrained by empirical evidence. Laboratory experiments offer a first cut at understanding what social learning strategies people actually use. Recent experiments in our lab have investigated the opportunity to use success based biases in which learners have access to the payoffs others receive in making their own decisions. We have also investigated the effects of spatial heterogeneity by moving participants from one laboratory ecosystem to another. Participants make heavy and sophisticated use of success when this information is available. Exposure to spatial variation stimulates substantial use of the conformist rule, unlike earlier designs where the use of conformity was suboptimal.

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SU 11:50AM

HORIZONTAL AND VERTICAL TRANSMISSION IN ADOPTION: A DATA-DRIVEN COMPARTMENTAL MODEL APPROACH

*Megan Carney*

Adoption in industrialized countries has been a mystery to evolutionists for some time, as it appears remarkably maladaptive, especially in the Western context of extremely high investment in each child (for example, see Silk 1990). If, however, adoption may be spread via transmission processes, the practice may be maintained even under neutral or slightly negative selection (Avital et al 1998). A proportional mixing compartmental model was developed using Stella 8 modeling software to explore and contrast three scenarios: (1) horizontal transmission, (2) vertical transmission and (3) a combination of horizontal and vertical transmission. Data for model was taken from several recent sources, including United States census data and national household surveys. The resulting analysis suggests that neither horizontal-only nor vertical-only transmission can sustain adoption practice alone, whereas horizontal and vertical transmission, in combination, seem able to sustain adoption practice at the level observed in the United States.

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SU 12:10AM

SPREAD OF COSTLY STATUS-SEEKING BEHAVIOR BY SOCIAL LEARNING: MATHEMATICAL MODELS

*Yasuo Ihara*

It is reasonable to suppose that the human neural structures underlying the capacity for culture have been shaped by natural selection. Hence, culture must have been enhancing individuals' fitness on average. It is not reasonable, however, to claim that every human culture has been adaptive. Indeed, cultural variants most readily transmitted between individuals do not necessarily improve individuals', or their kin's, reproductive success. It has been argued that fitness-reducing cultural variants may spread in a population if, for example, they improve individuals' social influence. In order to clarify this argument, I develop mathematical models of cultural transmission in a population with social structures, in which high-status individuals are more influential, but no more fertile or viable, than their low-status counterpart. The models suggest that culturally transmitted values or preferences that lead individuals to costly status-seeking behavior can spread even in the presence of innate transmission bias against fitness-reducing culture.

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SU 12:30AM

A CULTURAL EVOLUTIONARY THEORY OF NORMATIVITY

*Theodore Seto*

A cultural evolutionary theory of the internalization of ethical and political values is proposed. A genetic capacity to internalize learned behaviors facilitates their adaptive selection and thereby accelerates behavioral adaptation. In homo sapiens, the capacity to internalize allows transmission of nonobviously adaptive

learned behaviors notwithstanding reason. Learned behaviors benefit from the operation of the genetic algorithm and thereby become more complexly and adaptively nuanced. The paper uses the proposed theory to explain why humans are motivated to be good and why they are sometimes tempted to be bad. It defines goodness in game-theoretic terms and explains why each of the three principal current approaches to ethics – consequentialism, deontology, and virtue ethics – captures part of that definition. Finally, it offers a simple epistemological resolution of the “is/ought” problem that has heretofore prevented philosophers from accepting any causal bridge between the descriptive and normative worlds.

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**Session I-2 Mating IV**  
**International Conference Hall II, Chair: Susan Brown**

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SU 10:50AM

SEXUAL BEHAVIOR AND ORIENTATION: RELATIONS TO IGA AND CORTISOL LEVELS

*Susan Brown*

We examined sexual behavior, cortisol and IgA in women who identified as heterosexuals, lesbians or who were abstaining from sex. Participants provided data across three menstrual cycles, but only menstrual cycles with detectable LH surges were used in the analyses. We found increased sexual behavior, libido and positive affect at mid-cycle in all of the groups. Sexually active heterosexuals and lesbians had lower IgA levels than women abstaining from sex. Lesbians reported more negative health symptoms, but had lower cortisol levels than heterosexuals and women abstaining from sex. Our results of increased sexual behavior, libido and positive affect around ovulation are supported by findings from fMRI studies of attenuation of hyper-arousal during ovulation. Decreased IgA levels accompanied by fewer health problems indicate that there might be a male pheromone influencing the immune activity of heterosexual women. NIH grant #S06-GM0873-33.

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SU 11:10AM

PERCEPTIONS OF CURRENT AND FORMER ROMANTIC PARTNERS CONCEPTUALIZED AS ADAPTIVE MATING-RELEVANT BIASES

*Glenn Geher, Ryan Bloodworth, Joseph Mason, Christopher Stoaks, Heather Downey, Kristin Renstrom, Juan Romero*

Fletcher and Simpson (2000) propose that systematic adaptive biases which help foster intimate relationships should typify perceptions of intimates in long-term mateships. Two studies tested the nature of such adaptive mating-relevant biases within relationships. In Study 1, 161 male and female college students completed measures of attachment style and the Big Five personality traits to describe their current and former romantic partners. A tendency to idealize current partners and devalue former partners emerged. Study 2 (N = 65) examined the motivational underpinnings of this pattern by having participants engage in behavior that was inconsistent with this perceptual discrepancy – some participants wrote essays about the positive aspects of their former partners. Participants in this condition showed strong autonomic arousal and they modified their perceptions of each partner subsequently - suggesting that a strong motivational component underlies these mating-relevant perceptions. Findings are discussed in terms of the adaptive nature of these biases.

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SU 11:30PM

## GENES PREDISPOSING TO HOMOSEXUALITY INCREASE MATING SUCCESS IN HETEROSEXUALS

*Brendan Zietsch, Katherine Morley, Sri Shekar, Karin Verweij, Matthew Keller, Stuart Macgregor, Margaret Wright, Nicholas Martin*

There is considerable evidence that human sexual orientation is genetically influenced, so it is not known how homosexuality, which reduces reproductive success, is maintained in the population at a relatively high frequency. We show in a large community-based twin sample (N=4904) that psychologically masculine females and feminine men are 1) more likely to be nonheterosexual, but 2) when they are heterosexual have more opposite-sex sexual partners. With statistical modelling of the twin data we show that both these relationships are partly due to pleiotropic genetic influences common to each trait. We also find that heterosexuals with a nonheterosexual twin have more opposite-sex partners than do heterosexual twin pairs. Taken together, these results suggest that genes predisposing to homosexuality may confer a mating advantage in heterosexuals, and this could provide a plausible explanation for the evolution and maintenance of homosexuality in the population.

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**Session I-2 Groups II**  
**International Conference Hall II, Chair: Kingsley Browne**


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SU 11:50AM

## TRUST AND COHESION: INTEGRATION OF WOMEN INTO MILITARY COMBAT UNITS

*Kingsley Browne*

Policy discussions of integration of women into ground-combat positions often focus on individual traits and neglect group interactions. Group cohesion is critical to military performance, however, and trust is critical to cohesion. Women in military groups often adversely affect cohesion, especially as danger increases, at least partially because of men's reluctance to trust them in dangerous circumstances.

This reluctance to trust may reflect men's evolved psychology. The choice of combat comrades has always been consequential because of the risks and interdependence required. Empirical evidence confirms that soldiers attend to aspects of masculinity that would have been markers of effective primitive fighters.

Because the potential fitness costs of error in assessing combat comrades are asymmetric, error-management theory suggests a bias against trust. Because the proximate triggers of trust among comrades seem to include aspects of masculinity, some of men's reluctance to trust female comrades may be relatively intractable.

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SU 12:10AM

## CHINESE GOLDEN MONKEY AND ITS MULTI-LEVEL SOCIETIES

*Peng Zhang, Kunio Watanabe*

To understand social organizations of the Chinese golden monkey, we studied a free ranging band in their natural habitats from 2001 to 2007. The study confirmed this species live in a multi-level social aggregation. One-male unit, on average  $1 \pm 0$  male,  $4 \pm 1$  females and youngsters, is their basic social unit. The band, a higher social structure, comprised of  $8 \pm 1$  one-male units that consistently carried out their activities together. Adult females placed high priority of long-term relationships with other females in the one-male units, while adult male were socially peripheral. Among one-male units, clear dominance relationships existed, and the dominance ranks were stable for years. Dominance ranks of one-male units positively correlated with unit sizes and the duration of their stay in the band. I discussed possible evolutionary factors of their multi-level societies, by comparing with several other primate species living in multi-level societies, e.g. Gelada baboon, Hamadryas baboon and Proboscis monkey.

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SU 12:30AM

## DOCUMENTING THE ONLINE EXPRESSION OF UNIVERSAL BEHAVIOURS

*Anthony Cox, Chantel Burkitt, Maryanne Fisher*

Universal behaviours, which are caused by evolutionary pressures, should be evidenced in all environments, including artificial online (e.g., virtual) ones. Using a checklist, we have documented the occurrence of a wide variety of universal behaviours in the environment provided by the online game Second Life. As expected, social behaviours are readily identifiable, due to the environment's intended facilitation of online "romantic" relationships. However, there now exist large, social communities that extend beyond simplistic, romantic interactions. Although we have found that many universal behaviours are merely adapted to match the specifics of the online context, we have found users often modify the environment to permit the expression of universal behaviours, or use Second Life as a mechanism to express or discuss real world (e.g., offline) behaviours. We will present examples of all these phenomena, and explain how they impact the use of virtual environments to support contemporary research.

Dalhousie University, Canada/ amcox@cs.dal.ca

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**Session I-3 Religion**  
**Conference Room III, Chair: Stephen Sanderson**


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SU 10:50AM

## ADAPTATION, EVOLUTION, AND RELIGION

*Stephen Sanderson*

Neo-Darwinian theories of religion include both nonadaptationist (by-product) and adaptationist (religious modules evolved by natural selection) versions. After clarifying the meaning of the terms "adaptation" and "adaptationism," the paper presents four lines of evidence in favor of the adaptationist position: (1) religion generally has positive effects on both physical and mental health; (2) religions tend to be pronatalist and people who are more religious tend to leave more offspring than less religious or nonreligious people; (3) in the ancestral environment the role of the shaman was universal and was primarily devoted to the crucial human goals of curing illness and protecting and finding vital resources; (4) the major world religions that evolved in the first millennium BCE during a period of major social disruption emphasized an omnipotent, transcendent God of love and mercy who offered salvation in a heavenly afterlife and released individuals from earthly suffering.

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SU 11:10AM

## JAPAN'S CULTURAL INOCULATION—A DARWINIAN ACCOUNT OF THE RADIATION AND RETREAT OF FIREARMS AND CHRISTIANITY, 1543-1700

*Bret Beheim*

It is commonly assumed that Christianity failed to take root in Japan because it is fundamentally incompatible with Japanese culture, and once the religion established a small foothold in the 1500s, its ultimate rejection in the archipelago was inevitable. However, applying a Darwinian theory of cultural evolution, this paper argues that contingent historical forces, rather than fundamental cultural incompatibility, best explain the failure of the Catholic mission in Japan. I present evidence that Catholicism spread quickly due to a powerful prestige and nonconformist biases during the Sengoku period and an association with matchlock muskets, but once the country became unified under the Tokugawa these trends were reversed. These results suggest that the very process of expulsion produced a kind of 'cultural inoculation' within Japanese culture, which developed a suite of countermeasures that have thwarted Christian missionaries' attempts to repeat their earlier success ever since.

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**Session I-3**  
**Symposium: The Nature of Narrative**  
**Conference Room III, Chair: Marcus Nordlund**

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*This symposium will explore the nature of narrative from two directions. How can evolutionary and cognitive theory throw light on the production and interpretation of narrative, and, conversely, how can a global repository of narratives provide empirical data about human nature? One paper explores the interplay between evolved and culturally transmitted skills in the interpretation of literary meaning, with a particular focus on basic event comprehension, the interpretation of intentions, and the attribution of general implications to specific events. A second paper presents a cross-cultural, multi-coder study of romantic love in thousands of folk tales—is romantic love a literary universal?—and then proceeds to explore problems of cross-cultural definition and classification. A third paper addresses the anthropomorphizing of topographical features in hunter-gatherer folklore: why is navigational information linked to social information? This phenomenon is examined in light of human spatial cognition and the evolution and function of language.*

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SU 11:50PM

ROMANTIC LOVE: A FOLK TALE PROJECT AND ITS IMPLICATIONS

*Marcus Nordlund*

In recent years, the assumption that romantic love is a Western social construction has been called into question by neuroscientific as well as cross-cultural evidence. But we are far from a consensus in this area: some argue that romantic love is not really an emotion, or that its components may exist cross-culturally while the romantic compound is culturally specific. The first objective of this paper will be to present a cross-cultural, multi-coder analysis of thousands of folk tales by Jonathan Gottschall, Marcus Nordlund, and 18 co-authors that lends tentative support to the universalist position. The second objective will be to problematise these findings—and, by extension, those of past and future researchers in this field – with a particular eye to problems of cross-cultural definition (what is romantic love?) and classification (when can we claim to have uncovered it?).

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SU 12:10AM

HOW DO WE GET FROM HERE TO THERE? ANTHROPOMORPHIZED TOPOGRAPHY, SPATIAL COGNITION, AND VERBAL INFORMATION PROCESSING

*Michelle Scalise Sugiyama, Lawrence Sugiyama*

Many foraging tasks involve wayfinding, for which topographical knowledge is critical. Strikingly, hunter-gatherer folklore frequently contains stories about the origins of topographical features. The features highlighted in these stories are explained as transformed human agents or as the handiwork of human agents, raising the question, Why input non-social information as social information? The evolution of language created the opportunity for humans to share topographical information, yet it is unlikely that humans are designed to input navigational information verbally: all ambulatory animals must process spatial information, and since humans are the only animals that have evolved language, language cannot be requisite to navigation. This paper posits that harnessing topographical information to social information provides a means by which the former can be efficiently input, stored, and transmitted verbally.

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SU 12:30AM

FICTIONAL MEANING: EVOLUTION AND IMPLICATION

*Brian Boyd*

"Meaning" has long been a core problem in literary criticism and theory, especially in interpreting fiction. How does fiction mean, beyond the literal account of the story? And how can we account for the substantial convergence and divergence of responses to literary works, and for authors' shaping audiences' responses and yet doing so often in open-ended ways? I offer a naturalistic account of fictional meaning that incorporates evolved skills of immediate event comprehension, evolved and culturally elaborated skills of interpreting others' communicative intentions, and evolved and culturally elaborated skills for comprehending general implications of specific events. I hypothesize in humans a selective pressure to interpret events in ways beyond the immediate and a key role for pretend play and story in refining such interpretive capacities. Examples include Homer and Dr. Seuss.

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**Session I-4 Hormones**  
**Centennial Hall, Chair: Mark Flinn**

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SU 10:50AM

SEX STEROID HORMONES, ENVIRONMENTAL STRESSORS AND ADOLESCENT ADJUSTMENT

*Hans Vermeersch, Guy T'Sjoen, Jean-Marc Kaufman, John Vincke*

Research on sex differences in the experience and the outcomes of strain, with respect to adolescent adjustment, has been a topic of interest in both the social and the biomedical sciences. However, the failure to integrate findings generated in both fields has inhibited a better understanding of the stress process. Utilizing data from 599 adolescent boys (N = 301, mean age: 14.4 years) and girls (N = 298, mean age: 14.3 years), we analyzed how the experience of stressors is related to internalizing (i.e., depression and self-esteem) and externalizing (aggressive and non-aggressive adolescent risk-taking) forms of adolescent adjustment. In addition we analysed how these stressors interacted with sex steroid hormones, free testosterone (FT) and free estradiol (FE2). Several interactions between the experience of stressors, the experience of sex-specific stressors and sex steroid hormones were found in boys and girls. The implications of these results with respect to sex differences in internalising and externalising symptoms are discussed.

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SU 11:10AM

IS FATHER-CHILD RESEMBLANCE VARIABILITY ASSOCIATED TO A MIXED REPRODUCTIVE STRATEGY IN FATHERS?

*Alexandra Alvergne, Charlotte Faurie, Michel Raymond*

In humans, father-child resemblance is a paternity cue that helps fathers to direct their investment. Fathers possibly express various strategies concerning their reproductive decisions and the degree to which children resemble them: males mostly involved in paternal investment should produce children resembling them while those mostly involved in mating investment should not (anonymity), thus avoiding discrimination if children are raised by another male. The male differential allocation in mating versus parenting effort is proximally explained by testosterone profiles. The aim of this study is (1) to quantitatively investigate the link between paternal investment and testosterone levels among fathers and (2) to test if father testosterone levels predict the degree to which children resemble them. Data were collected for 30 families from a polygynous traditional society where the link between father investment and facial resemblance was previously observed. Results are discussed in the context of the evolution of paternal investment in the human family.

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SU 11:30PM

## TRUST, PREFERENCES, AND SOCIAL DILEMMAS: DOES THE HORMONE OXYTOCIN INTERACT WITH GENDER AND SOCIAL VALUE ORIENTATION TO AFFECT COOPERATION?

*Carolyn Declerck, Toko Kiyonari, Christophe Boone*

Trust and prosocial preferences are two common solutions to solving social dilemmas. The neuropeptide Oxytocin, implicated in mammalian social behavior, has been shown to boost trusting behavior in experimental economic games. We tested if Oxytocin also affects cooperation in mixed motive games, and if it interacts with gender and social preferences. Specifically, we test the hypothesis that Oxytocin increases cooperation by attenuating fear in prosocials and greed in proselves. Participants received either Oxytocin or a placebo in a double blind procedure and played a one-shot simultaneous prisoner's dilemma (containing influential elements of greed and fear), assurance game (where greed is absent), and sequential prisoner's dilemma game (where fear is absent). The results indicate that Oxytocin may have opposite effects on cooperation in people with different social preferences: consistent with a role in fear reduction, prosocials cooperated significantly more, yet proselves significantly less when receiving oxytocin in the simultaneous prisoner's dilemma.

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SU 11:50AM

## TESTOSTERONE IS ASSOCIATED WITH MATING SUCCESS BUT NOT ATTRACTIVENESS OR MASCULINITY IN HUMAN MALES

*Marianne Peters, Leigh Simmons, Gillian Rhodes*

Testosterone (T) is thought to mediate a trade-off between paternal effort and mating effort, such that males investing monogamously have lower T than those with multiple partners. This suggests that high-T males may have a reproductive advantage over their low-T counterparts via increased mating success. This study tested 119 adult males to assess whether T is associated with mating success, and rated masculinity and attractiveness. We found a significant positive correlation between T and cumulative mating success. There was, however, no correlation between T and masculinity or attractiveness. This study indicates that although current levels of T covary with male mating success, this effect may not be mediated by women's preferences for visual cues to T levels conveyed in static face or body features. If the T-mating success link is driven by female choice, this effect may be behaviourally modulated, for example, through the augmentation of male mate-seeking effort.

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SU 12:10AM

## TESTOSTERONE IN ROMANTICALLY INVOLVED MEN

*Steven Gangestad, Randy Thornhill, Christine Garver-Apgar*

From a life history perspective, male testosterone has been conceptualized as a modulator of allocation of effort. Increases in testosterone production and metabolism purportedly result in greater mating effort and attention to male-male competition. Decreases purportedly result in greater somatic effort and attention directed to offspring (if they exist) and, possibly, primary partners. In a study of 65 romantically involved couples in which all women were normally ovulating, we sampled men's testosterone multiple times: Twice when female partners were in the fertile phase of their cycles, and twice when partners were in the luteal phase. We examined (a) associations of testosterone with indicators of men's relationship investment and commitment, (b) changes in testosterone as a function of partners' fertility status, and moderators of change, and (c) within-couple behavioral correlates of men's testosterone levels over time. Results are interpreted within a life history framework.

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SU 12:30AM

DO CORTISOL PROFILES RESPOND ADAPTIVELY TO SOCIAL EVENTS DURING CHILD DEVELOPMENT?

*Mark Flinn*

Exposure to stressful experiences increases vulnerability to adverse health outcomes. A potential endocrine mechanism mediating the link between stress and health is the hypothalamic-pituitary-adrenal (HPA) system, with a key role attributed to the glucocorticoid hormone cortisol. Here I present analyses of cortisol levels, social stressors, and health to assess developmental trajectories of HPA functioning. Saliva samples (N=32,219) were assayed for cortisol in concert with monitoring of growth, morbidity, and social environment for children (N=317) in a rural Dominican community each year over an 18-year period (1988-2006). Several measures of cortisol (C) profiles are analyzed: (1) average C, (2) average wake-up C, (3) average ratio of AM/PM C, (4) variability of AM/PM C, and (5) reactivity of C. A majority of children exhibit stability of all measures. Children exposed to traumatic events exhibit context-specific changes, with increased reactivity to social stressors, but normal reactivity to physical stressors.

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## POSTER ABSTRACTS

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Poster-1

### DIFFERENTIAL COUSIN CONTACT AS A FUNCTION OF PATERNITY UNCERTAINTY

*David Bishop, Nicole Egan, John McGinnis, Lisa Savre*

Recent research has suggested that cousin-directed altruism varies as a function of paternity uncertainty. Jeon and Buss (2007) found that individuals acted most altruistically toward the children of a mother's sister (MoSis) and least altruistically toward the children of a father's brother (FaBro); children of a father's sister (FaSis) and father's brother (FaBro) were intermediate. In this study, undergraduates who reported at least one biological cousin from each of the four cousin categories were asked to report on the frequency of contact both received from and directed to each cousin. Fourteen contact behaviors and emotional closeness were assessed. A series of repeated-measures ANOVAS revealed that contact varied significantly among cousin categories on 9 of the 14 variables and on the closeness variable. In each case, respondents reported greater contact with children of MoSis than the other cousin types. A significant linear trend was evident on 8 of these variables.

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Poster-2

### STATUS AS SOCIAL RESPONSIBILITY OR STRATEGIC ADVANTAGE: SOCIAL VALUES WITHIN STATUS HIERARCHIES

*Eric Gladstone, Kyle Irwin, Brent Simpson*

Previous research in evolutionary psychology focuses on how reputation management systems promote cooperative behavior. Research shows those with good reputations are rewarded through increased exchange opportunities; thus people act in ways to bolster their reputations (through increased generosity). While critical to our understanding of cooperation, previous research fails to consider how reputation management operates within status hierarchies. We test two competing arguments. The first states that, because actors view high status others as the source of social and material rewards, participants will act more generously when observed by higher status third parties. The second argument predicts that social values mediate the impact of social status. According to this line of reasoning, prosocials treat high status as a social responsibility whereas egoists view status as a strategic advantage. As a result, for prosocials, status and generosity will be positively correlated whereas for egoists, status and generosity will be negatively correlated.

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Poster-3

### THE EVOLUTION OF RECIPROCITY. A SITUATIONIST VIEW

*Jean-Baptiste André*

Humans massively engage in reciprocal altruism, and yet we lack a satisfactory evolutionary explanation. Incitations to reciprocate exist when past behaviors convey information about future behaviors. In evolutionary models, it is the implicit assumption that individuals can only play consistent strategies that forms this incitation, because a single defection then signals future defections. However, this hypothesis is not biologically justified. Consistency of social behavior is a product of evolution, not a legitimate a priori assumption. In the present theoretical paper, I propose an alternative explanation. Humans can be in various situations with respect to each others. A defection is thus interpreted as a signal that one would not benefit from a particular social exchange, and that this is likely to last, which makes it rationale to reciprocate. It is hence the inertia of individual situations that explains the consistency of social behavior, and founds the incitation to reciprocate.

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## Poster-4

## THIRD PARTY PUNISHMENT ON DECEPTION

*Fumiko Masuda, Esuka Watanabe, Yohsuke Ohtsubo*

What mechanism keeps human language honest poses an evolutionary puzzle because the human language system does not include any handicaps that allow the evolution of honest signaling (Zahavi, 1975). Recently, Latchmann Szamado, and Bergstrom (2001) argued that social punishment inflicted on the deceiver may be the cost of deception. We conducted a modified version of the third party punishment game to investigate whether deceivers will in fact be socially punished. Participants observed an experimental protocol in which the trustee solicited the endowment transfer from the trustor by stating that he would give more than half or exactly half of the total resource back to her, and then gave half back. Thus, the promise of "more than half back" was deceptive. Eight of 14 participants inflicted third party punishment on the deceptive trustee, while only one of 14 did so on the honest trustee,  $p=.006$  by Fisher's exact test.

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## Poster-5

## DOES THE ALTRUISM LEVEL OF PERCEIVERS AFFECT THEIR DETECTION OF ALTRUISM?

*Ryo Oda, Noriko Yamagata, Yuki Yabiku, Akiko Matsumoto-Oda*

Detection of genuine altruists and exclusive exchange with those people could be a solution to the problem of subtle cheating. Brown et al. (2003), using a zero-acquaintance video presentation paradigm, revealed that humans can detect altruists by some non-verbal cues. We replicated their experiment with modification of several methods. First, we used video-clips of natural conversation as the stimulus. Second, we asked the perceivers to self-report their own altruism on a scale and then to estimate the videotaped targets' altruism using the same scale. Viewing 30-second video clips without sound, the participants could estimate the targets' altruism levels correctly, but the altruism level of the perceivers did not affect discrimination between altruists and non-altruists. Impressions of the targets were also measured using a semantic differential method. Coding of nonverbal behavior of the targets revealed that altruists exhibited more felt smiles than non-altruists, which also supports the results of the previous study.

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## Poster-6

## CAN HUMANS BE DIVIDED IN "DOVES" AND "HAWKS"? AN EVOLUTIONARY MEDICINE PERSPECTIVE

*Ivana Hromatko, Meri Tadinac, Natasa Jokic-Begic, Anita Lauri-Korajlija, Lena Kotrulja*

Why some individuals develop the specific disease they do? The allostasis depends on temperament and personality traits, and related stress responses. Within a population there is a balance in frequency of genes determining the tendency towards "Hawks" and "Doves". Is it possible to identify groups of individuals with a heightened risk for developing specific diseases? The aims were to determine whether an analogue of Hawks and Doves can be defined in humans; and whether the proportion of Hawks and Doves differs among different groups of patients. Anxiety trait and coping styles were assessed in 205 patients and two groups were formed: Hawks (low anxiety/problem-oriented coping style) vs. Doves (high anxiety/avoidant coping style). Sex differences in proportion of Hawks and Doves in various patient groups suggest an interaction between sex and allostatic load management, and that the onset of a certain disease might be related to this pattern of strategies.

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## Poster-7

**SELF-DISCLOSURE AS A COSTLY SIGNAL OF COMMITMENT: THE EFFECTS OF CULTURE, SOCIAL STRUCTURE, AND DOMAIN***Joanna Schug, Masaki Yuki, William W. Maddux*

Self-disclosure is well known for its role in the formation and maintenance of interpersonal relationships. As disclosing potentially damaging information about oneself can bring about a variety of negative consequences, providing others with this information serves as a type of hostage posting, guaranteeing trustworthiness. Voluntarily divulging such information thus serves as a signal of one's commitment to the relationship. However, the usefulness of this signal should theoretically differ across domains and social contexts. Specifically, a signal of commitment would have little use in kinship relationships or in cultures and social contexts where social networks are pre-determined and stable. From this logic, we predicted that strategic self-disclosure used to signal commitment would be more prevalent outside of kin relationships, as well as in social contexts high in relational mobility where relationships between individuals are generally unstable and personally chosen. Data from Japan and the United States supported our hypothesis.

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## Poster-8

**WHEN WE REMEMBER FACES OF OTHER PEOPLE: DEFECTORS ARE MEMORABLE WHEN THEY ARE RARE; ALTRUISTS WHEN THEY ARE NOT***Satoshi Nakashima, Yuko Morimoto, Takuya Ishii, Takafumi Okubo, Sueto Kumashiro, Reiko Matsuda*

Evolutionary psychologists have proposed that humans have cognitive mechanisms for cheater detection. In fact, Mealey et al. (1996) and Oda (1997) found that faces of cheaters are more memorable than those of others. In addition, Chiappe et al. (2004) argued that remembering altruists is also functional and showed that altruists are remembered better than irrelevant individuals. Subsequent studies, however, failed to replicate these results (Barclay & Lalumiere, 2006; Mehl & Buchner, 2008). According to memory research, the distinctiveness of a target also affects the accuracy of memory. In previous research, the distinctiveness of descriptions presented with faces was confounded with trustworthiness. We examined whether faces of defectors and altruists are memorized more than those of irrelevant individuals under conditions controlling distinctiveness. Results show that recognition of faces does not depend simply on trustworthiness or distinctiveness: Defectors are remembered better when they are highly distinctive; altruists when they are not.

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## Poster-9

**GROUP-BASED RECIPROCITY AS AN ADAPTIVE STRATEGY FOR GENERALIZED EXCHANGE***Yutaka Horita, Toshio Yamagishi*

We tested if second players in a one-shot, sequential Prisoner's Dilemma Game would reciprocate the first player's cooperative behavior. We found that second players cooperated at a higher rate when the first player was a member of the same minimal group (ingroup) than when he/she was an outgroup member. However, this ingroup bias in cooperation existed only in the mutual knowledge condition in which the participant (second player) knew that the first player also knew their respective group membership. On the other hand, no ingroup bias was observed in the unilateral knowledge condition in which the participant knew the group membership of the first player, but the first player did not know which group the second player belonged to. This effect of knowledge manipulation indicates that the second player reciprocated a group-based favor based on whether or not the first player has the knowledge of the second player's membership.

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## Poster-10

## HOW DO WE TREAT GIVERS TO FREE-RIDERS IN INDIRECT RECIPROCITY SETTINGS?: AN EXPERIMENTAL STUDY TO EXAMINE STRATEGIES IN INDIRECT RECIPROCITY SETTINGS

*Rie Mashima, Nobuyuki Takahashi*

Recent theoretical studies suggest that the key to the emergence of indirect reciprocity is to exclude not only free-riders but also indiscriminate givers who help free-riders (Takahashi & Mashima, 2006). We conducted a laboratory experiment to examine people's actual strategies in indirect reciprocity settings. Participants played a repeated giving game. In each round, participants were asked to decide whether to give their endowment to one of the other participants or keep it for themselves. When they made their decisions, they could see 1st-order information (whether each target gave or didn't give in the last round) and 2nd-order information (whether the person had given to a giver or a non-giver in the last round). Results showed that participants actually excluded not only non-givers but also those who had given to non-givers. Further analysis suggested that altruistic sentiments, rather than punitive sentiment, form the motivational basis of such strict discrimination.

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## Poster-11

## COOPERATORS TEND TO SEE HUMAN FACES IN ABSTRACT FIGURES

*Shigehito Tanida, Hirofumi Hashimoto, Toshio Yamagishi*

Players of a one-shot PDG were presented with three black dots in the shape of either a regular triangle or an upside-down triangle on their computer display. When asked to draw a picture using the three dots after the game, they drew a human or pseudo human face more frequently in the regular triangle condition than in the upside-down triangle condition. Based on Haley & Fessler's (2005) finding, we predicted that participants would cooperate more in the upside-down than the regular triangle condition, but we found no conditional difference. However, those who drew a human or pseudo-human face cooperated at a higher rate than those who drew an animal face or inanimate figures. Analyses of post-experimental questionnaire further indicate that human face drawers are those who are prone to activate the social exchange heuristic (Kiyonari et al., 2000) and perceive PDG as an instance of social exchange.

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## Poster-12

## YOUNG ADULTS ATTEMPT EXCHANGES IN REPRODUCTIVELY RELEVANT CURRENCIES

*Daniel Kruger*

Adults in many species exchange reproductively relevant currencies, males trade resources for sexual relations with females, and females have sex with males in exchange for provisioning. These exchanges can occur outside of a long-term partnership, which itself could be considered a commitment to the accessibility of reproductive currencies provided by each partner. The current study demonstrated that young adults (N = 475) who are not in acute need of resources intentionally attempt reproductive currency exchanges outside of dating relationships or formal committed relationships and also report being the target of such attempts made by others. Across attempts made and offers received, men were more likely to attempt to trade investment for sex and women were more likely to attempt to trade sex for investment. The vast majority of attempted exchanges did not take place in the context of existing relationships although a small proportion did lead to relationships.

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Poster-13  
 PUNISHMENT IN THE SPATIAL ULTIMATUM GAME  
*Genki Ichinose, Takaya Arita*

A large number of psychological experiments have shown that humans behave fairly in the ultimatum game. We apply an evolutionary approach to the ultimatum game. It is well known that punishment promotes cooperation by penalizing defectors. Rejecting unfair offers in the ultimatum game is one of a form of altruistic punishment. We examine another form of punishment in which responder rejects playing the game itself with unfair proposer. In addition, the spatial structure is also important for the evolution of fairness because the cluster of fair players can propagate by rejecting rational players. We constructed an individual based model of the ultimatum game in which these two mechanisms are incorporated. By conducting evolutionary experiments, we found that this type of punishment promoted fairness, which most evolved by being coupled with the spatial structure. This result may explain the emergence of the social norm known as inequality aversion.

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Poster-14  
 ARE THERE NONVERBAL CUES TO COOPERATION? AN EXPERIMENTAL STUDY USING A PRISONER'S DILEMMA GAME  
*Mizuho Shinada, Michiko Koizumi, Shigehito Tanida, Hirofumi Hashimoto, Toshio Yamagishi*

Human cooperation among genetically unrelated people is an evolutionary puzzle because cooperation is a costly behavior for each individual. The puzzle could be resolved if cooperators (not defectors) are able to distinguish cooperators from cheaters. Recent studies have shown that people can tell altruists from non-altruists by non-verbal cues (Brown et al., 2003, Yamagata et al., 2007). This study replicated previous findings and examined if people can tell altruists from non-altruists by non-verbal cues. Furthermore, we examined if people can tell cooperators in a prisoner's dilemma game from non-cooperators with the "zero-acquaintance video presentation paradigm". Participants assessed three types of video-clips without voice: targets read aloud a fairly tale, targets talked about their favorite things, and targets showed facial expressions of various kinds of emotion. The personality traits and economic traits of participants were also examined to investigate if they are related to the detection ability.

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Poster-15  
 PERCEPTIONS OF SOCIAL CATEGORIES' INGROUP HOMOGENEITY  
*Cristina Moya*

Much research on stereotyping implies that humans treat all social categories, whether they are gender, racial, political, age, or health status based, as equivalent targets of stereotypes. Using social categories to make predictions minimizes the costs of searching for new information. However, such reasoning also runs the risk of producing incorrect predictions. Therefore, we might expect that humans should be predisposed to detecting or inferring correlations between only social categories and their members' traits if such associations recurred during human evolutionary history. In this study we gauge participants' likelihood of making predictions based on membership in novel social categories and their certainty in these assessments. We compare subjects' predictions based on kin, linguistic, territorial, political and occupational category members.

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## Poster-16

**DOES THE EXISTENCE OF THE OUTGROUP MEAN CONTAMINATION TO FEMALES BUT AN OBSTACLE TO MALES?: SEX DIFFERENCES IN THE PERCEPTION OF INTERGROUP THREAT**  
*Kunihiro Yokota, Masaki Yuki*

The purpose of this study is to examine sex differences in perceived intergroup threats. Recently, sex differences on two types of intergroup threat (obstacle v.s. contamination) have been reported. Some evidence showed that males were more sensitive to obstacle threat (outgroups would hinder ingroup's goals) leading to aggressive discrimination compared to females (e.g., van Vugt et al., 2007), while females were more sensitive to contamination threat (outgroups would contaminate ingroup via contagion) leading to avoidance discrimination (Kurzban & Leary, 2001) compared to males (e.g., Navarrete et al., 2007). However, it is unclear whether or not these differences would occur outgroup's perception or threat-discrimination processes. In the current study, we examined perception of threats toward outgroup. Twenty-eight participants (9 females, 19 males) rated intergroup threats toward 33 social groups. Inconsistent with our predictions, no sex difference was found in obstacle threat and males perceived contamination threat more than females did.

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## Poster-17

**SEX DIFFERENCE OF INGROUP BIAS IN MINIMAL GROUPS**  
*Nobuhiro Mifune, Toshio Yamagishi*

Ingroup bias, the tendency to behave altruistically towards ingroup members but competitively towards outgroup members, has been observed even in minimal groups. It has been repeatedly shown that, in minimal groups, ingroup bias occurs only when participants know each other's group memberships (mutual knowledge condition). This suggests that the bias is an adaptive behavior for generalized reciprocity within groups. According to evolutionary psychology, males should have a competitiveness towards outgroup males. We therefore expect that priming participants with same sex partners may lead to intergroup competition among males even though their partner does not know about participants' group membership (unilateral knowledge condition). To test this hypothesis, we conducted an experiment with all participants are either male or female in each session. As expected, females showed ingroup bias only in the mutual knowledge condition but not in the unilateral knowledge condition. However, males showed ingroup bias regardless of the conditions.

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## Poster-18

**DOMINANCE AND DINNER DATES: WHO PAYS THE BILL?**  
*Michael Stirrat, David Perrett*

Participants were invited on hypothetical dinner dates. If they chose to accept the date they had to state who they would prefer to pay for the meal. They also reported how dominant they considered themselves to be. Participants showed systematic sex difference such that males preferred to pay for the meal with opposite sex invitations and women were more likely to allow the opposite sex invitee to pay. Female participants preferred to split the bill with the same sex.

More dominant individuals behaved more like their sex. Dominant males were more inclined to pay for meals than less dominant males. Dominant females were more likely to report a preference for having their meal paid for whereas less dominant females preferred to split the bill.

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## Poster-19

## MPI PREDICTING FAMILY CONFLICTS IN MATRILINEAL AND PATRILINEAL SOCIETIES

*Antonio Maia*

This work proposes to account for cultural variability in connection to the organization of the human family, in the light of the following theories: 'kinship selection'; 'reciprocal altruism'; 'parental investment and sexual selection' and 'parent-offspring conflict'. It is also founded on evidence based on the comparison of ethnographic data. It intends to demonstrate that there is a significant alteration in the behavior of family members (father, son/nephew, mother, and mother's brother) when the rules of inheritance of wealth change, as these rules dictate the MPI sometimes in the nephew (matrilineal/avuncular) and sometimes in the son (patrilineal). Variation in MPI modifies family relations in matrilineal and patrilineal organizations in a predictable manner. The role played by MPI in determining family tensions (or the absence of) will be shown by applying a cross cultural analysis to the data obtained from the HRAF, using the PSF (Probability Sample Files).

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## Poster-20

## RELIGION AND SELF-CONTROL: EMPIRICAL FINDINGS

*Adam Blake, Michael McCullough*

To reap the adaptive benefits associated with agrarian food production and other social adaptations that are characteristic of contemporary human societies, the development of high levels of self-control was essential. To the extent that religious belief was capable of fostering self-control, selection would have favored its development during humans' transition from a nomadic existence to permanent settlement. Consistent with this proposition, many studies show that people who score higher on measures of conventional religious beliefs and behaviors score higher on self-report measures of general self-control than do their less religious counterparts. However, no experimental research has yet determined whether religious cognitions increase self-control. We report the findings of an experiment investigating whether participants randomly assigned to one of three visual priming conditions (religious symbols, images of eyes, or a control stimulus) subsequently differ in self-control or self-monitoring. Potential differences in personality variables subsuming self-control are also reported.

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## Poster-21

## MIND READING AND CULTURAL IDENTITY

*Mitsue Nomura, Reginald Adams Jr., Sakiko Yoshikawa, Michael Stevenson, Nalini Ambady*

This study examined the role that cultural identity plays in mind reading, using the "Reading the mind in the eyes" test (Baron-Cohen et al., 2002) and its Asian version, which we developed. The results reveal an intracultural advantage in mind reading across native Japanese and U.S. Caucasian participants when both the four-alternative (Study 1) and open-ended response (Study 2) formats were used. Study 3 adopted a sequential matching task to examine whether this cultural difference would emerge at an early stage of mind reading. The results showed that the response times for a "matched" response were faster for in-group eye stimuli paired with target words than for out-group eye stimuli, although this difference in response times ceased when the trials were repeated. These results suggest that invariant information in faces such as cultural identity influences the processing of changeable aspects of faces such as gaze and facial expressions.

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## Poster-22

## TOOL SHARING IN CHIMPANZEES: HELPING BEHAVIOR WITH NON-FOOD OBJECTS

*Shinya Yamamoto, Tatyana Humle, Masayuki Tanaka*

Upon review of previous experiments on chimpanzees' altruism, we propose two hypotheses: 1) other-initiated-altruism hypothesis, which predicts that chimpanzees behave altruistically upon recipients' request, but not spontaneously, and 2) altruism-with-non-food hypothesis, which predicts chimpanzees' other-regarding and helping in contexts not directly involving food. To examine these hypotheses, we conducted experiments with chimpanzees using a tool exchange paradigm. We gave a chimpanzee food resource A and a tool B, necessary to acquire food A, while supplying the other individual with food resource B and a tool A, required to obtain food A. Tools were transferred between two chimpanzees, and the tool sharing predominantly followed recipients' request. These results support the two hypotheses. Supposing that these characteristics of altruism were present in the common ancestor of chimpanzees and humans, it is possible that the evolution of human language and material culture provided conditions favoring the evolution of altruistic cooperation during hominization.

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## Poster-23

## IMITATION IS NOT CONSUMMATION: THE ROLE OF BIAS AND MODULARITY IN CULTURAL INHERITANCE

*Joanna Bryson*

Just how difficult is maintaining stable culture? Because episodes of cultural exchange have poor fidelity of transmission, Sperber & Hirschfeld (2004, 2006) suggest modularity provides necessary bias for recovering the true signal. But information theory tells us biased errors impede signal recovery.

Cultural transmission, unlike biological transmission, is not dependent on a single transmission event, nor on only two "parents". Learning agents have many opportunities to recover statistical regularities about both actions and the context in which they are expressed. Brains are superb at finding such statistical regularities. In fact, culture may facilitate module acquisition this way.

I demonstrate cultural stability despite highly corrupted transmission with an agent-based simulation. The only factors limiting signal recovery are those reducing the number of signal exposures expected in an individual's lifetime. Therefore, modules might increase cultural transmission to the extent they increase information throughput by providing cognitive compression.

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## Poster-24

## FAMILIAL TRANSMISSION OF AUTHORITARIAN CONSERVATISM: GENETIC INHERITANCE OR CULTURAL TRANSMISSION?

*Chizuru Shikishima, Juko Ando, Kai Hiraishi, Shinji Yamagata, Koken Ozaki, Yusuke Takahashi, Koichi Nonaka*

Behavioral genetics methodology can decompose variance of an observed trait into the effect of three latent variables: genetics, shared environment, and nonshared environment. With this paradigm, factors contributing to the formation of authoritarian conservatism were examined. 4111 participants (1279 male and 1899 female twins between the ages of 12-26, as well as 83 fathers and 860 mothers of the twins) responded to the Authoritarian Conservatism Scale. Both twin model and parent-offspring model analyses accounted for a third of the variance of authoritarian conservatism by genetics, and two thirds by nonshared environment. However, further analyses employing the gene-environment interaction model demonstrated that the shared environmental effect was moderated by the level of family cohesion. The effect of shared environment increased drastically when family cohesion was high. Evolutionary implications of genetic and cultural vertical transmission of social attitudes are discussed.

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## Poster-25

## THE 'EVOKED CULTURE' APPROACH TO CULTURAL VARIATIONS IN THE IMPORTANCE OF SELF-ESTEEM (1): A CROSS-NATIONAL COMPARISON

*Kosuke Sato, Masaki Yuki, Kosuke Takemura, Joanna Schug, Shigehiro Oishi*

One way to look at cultural variations of psychological tendencies and mechanisms is to treat them as the results of adaptation to different social and ecological conditions. From this "evoked culture" approach, we theorized that the effect of self-esteem on subjective well-being (SE-SWB relationship) should be stronger in societies high, rather than low, in relational mobility (RMob), a social structural factor reflecting the amount of opportunities to form new relationships. In societies high in RMob, where finding desirable relational partners is easier but also competitive, than in societies low in RMob, self-esteem, or perceived desirability of oneself, predicts one's success. It is thus strongly correlated with SWB. Supporting this hypothesis, our cross-national survey between the US and Japan indicated: (1) SE-SWB association, as well as perceived RMob, were greater in the US than in Japan, and (2) the difference in SE-SWB relationship was mediated by perceived RMob.

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## Poster-26

## THE 'EVOKED CULTURE' APPROACH TO CULTURAL VARIATIONS IN THE IMPORTANCE OF SELF-ESTEEM (2): A SECONDARY DATA ANALYSIS

*Kosuke Takemura, Masaki Yuki*

There is a growing viewpoint to see cultural variations in psychological tendencies to emerge under different ecological and social contexts via adaptation (Tooby & Cosmides, 1992). From this perspective of "evoked culture," the previous findings in cultural psychology that the impact of self-esteem (SE) on subjective well-being (SWB) is stronger among North Americans than among East Asians can be explained in terms of adaptations to socio-ecological contexts differing in the level of relational mobility. SE, or perceived "marketability" of the self, should be more important in societies where interpersonal relationships are generally more fluid and opportunities to form new relationships are abundant. To test this hypothesis, we performed a secondary analysis of representative social survey data within Japan, and found that, as predicted, the SE-SWB association was greater in regions where people changed their jobs more frequently than where people did less so.

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## Poster-27

## DEVELOPMENT OF A CAUSAL RELATIONSHIP MODEL FOR SENSE OF COHERENCE OF UNDERGRADUATE STUDENTS: AN APPLICATION OF THE MULTIPLE GROUP STRUCTURAL EQUATION MODEL

*Parinya Siriattakul*

The objectives of this research were to study causal relationship, develop and validate consistency with empirical data and to test the model invariance between 2 samples: an application of the multiple group structural equation model. The samples consisted of 540 first year undergraduate students in Thailand. The research instruments were five-scale.

The result indicated that the adjusted model was consistent with empirical data. Model validation of a good fitted model provided Chi-square = 25.869, df = 81, p = 1.000, Chi-square/df = 0.319, GFI = 0.996, AGFI = 0.986, RMR = 0.006, LSR = 1.635. The variables in the model accounted for 89.70 percent of the total variance of sense of coherence. The variable that had most significant effect on sense of coherence was self-esteem, democratic child rearing and anxiety, respectively. The causal relationship model of sense of coherence of undergraduate students indicated invariance of model form but the parameters were variance.

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## Poster-28

WHY JOHNNY DROPS OUT OF HIGHER EDUCATION AND JILL FAILS TO EXCEL IN SCIENCE:  
THE EVOLUTIONARY SOCIAL PSYCHOLOGY OF UNIVERSITIES AND SCIENTIFIC NETWORKS

*Susanne Lohmann*

Worldwide, as higher education systems shift from elite to mass to universal higher education, the same story plays out over and over. Women students start out a minority, overtake their male counterparts, and end up a supermajority. Then comes an interesting break in the story. Even as women take to higher education like ducks to the water, including the most advanced degrees, they subsequently become professors at lower rates than do men, and the survivors—the women who made professor—drop out, or fail to excel, at higher rates than do men.

Higher education and modern science are deeply unnatural activities: no such thing existed in the ancestral environment. Universities and scientific networks evolved over centuries to render higher education and science appealing to the male brain. In recent decades, the higher education experience has changed to favor women, even as the social life of science remains geared towards men.

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## Poster-29

FEMALE CRIMES IN VIEW OF EVOLUTIONARY PSYCHOLOGY

*Maolin Ye, Yanyang Cheng, Wei Liu*

From the point of view of evolutionary psychology, female crimes is the competitive response to the lack of resources and the males who possess resources. Measured against males, females have a lower crime rate due to a psychological mechanism: females have a higher level of fear towards dangerous situations and behaviors, that is, females have a lower threshold of fear. The need of resources and lower threshold of fear are important evolutionary psychological mechanisms to ensure females and their children's survival. Males' social control over females leads to females' subordinate status and the social control further internalizes females' self-control. Thus females are less impulsive and adventurous and have a lower crime rate compared to males.

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## Poster-30

THE ASSOCIATION BETWEEN TEASING EXPERIENCES AND HEALTH AMONG JUNIOR HIGH  
SCHOOL STUDENTS IN TAIWAN

*Wen-chi Wu, Lee-Lan Yen, Yi-Chen Chiang, Hui-Shan Sheng*

This study aims to investigate the association between hostile teasing and health among adolescents in Taiwan. The data were collected from "Taiwan Adolescent Humor and Health Project" conducted in 2007. Overall, 60 classes included 1638 students were randomly selected throughout Taiwan. Cumulative logistic regression was used to investigate the association between teasing experiences and health indicators. There were 38.23% students had high-level of teasing experiences. After controlling personal characteristics, students who had more teasing experiences were more likely to report poor health status (Odds Ratio, OR=1.48, CI=1.08-2.04), higher level of psychosomatic symptoms (OR=1.93, CI=1.58-2.35), higher frequency of trouble sleeping (OR=1.53, CI=1.23-1.90), higher level of depression (OR=2.31, CI=1.87-2.86) and higher level of social anxiety (OR=2.12, CI=1.74-2.59). Our results support that the teasing experience was associated with health among adolescents. We suggest that more attention should be paid to the students who had been teased more frequently than their peers.

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## Poster-31

## BARGAINING BEHAVIOR IN CHILDREN WITH AUTISTIC SPECTRUM DISORDERS

*Kumiko Mori, Ryoji Yukihiko*

This study investigated developmental influences on bargaining behavior in children with autistic spectrum disorder and a typically developed control group. Children between 7 and 15 years old played a dictator game and a series of ultimatum games. The two groups showed different developmental processes for their initial offer. The initial offer of autistic children did not depend on whether they had responded correctly to the false belief task. Autistic children, particularly those who did not pass the false belief task, tended to accept an unequal offer, even if the proposer had previously rejected an unequal offer. The results suggested; (1) the initial offer decision may somehow be associated with the ability of “theory of mind” but not with first-order “theory of mind” ability and (2) negative reciprocity may be associated with first-order “theory of mind” ability.

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## Poster-32

## DEFICIENCY OF THEORY OF MIND IN ‘REVOLVING-DOOR’ PATIENTS WITH SCHIZOPHRENIA

*Yumiko Inoue, Kazuo Yamada, Ryoji Miyata, Yasuo Fujii, Shigenobu Kanba*

**Background.** The aim of this study was to investigate the association between theory of mind (ToM) deficits and repeatedly relapse in patients with schizophrenia.

**Method.** A ToM picture story comprising a sequencing task, a first and a second order false belief test, and tactical deception test was given to 55 so-called ‘revolving-door’ remitted patients with schizophrenia who had high relapse rates and frequent hospitalization, and 55 matched remitted and stable patients with schizophrenia. **Results.** ‘Revolving-door’ patients showed statistically significant impairment in a second order false belief task and sum score in ToM task, compared with non-hospitalization patients.

**Conclusions.** Our results suggest that ‘revolving-door’ patients who have repeatedly relapsed may impair ToM ability. Evaluation of ToM ability in patients with remitted schizophrenia may be a useful to predict their prognosis, and we may have to provide the social support for prevention against relapse.

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## Poster-33

## ERP STUDY ON THE RIGHT-HEMISPHERE DOMINANCE IN SELF-RELEVANT RECOGNITION

*Makoto Miyakoshi, Noriaki Kanayama, Tetsuya Iidaka, Hideki Ohira*

Event-related potential (ERP) studies have reported that self-relevance of stimuli is reflected P300. On the other hand, human self-relevant recognition has been related to the right hemisphere function. The effect of the right-hemisphere dominance on P300 remains unclear. Therefore, we performed a cognitive ERP experiment test the hypothesis that self-relevant stimuli presented in the visual field ipsilateral to the dominant hemisphere (i.e., right) attenuate P300. Twenty-four healthy participants (age 21.1±1.4, range 20-26, 11 women) participated in the study. The experimental design was 3 (familiarity: self-relevant, familiar, unfamiliar) vs. 2 (objects: face, cup) vs. 3 (visual fields: left, right, bilateral). Results confirmed P300 attenuation for one’s own cup, but not for faces, presented in the right visual field. We concluded that right-hemisphere dominance for self-relevant recognition is present but in the mild degree.

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## Poster-34

## QUANTITATIVE EVALUATION OF MOTOR MILESTONES

*Vanessa Zacher, Carsten Niemitz*

Studies on the motor development of infants in the first 12 months of life show that motor skills are acquired in a specific sequence. Yet, most of them are qualitative, and conclusions on the performance are restricted. In qualitative studies, the emergence of "motor milestones", e.g. rolling over or creeping on tummy, are evaluated as important. However, our quantitative observation show that the aforementioned patterns are underpart in question of performance, while the significance is confirmed for other milestones, e.g. in prone position up on arms, standing quadrupedally and crawling. It is of particular interest that especially bipedal standing is among those patterns playing a major role for the development before the infants start to walk. This points up that the acquisition of erect, alternating bipedal locomotion is divided into two major developmental patterns. While crawling mediates alternating limb movements, standing strengthens the musculature and enhances the equilibrium sense.

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## Poster-35

## TYPICAL DEVELOPMENT IN THE RESPONSE TO BEING IMITATED BY OTHERS IN CHILDHOOD -A WAY TO FIND "OTHERS' INTENTION"-

*Kazuhide Hashiya, Hiromi Kobayashi*

We imitate others and perceive being imitated by others: imitation is a medium for communication. Previous studies have shown that imitation scaffolds mother-infant communication and its application to facilitate communicative ability of autistic children is effective. Perception of BI is also a question from an evolutionary perspective. However, developmental change in response to BI beyond mere detection had not been paid much attention. To shed light on this, we asked 600 mothers to imitate their offspring's act and report the response. We classified data based on the age of the tested (0-5 years) and showed that 1: Positive response to BI was observed throughout the age group. 2: Negative response increased as a function of age. 3: Inquiry about the intention of BI appeared around the age of 2.5. 4: Show embarrassment to BI at around 3. The results are discussed referring to the problem of perceiving "others' intention".

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## Poster-36

## LIFE HISTORY THEORY, EXPECTED LIFESPAN AND ATTITUDES TOWARDS RISK BEHAVIORS AND FUTURE LIFE EVENTS

*Deborah Schechter*

Previous research has shown that extrinsic mortality is associated with patterns of life history investments. In particular, researchers have been successful in documenting relationships between life expectancy and risk taking behavior and women's age at first birth. In the current study, previous findings are extended by hypothesizing that expected lifespan will be associated with short-term costs and long-term gains. Data from a sample of 104 Native American youth aged 10 – 23 years are analyzed to explore potential associations among expected lifespan and attitudes towards risk-taking behaviors, current educational investments, and expectations to go to college, get married and have children. Results support hypotheses: expected lifespan is positively associated with more negative attitudes towards risk-taking behaviors, investment in education, expectation to attend college, get married and have children.

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Poster-37

WOMEN'S PERSPECTIVES ON THEIR LIFE STORIES IN MATERNAL KINSHIP: USING THE IMAGES DRAWING METHOD

*Naoko Nishiyama*

This study inquires how women represent their life stories in terms of their maternal kinship. Many psychologists have focused on the mother-child bond at an early age. In this study, I expand the temporal perspective from a life-span to a generative-lifecycle-span, and from two to three generations. 245 Japanese college students (average age 19.57) provided information on their families. Using the Image Drawing Method (IDM), they were asked to draw images of their (1) past, (2) present, and (3) future relationships with their mothers and maternal grandmothers. The data were analyzed using a qualitative method. And four fundamental patterns of images were identified: "dyad and one", "triangle", "side by side", and "wrapped". The patterns of images in early childhood tended to continue throughout the three life stages, although positions or roles were reversed. Therefore, the life stories of relationships continued over generations as the status of its members changed.

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Poster-38

CLIMATE, SEASONS AND EVOLUTION OF THE HUMAN BODY, MIND AND BEHAVIOR

*Jean-Francois Turmel*

Studies showing the influence of the climate and of the seasons on the evolution of the human body, mind and behavior are presented. It is shown that a climatic variable affecting the natural increase rate of a human population enables to predict if males and females of the population are forming polygamous or monogamous reproductive unions, if the individuals of the population are affected by violence and warfare and if the individuals of the population are affected by depression, alcohol use disorders, dementias and cancers of the reproductive organs notably. Also, the seasonality of birth of individuals of a population deceased from different causes is presented. The synthetic evolutionary theories presented to explain the observations should enable to predict and prevent warfare between populations of individuals, depression, alcohol use disorders and dementias in individuals of populations and deaths of individuals of populations from suicide, homicide, vehicle accident and cancer notably.

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Poster-39

ENVIRONMENTAL VARIABILITY AND THE EVOLUTION OF THE CAPACITY FOR CULTURE

*Nathalie Boutros*

The cognitive machinery required for selective imitation is expensive but has been advantageous for our species and is probably responsible for our complex cumulative culture. We are likely the only extant species with such a capacity however. Why is such an apparently useful trait not more prevalent? It has been suggested that the capacity for selective imitation is an adaptive response to environmental variability. In this study, I simulate the evolvability of selective imitation: Populations of individuals were evolved in environments ranging from no to high variability. Individuals adopted one of the following behavior-acquisition strategies: 1) innate behavioral repertoire, 2) a "Trend Watching" strategy which imitated the most common parental generation behavior or 3) a "Social oblique" strategy which only imitated successful members of the parental generation. The results show that environmental variability alone is not sufficient to predict dominant learning strategy, and suggest that other factors are necessary.

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Poster-40

**"SMILE" AS "HONEST SIGNAL": MEASURING HANDGRIP WHILE EXPRESSING SMILE***Ryo Tamura*

The evolution of “smile” was considered from the perspective of semantics (van Hooff, 1972). However, previous study only described a speculation. This study investigated the probability that people express “smile” as “honest signal”. It is predicted that physical ability decreases when people express “smile”, because weakened physical ability disables exploitation to partner at resource exchange. In other words, making oneself vulnerable softens other’s fear of to be exploited. To examine this hypothesis, I measured handgrip as physical ability in two conditions. One was “expressing smile” as experimental condition, and the other was “keeping neutral face” as control condition. Participants were demanded to grasp grip dynamometer while expressing “smile” or keeping “neutral face”. The result declared that handgrip decreased while expressing smile. The relationship between expressing smile and occurring pleasant emotion was discussed.

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Poster-41

**COMPARATIVE STUDY OF FACIAL EXPRESSIONS OF LAUGHTER APPEARING IN REMAKE MOVIES USING AUTOMATIC SMILE-DETECTION SOFTWARE***Noriko Ozawa*

This study examined whether there are some differences in facial expressions of laughter in different countries using movie remakes. 24 stories were selected, and corresponding scenes of original and remade movies were extracted as still images. Forty-five facial expressions of laughter were selected for analysis. Obtained images were 8 pleasant-alone, 26 pleasant-with others, 1 unpleasant-alone, and 8 unpleasant-with others. Smile-detection software was used to measure the strength of the expression of laughter. This suggests that facial expressions are largely elicited by the emotional state, but some other factors such as cultural differences and the actor’s or director’s personal characteristics may also influence expressions. Laughter was seen more commonly in pleasant situations than in unpleasant situations, and the strength of laughter was also greater in pleasant situations. Although explanations for such deviations were not obvious in each case, we suspect that cultural differences have some influence on facial expressions.

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Poster-42

**GENDER IS NOT PERCEPTUALLY SEPARABLE FROM DISPLAYS OF ANGER AND HAPPINESS***K.C. Blackwell, D. Vaughn Becker, Takao Sasaki*

Recent research has shown that decisions about the sex of a face and the emotional expressions of anger or happiness are not independent (Becker, Kenrick, Neuberg, Blackwell & Smith, 2007). Specifically, participants are more efficient identifying men as angry and women as happy. A Garner interference task and a “go, no-go” task provide new evidence that the connections between masculine features and angry expressions and between feminine features and happy expressions are bottom-up, perceptual processes rather than top-down, conceptually-driven ones (e.g. gender stereotypes). Indeed, the evidence is consistent with the possibility that these results stem from a property of the sexual dimorphism of the human face itself.

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Poster-43

## ELECTROPHYSIOLOGICAL RESPONSES TOWARDS UNTRUSTWORTHY FACE

*Koki Ikeda, Toshikazu Hasegawa*

To evaluate the trustworthiness of others is assumed to be an important factor to establish effective cooperation in human society. However, little is known about the neural bases underlying the cognitive process of trustworthiness. Previous brain imaging studies have suggested that it is untrustworthy faces, not trustworthy ones, that activated amygdala, an emotional center of the brain (Winston et al. 2002; Engell et al. 2007). In this study, we evaluated the temporal characteristics of the processing of facial trustworthiness by using event-related potential (ERP) technique. In addition, the effect of attention deprivation was examined in order to eliminate the possibility that the differential activation by untrustworthy faces was due to physical characteristics of the stimuli. Results suggested that the untrustworthy faces elicited emotion-related brain activity within hundreds milliseconds after the stimulus presentation. Implications of such emotion-based judgment regarding the trustworthiness of other's face on human cooperation will be discussed.

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Poster-44

## GENDER DIFFERENCES IN THE CHANGE DETECTION OF FACIAL EXPRESSION

*Tulay Yildirim, Osman Iyilikci, Sonia Amado, Evrim Gulbetekin*

We investigated sex differences in change detection for threat related fear, angry and happy facial expressions. Photographs of different facial expressions of men and women were utilized. In Experiment-1 a flicker paradigm was used where neutral faces were changed with a facial expression and participants were required to detect the change. The results indicated that, male angry faces were detected more rapidly than female angry faces by both male and female participants, while no significant sex differences were found for fearful and happy faces. In Experiment-2, we conducted the same experiment with inverted faces in order to examine the effect of the physical features of the faces on change detection. The findings indicated an anger detection superiority for the inverted pictures where emotion can not be identified, strengthening the idea that detection of angry male faces is more rapid and recognition of aggression on male faces has an adaptive value.

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Poster-45

## INTERFERENCE BETWEEN FACIAL EXPRESSION AND IDENTITY IN FACE RECOGNITION: THE EFFECT OF HAPPY FACES

*Sahoko Komatsu, Yuji Hakoda*

The purpose of this study was to examine interference between facial expression and identity in face recognition using a selective attention task (Garner task). We examined whether there is a difference in interference of happy faces and angry faces. 32 participants judged the expressions or identity of faces while data irrelevant to the task (identity or expression) was either controlled or varied. In terms of the experiment's results, although reaction times (RTs) for identity judgment were not influenced by expression variation, identity variation did interfere with RTs for expression judgment. Furthermore, the level of interference from happy faces was greater than that from angry faces. These results showed that identity information interferes with facial expression recognition, and there is a greater degree of interference with identity when faces are happy. We discuss these results from the perspective of approach and avoidance.

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## Poster-46

## INDIVIDUAL DIFFERENCES IN THE EFFECT OF RELATIONSHIP CONTEXT ON WOMEN'S PREFERENCES FOR SEXUAL DIMORPHISM IN MALE FACE SHAPE

*Finlay Smith, Benedict Jones, Anthony Little, Lisa DeBruine, Lisa Welling, Jovana Vukovic, Claire Conway*

Women demonstrate stronger preferences for femininity when assessing men's attractiveness for long-term than short-term relationships. One explanation of this effect is that the pro-social traits associated with femininity are particularly important for long-term relationships. Other researchers have suggested that stronger masculinity preferences for short-term contexts occur simply because masculine men are easier to classify as 'male'. We investigated these two proposals, finding that women not using hormonal contraceptives demonstrated stronger preferences for feminine men as long-term partners than as short-term partners and that this effect was most pronounced among women who perceived feminine men as particularly trustworthy. Consistent with previous studies, no equivalent effects were observed in a sample of women reporting hormonal contraceptive use. These findings support the proposal that the effect of relationship context on women's masculinity preferences occurs, at least in part, because women value pro-social traits more in long-term than short-term partners.

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## Poster-47

## PREFERENCE FOR WOMEN WITH FAIR SKIN

*Kyoko Yamaguchi, Kenichi Aoki*

Human skin reflectance has been studied in many study areas. According to a cross-cultural study by Van den Berghe and Frost (1986), men preferred women with relatively light skin color in most societies where data were available. They suggested the hypothesis that lighter colored skin would signal fecundity in a female, resulting in sexual selection on less pigmented cutis. However, preference for skin tone is known to change with trend and association between light colored skin and fertility remains unclear.

In the present study, we reinvestigated preference in skin pigmentation. Japanese men and women provided their preferences for skin tone of mates and lovers. The results showed that men tended to prefer women with lighter skin than themselves, especially as lovers. We will discuss cultural influence on the preference for skin tone as well as sexual selection on the evolution of light skin pigmentation in high latitude areas.

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## Poster-48

## CROSS-CULTURAL STUDY ON PREFERENCES FOR RELATIVE LEG LENGTH IN A POTENTIAL PARTNER

*Piotr Sorokowski, Boguslaw Pawlowski*

In this presentation we show how leg length influences attractiveness of humans. Stimuli consisted of 7 different pictures of man and woman in which the ratio between leg length and height was varied from average by elongating and shortening the legs. We found that pictures with legs shorter than the average were perceived by Polish raters as less attractive. Although longer legs appeared to be more attractive, this was true only for the 5% leg length increase; excessively long legs decreased body attractiveness. In further research, 3103 participants from 27 nations rated the physical attractiveness of our stimuli and similar results as in Polish sample were obtained. We hypothesize that such preferences are evolutionarily justified because leg length conveys biological quality. Short and/or excessively long legs might indicate maladaptive biological conditions such as genetic diseases, health problems or weak immunological response to adverse environmental factors acting during childhood and adolescence.

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Poster-49

## CAROTENOIDS, SKIN COLOUR AND HEALTH

*Ian Stephen, David Perrett, Vinet Coetzee*

The yellow dietary pigment  $\beta$ -carotene is associated with immune and reproductive health in humans and other animals. Some bird and fish species use carotenoid-based ornaments to signal health and reproductive status.  $\beta$ -carotene supplementation causes increased  $\beta$ -carotene levels in the skin, causing skin yellowing, reflected in an increased  $b^*$  component in the CIELab colour space. Part 1 of this study finds that individuals' fruit and vegetable intake, and their unsupplemented  $\beta$ -carotene intake are associated with skin yellowing. Part 2 uses  $\beta$ -carotene supplementation to empirically measure carotenoid-induced colour change and applies that change to colour-corrected facial images. In a computer task, participants increased the amount of carotenoid colour in faces to optimise healthy appearance, especially in faces lacking yellow colouration (low  $b^*$ ). High skin carotenoid colour may signal pathogen resistance and reproductive health. Hence for humans, as in other species, high carotenoid levels may be sexually selected.

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Poster-50

## FRIENDS AND RIVALS: EFFECTS FEMALE DOMINANCE AND PHYSICAL ATTRACTIVENESS FOR FEMALE-FEMALE COMPETITION

*Deanna Forrester, Cassie Preston, Krista Alyn, Lynne Honey*

When females evaluate one another, they do so for several purposes. Some females may be perceived as good friends, others may be perceived as rivals or competitors. In this study, we wished to determine whether females are sensitive to cues about the dominance of other females, in addition to cues about physical attractiveness. Participants viewed a photograph (moderately or highly attractive) and read a paragraph (high or low dominance) about a female target and then rated her on several items including those related to friendship and competition. Dominant females were more likely to be perceived as rivals, and non-dominant females were more likely to be perceived as friends. Further, non-dominant females were given higher ratings as potential girlfriends for participants' male friends. We will discuss these results in the context of data pertaining to male mate-choice preferences, and female sensitivity to rivals who may threaten their romantic relationships.

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Poster-51

## PARENTAL INFLUENCE ON MATE CHOICE

*Saori Nojo, Satoshi Tamura, Yasuo Ihara*

It has been hypothesized that human homogamy is in part caused by sexual imprinting-like mechanisms, in which parental phenotype affects mating preference of offspring. In order to examine this hypothesis, we compared faces of unmarried couples and their family members. Facial similarity between each pair of individuals was measured in two ways. First, we asked participants to see photographs of individuals and rate facial similarity between them. Second, we obtained "physical" similarity scores for each pair of faces based on results of factor analysis of facial proportions in Japanese subjects. It turned out that our results partially support the above hypothesis. We also investigated relationship between physical and perceived similarities and found that one of the physical similarity scores is positively correlated with perceived similarity, suggesting that this score can be used as a proxy of perceived similarity between pairs of faces.

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Poster-52

MATE PREFERENCES OF THE BAKA HUNTER-GATHERERS AND ADJACENT BANTU FARMERS IN SOUTH-EAST CAMEROON

*Takanori Oishi*

Many evolutionary psychologists assumes that human mate preferences had evolved under the hunting and gathering life in the past. In this presentation, I will present some results of preliminary survey on mate preferences of the Baka hunter-gatherers, and their Bantu neighbors for comparison, to discuss about the possible influences of recent social change on hunter-gatherer's mate preferences.

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Poster-53

COSTS AND BENEFITS OF FAT-FREE MUSCLE MASS IN MEN: RELATIONSHIP TO MATING SUCCESS, DIETARY REQUIREMENTS, AND NATURAL IMMUNITY

*William Lassek, Steven Gaulin*

On average men have 61% more muscle mass than women ( $d=3$ ). Metabolically, this is supported by much higher levels of testosterone. Potential benefits of greater muscle mass include increased mating opportunities, while potential costs include increased dietary requirements and decreased immune function. Using data on males 18-49 from the third National Health and Nutrition Examination Survey, the ratio of fat free mass to BMI (FFM/BMI) and creatinine (a muscle breakdown product) are the strongest predictors of numbers of self-reported sex partners per year. On the cost side, FFM and limb muscle area explain 14% of the variance in daily energy intake; and the percentage of FFM is the strongest (negative) predictor of C-reactive protein (CRP), a measure of natural immunity. Men in the top decile for FFM/BMI report twice as many sexual partners as men in the bottom decile, but have 33% more energy needs and 37% lower CRP levels.

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Poster-54

CHILDREN OF WAR: TESTING SEX RATIOS BEFORE, DURING, AND AFTER THE HOMELAND WAR IN CROATIA

*Josip Hrgovic*

R.A. Fisher proposed that natural selection should favor 50/50 sex ratio. Any deviations from favored 50/50 sex ratio in a given time should be corrected in the following time period. Thus, increased mortality of males (e.g., during a war) should be compensated with an increased fertility and decreased mortality of males in the following years. R.L. Trivers and D.E. Willard, on the other hand, proposed that sex ratio depends upon parents' environmental conditions. Parents living in poor conditions (e.g., war zone and post-war economic crisis) should favor daughters, while those living in better conditions should favor sons. Those two propositions are tested on economic and demographic data on Croatian population before, during, and after the Homeland war. Although there were no differences in sex ratios of newborns during a 40-year period, we found significant changes in sex ratios in mortality among various age-groups in post-war years.

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Poster-55

## THE NIKE SWOOSH LOGO SHAPE OF AGE-SPECIFIC ABORTION RATIOS IN MODERN SLOVAKIA

*Peter Sykora*

Age-specific abortion ratios in modern Slovakia are analysed in this paper. The U-shaped curve with the highest values for the youngest and for the oldest age groups is generally predicted for such data, as it is for example a case for induced abortion ratios in modern Sweden (Tullberg and Lummaa, 2001). However, I found that data for abortion ratios in Slovakia seem to fit rather the Nike swoosh logo shape than the symmetrical U shape. This shape of the curve remains almost the same across eight consecutive years (1993 – 2000), although mostly right arm of the curve is gradually shifting towards lower values. Probably as a consequence of increase in use of humoral contraception among women older than 25 during the 1990s and a consecutive decrease in abortion rate. Relations to age-specific infanticide ratios and parity classes will be discussed.

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Poster-56

## INCREASING STRESS REDUCES THE LEFT CRADLING BIAS IN MALES HOLDING A “CRYING” DOLL

*Shazia Khan, Brenda Todd*

A strong preference to hold infants and dolls on the left, rather than right, side has consistently been found in mothers, nulliparous women, and girls. Findings support the explanation that cradling side is contralateral to the hemisphere dominant for emotion and face processing and also that stress and depression have the effect of reducing the left bias. Males typically show little or no lateral cradling bias, unless they are fathers of newborns. This study finds a left cradling bias, comparable to that of females, in males (non-fathers) when they are asked to imagine a doll is their own newborn and that this bias is significantly reduced when stress is increased by both administering a cold pressor test and inducing a negative expression and crying sounds in the doll that they hold. Results are compared to the finding that cold pressor stress alone reduces a left cradling bias in nulliparous females.

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Poster-57

## BIS/BAS AS HYPOTHESIZED RISK FACTORS TO ANXIETY AND DEPRESSIVE SYMPTOMS

*Yusuke Takahashi, Shinji Yamagata, Nobuhiko Kijima, Kazuo Shigemasu, Yutaka Ono, Juko Ando*

Anxiety and depressive symptoms co-occur more commonly than would be expected by chance. What caused these two to be comorbid and to be distinctive? Data for this study were obtained as part of ongoing longitudinal twin study. Completed questionnaires on their temperaments (e.g., BIS and BAS from Gray's model) were collected from 424 pairs at 1st wave. At 2nd wave, a questionnaire on their mental states was administered to 156 pairs of twins. The results of behavioral genetic analyses showed that BIS is thought to be a general diathesis for anxiety and depressive symptoms, BAS is thought to be a specific risk factor for depressive symptoms. The analyses also revealed that the genetic variance of emotional problems was completely explained by that of temperaments. Gray's model of temperaments could clarify developments of anxiety and depressive symptoms, delineate these etiologic mechanisms, and provide information with implications for the preventive interventions.

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Poster-58

## COSTS AND POSSIBLE BENEFITS OF DELAYED WEANING IN NORTHEAST INDIA

*Kersti Harter, Donna Leonetti*

Introduction of complementary foods and cessation of breastfeeding are contingent on ecological factors. Benefits may accrue to mothers in delaying complementary feeding even when experiencing negative consequences associated with breastfeeding. Cox regression of data on breastfeeding and complementary supplementation from a 2001 study of 429 Bengali and 258 Khasi women in Northeast India shows associations between time to supplementation and breast pain. While Bengali women tended to delay complementary feeding for longer, women of both groups who experienced breast pain had a lower risk of rice supplementation. However, Bengali and Khasi who reported breast pain tended to supplement significantly earlier with auxiliary milk than women without pain (for both,  $p < .05$ , adjusted for maternal age). Studies suggest that unlike supplementation with other foods, supplementation with auxiliary milk prolongs the time to cessation of breastfeeding. Our findings imply there may be benefits to women delaying weaning even when experiencing breast pain.

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Poster-59

## PERCEPTIONS OF NATURAL IN THE DOMAINS OF FOOD AND MEDICINE

*Jordan Serin, Roger Sullivan*

This study takes an evolutionary approach to the meaning of "natural" as a desirable attribute in food and medicine. We follow the work of Rozin et al. (2004) and Rozin (2005) in using a questionnaire to document and examine this "natural preference". Data for the current study were collected in Sacramento, California using several samples: undergraduate students from CSU-Sacramento, shoppers at a natural foods market and hobbyist gardeners. A comparative, non-US sample of respondents was drawn from undergraduate students in Mexico City. Participants rated the naturalness of various food and medicinal items; they indicated whether they prefer various products in either their processed or natural forms; and they indicated whether they consider natural forms of foods and medicines to be healthier or more effective than their processed counterparts. We present and interpret preliminary results with reference to evolutionary theoretical models of ancestral diets, domain-specific cognitive mechanisms, and the naturalistic fallacy.

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Poster-60

## DERIVATIONS OF PREFERENCES AND CHANGES OF PREFERENCES BY COMPUTER SIMULATIONS FROM A DARWINIAN VIEW POINT

*Yoshio Sakurai*

Derivations of "preferences" and "changes" of preferences by computer simulations from a Darwinian view point The concept, "preference" is very important one in modern social sciences. But they seldom teach us how the "preferences" are formed and how "preferences" change. I tried to investigate these two questions by multi agents simulation. I made two hypotheses from a Darwinian view point. Hypothesis I: Under the given environment, each agent will acquire such preference that will make the probability of reproduction of same agents maximum. Hypothesis II: If the speed of change of the environment is sufficiently fast, the agents will acquire "preference change function" s. I tested these two Hypotheses by multi agents simulation. I got affirmative results.

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## Poster-61

## EVALUATION OF MORAL WRONGNESS ON THIRD-PARTY SIBLING INCESTUOUS BEHAVIOR AMONG JAPANESE COLLEGE STUDENTS

*Lei Tsuyuki, Kenichi Aoki*

In almost all societies, incest taboo exists. In this survey, we examined the relationship between moral wrongness about sibling incest and length of co-residence, childhood relationship with opposite-sex sibling(s) to know how personal sentiment about sibling incest occurs. The results showed that females, whose mothers are more rigorous about dating, considered sibling incest more wrong. On the other hand, males, who lived longer with opposite-sex sibling(s) during age 0-10 regarded sibling intercourse as more tolerant after controlling for mother's rigorousness about dating, childhood co-residence and intimacy with opposite-sex sibling(s). This result is different from the survey in the US. This difference in morality may be due to the difference in laws, considering that incest is illegal in the US whereas, only marriage between close relatives is prohibited in Japan.

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## Poster-62

## THE EVOLUTION OF MALE ANDROPHILIA IN SAMOAN FA'AFINE

*Alatina Ioelu, Doug van der Laan, Paul Vasey*

"Androphilia" refers to sexual attraction to mature males, whereas "gynephilia" refers to sexual attraction to mature females. The female fecundity hypothesis holds that the reproductive costs associated with genes for male androphilia are offset by the reproductive benefits that occur if the same genes result in increased reproductive success in female kin (Camperio-Ciani et al., 2004). The kin selection hypothesis holds that, in the absence of direct reproduction, androphilic males exhibit elevated altruistic behaviour toward close kin to increase their indirect fitness (Vasey, Pocock & VanderLaan, 2007). Our data from Independent Samoa furnish tentative support for both hypotheses. The mothers of fa'afine (i.e., Samoan effeminate androphilic males) are more fecund compared to those of gynephilic males. Moreover, androphilic males in Samoa exhibit significantly higher avuncular tendencies compared to gynephilic males with no children. We discuss how data in support of the female fecundity and kin selection hypotheses can be integrated.

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## Poster-63

## SEX DIFFERENCES IN RESPONSES TO HOMOSEXUAL AND HETEROSEXUAL INFIDELITY

*Alp Giray Kaya, Seda Can, Seda Dural*

Evolutionary theory predicts that the responses to different types of infidelity vary by sex. In the present study, it is aimed to investigate whether the responses to heterosexual and homosexual infidelity would differ between sexes in a forced-choice infidelity paradigm. To test the hypothesis that the responses to sexual and emotional infidelity are affected by homosexual and heterosexual infidelity, two alternative scenarios portraying either sexual or emotional infidelity were produced. The sample included 449 male and 432 female participants. In addition to the responses elicited by the scenarios, their first ordered emotions were gathered. A four-way exploratory frequency analysis was performed to develop a hierarchical log-linear model of infidelity. In the heterosexual infidelity condition, male participants reported that they were disturbed more by sexual infidelity than emotional infidelity and females were vice versa. However, in the homosexual infidelity condition, males and females responded similarly to both sexual and emotional infidelity.

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Poster-64

THE APPLICATION INTO THE AFFECTIVE DOMAIN OF MECHANISMS RELEVANT TO THE ORGANIZATION OF COUNTERINTUITIVE MOVEMENTS: THE ORIGIN OF THE GENUS HOMO

*Jacques van Hoof*

The core problem in understanding human evolution is understanding counter Darwinian behavior as fluid ranking and self sacrifice.

In order to understand these specific human qualities a new developmental model was designed. In this model it is assumed that during the phylo- and ontogenesis of the human brain two (striatal and cerebellar) motor mechanisms, relevant to the programming of counterintuitive movements, are implemented in a repetitive way from the "how to do" motor domain into the "what to do" intentional (limbic) domain through cortical- subcortical circuits. This model elucidates how by exaptation counterintuitive intentions as self sacrifice, modesty, fluid ranking and susceptibility for the intentions (rhythms) of group members can be generated. It has greater explanatory power than current alternatives and it may provide a useful framework for further research.

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Poster-65

DIFFERENTIAL EFFECTS OF PHONOLOGICAL INTERFERENCE: ARE FEMALES MORE SENSITIVE TO PHONOLOGICAL INFORMATION THAN MALES?

*Sho Tsuji, Kazuko Komori, Elke van der Meer, Takane Ito*

Sex differences favoring females have been reported in tasks requiring phonological judgments, leaving open the question if this reflects phonology-specific or more language-general processing differences. We examined if females were disfavored in tasks inducing phonological interference, which should only be the case if the sex differences were specific to the processing of phonological information.

In a lexical decision task measuring the effect of homophone density (HD; performance differences on words with and without homophones), we induced (1) high phonological interference by presenting pseudohomophones or (2) low phonological interference by presenting random nonwords as correct no responses in a between-subject design (N=80).

A significant interaction between effect of HD, sex and interference condition revealed that females showed a significant HD effect only in (2), the opposite being true for males. The results strongly support sex differences in phonological processing with females being more sensitive to phonological information.

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Poster-66

PSYCHOSOCIAL RESOURCES SHAPE THREAT DETECTION

*Douglas Yeung, Kent Harber*

Recognizing potential threats is fundamentally important to emotional well-being and physical survival. Psychosocial resources (e.g., social support, self-worth) provide the means to cope with perceived threats. Using degraded visual displays of menacing human figures, we show that exaggerated distortions of danger may result if one is already feeling vulnerable. Conversely, people who feel equipped to take on stressful, ambiguous situations may be less likely to perceive potential threats in an exaggerated fashion. Four studies tested whether resources influence detection sensitivity to angry human figures. Fearful participants with either depleted, boosted, or unchanged psychosocial resources judged the presence or absence of moving figures expressing one of five emotions – angry, happy, sad, fearful, or neutral. Overall, fearful participants were more likely than neutral participants to perceive an angry figure when in fact none was present. Resources, however, moderated the relationship between fear and impaired detection of angry figures.

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Poster-67

DISCUSSION ON THE RELATIONSHIPS BETWEEN GLOBAL/LOCAL PERCEPTUAL PROCESSINGS AND ILLUSORY PERCEPTIONS WITH THE EBBINGHAUS-TITCHENER CIRCLES

*Noriyuki Nakamura, Sota Watanabe, Kazuo Fujita*

A target circle surrounded by larger inducer circles looks smaller and that surrounded by smaller circles looks larger than the reality. This is the Ebbinghaus-Titchener illusion. Here we show that the Ebbinghaus-Titchener figures also induce strong illusion in pigeons and bantams, but, surprisingly, in the other direction; that is, all 5 pigeons and 3 bantams judged the target circle surrounded by larger circles larger than it really is and vice versa. Baboons (Parron & Fagot, 2007) and some humans (autism: Happé, 1996; seminomadic Himba people: de Fockert et al., 2007), who show local precedence in perceptual processing as well as pigeons (Cavoto & Cook, 2001) and chimpanzees (Fagot & Tomonaga, 1999) do, are known not to experience an illusory perception by the circles. These findings suggest that humans have evolved global-oriented perceptual (or perhaps cognitive) processing.

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Poster-68

EVOLUTION OF CAST SHADOW PROCESSING: FROM A COMPARISON BETWEEN HUMANS AND NEW WORLD MONKEYS

*Ayumi Sakai, Kazuo Fujita*

Our previous finding that depth perception from texture gradients differs between humans and New World monkeys indicates that depth processing may be greatly influenced by visual environments. Cast shadow is a pictorial depth cue strongly influencing human judgments of spatial position of objects, and could be a useful clue of depth to arboreal monkeys having lived in "shadow-rich" forests. This study investigated whether arboreal monkeys use cast shadows in depth perception. The monkeys classified computer-drawn balls of various sizes into large or small. In test trials, the balls appeared with a cast shadow on a ground context. The shadow position affected size judgments as in humans, but the processing of "impossible" shadow was different from humans'. These results suggest that arboreal monkeys use cast shadows as a depth cue and humans, surrounded by artificial lighting or flat surfaces, may have evolved a special strategy on pictorial depth processing.

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Poster-69

CHANGE DETECTION IN PHYLOGENETIC AND ONTOGENETIC THREAT-RELATED STIMULI

*Asli Dogan, Sonia Amado, Osman Iyilikci, Evrim Gulbetekin*

In the present study, a change detection paradigm is used to study attentional bias for both phylogenetic and ontogenetic fear-related stimuli. Attentional bias was assessed by a flicker task, similar to the task used by Ro, Russel & Lavie (2001), where subjects were to detect the changing picture among six images of different categories presented. A pilot study was conducted in order to confirm the similarity in physical features of the image pairs. In the first experiment 50 subjects participated and change detection superiority for the wild animal category was found over cute animal, furniture, stationery, vehicle, fruit and toy categories. 50 subjects participated in the second experiment where weapon pictures were used instead of wild animal pictures and no change detection superiority was found for this ontogenetic fear related category. Results are discussed from an evolutionary point of view.

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## Poster-70

## KEEPING TRACK OF MULTIPLE AGENTS VS. OBJECTS

*Silke Atmaca, Areti Chouchourelou, Wolfgang Prinz*

Humans are known to be able to track about 4 identical objects for 10s in a standard Multiple Object Tracking (MOT) task (e.g. 8 identical objects move randomly for 10s, 4 of the objects are targets; Pylyshyn & Storm, 1988). However, we assume that this cognitive tracking device evolved in order to keep track of multiple agents (biological entities capable of intentional, goal-directed action), rather than the tracking of any sort of (inanimate) objects. As a consequence, we propose that MOT is a perceptual task that, in accordance with the theory of Common Coding (e.g. Prinz, 1990), should highly engage systems involved in motor control, possibly including human mirror systems. Biological movements should thus be easier to track, as observers should be able to rely on their own motor repertoire during tracking.

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## Poster-71

## EXAMINING THE ROLE OF CULTURAL APPROVAL FOR FEMINITY VISUAL CONSUMPTION IN THE EARLY TAIWAN MEDICINE ADS

*Chyong-Ling Lin, Jin-Tsann Yeh*

The study identified Taiwanese medication behavior revealing a mix of ethical issues focused on female role expectations and cross cultural depictions. Patent medicines are “must have” items when Taiwanese travel overseas. The attitude they possess when taking medicine is one of healing if they are sick; they also believe medicine, where treatments are suggested by a sorcerer instead of a doctor, can make people grow stronger. This mysterious belief reveals Taiwanese medication emotions associated with a variety of feminist personality traits which is transferred to a medication’s effectiveness. The study examined the connection to social rituals applied in advertisements that expressed social value of women. The intensive exposure of feminist depictions in the ads can be seen as a path of “image learning”. The self-image building likely influenced and constructed women’s self-expression preferences, purchasing attitudes, social position aspirations, and cultural approval of new femininity expectations.

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## Poster-72

## REPRESENTATIONS OF FEMININITY AND MASCULINITY IN JIMMY LIAO’S PICTURE BOOKS

*Chih-Hsiang Ko*

Femininity and masculinity are not natural born but multiple, hierarchical, collective, constructed and dynamic. Children can be introduced to archetypes earlier, and this can be accomplished with picture books. This paper discusses the idiosyncrasies of masculinity and femininity in Jimmy Liao’s picture books, which are aimed to make readers think about the characters’ feelings and how special events are revealed in pictures through the combination of text and illustrations. The emotions and experiences of characters are shaped by the author’s assumptions about what it means to be male and female. In addition, picture books provide role models for children in defining standards for feminine and masculine behavior, and can also reflect much of the conflict and controversy in the society regarding moral standards and lifestyles. Finally, the latency of sexism in Jimmy’s picture books and implications for children and parents are discussed.

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## Poster-73

## THE CROSS-CULTURE ANALYSIS OF FEMALE ROLE PORTRAYAL DEPICTION IN TAIWANESE PRINT ADS

*Chyong-Ling Lin, Jin-Tsann Yeh, Shyan-Bin Chou*

Female endorsers in advertising have been doing product information promotion in the market. With more and more highly educated women participating in the labor force, the conceptions of feminist depictions in advertising have become a perplexing issue. The female role portrayals of the past are not able to totally reflect the expectations and beliefs of contemporary women. The author collected print ads as data from three types of the highest circulation magazines: foreign women's magazines (Chinese edition), domestic women's magazines, and domestic management magazines subscribed to in Taiwan to investigate what were the favorite feminine patterns and feminist depictions in a traditionally masculine society. The results showed classical beauty and girl-next-door images were "acceptable" gender-role behavior exposed highly in domestic magazines, which might contribute to conservative Confucian beliefs. On the other hand, being trendy was a significantly high preference for contemporary feminist depictions in foreign women's magazines.

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## Poster-74

## SERIATION METHODS AND SOCIAL NETWORK STRUCTURE

*Carl Lipo, Mark Madsen*

Varying social network topology impacts the distribution of stylistic artifact classes when measured through frequency seriation. Here, we present a simulation of random copying of stylistic traits among individuals situated in a range of interaction networks from fully-connected to small-world and random graphs. The results provide a new means for standard frequency seriation techniques, and define classes of social networks that can be distinguished by seriation of artifact frequencies.

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## Poster-75

## THE ARGUMENTATIVE THEORY OF REASONING AND CROSS-CULTURAL PSYCHOLOGY

*Hugo Mercier, Jean-Baptiste van der Henst, Hiroshi Yama, Yayoi Kawasaki, Kuniko Adachi*

Sperber has proposed an evolutionary theory in which reasoning evolved for argumentative purposes. Some cross-cultural psychologists (Nisbett, Peng, Norenzayan) have claimed that partly due to a lack of argumentation some cultures differ fundamentally in their ways of reasoning. This would be very worrisome for the argumentative theory of reasoning. We have inquired into the anthropological, historical and sociological basis of these claims, and found them wanting. Moreover a detailed analysis of the experimental evidence put forward in their support shows that instead of revealing deep dissimilarities in ways of reasoning it only demonstrates cross-cultural differences in the way context triggers different kinds of reasoning. Lastly, we have conducted cross-cultural experiments that have revealed the extent to which important features of reasoning are shared by Easterners and Westerners. We conclude that the cross-cultural data are not a real threat to this evolutionary theory of reasoning.

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Poster-76

## ANGLE JUDGMENT BY JAPANESE PEOPLE: ARE THEY GOOD AT RELATIONAL JUDGMENT?

*Sota Watanabe, Noriyuki Nakamura, Kazuo Fujita*

Kitayama et al. (2003) showed that Japanese people are better at judging line length relative to the surrounding frame than doing it based on the absolute length of the line, whereas Americans show a reversed tendency. We investigated whether this tendency remains the same for another dimension, the line angle judgment. We requested Japanese people to draw a line that matched either in the angle relative to the sample figure or in the absolute angle; in fact, the subjects were shown sample and test stimuli composed of 4 lines converged at one point on the computer display. We defined the angle constructed by the two inner lines as a target angle. After observing a sample stimulus, the subjects adjusted the target angle of the test stimulus to match the sample either absolutely or relatively in each trial. The results suggest the possibility that Japanese are better at judging angle relatively.

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Poster-77

## DECISIONS UNDER AMBIGUITY: EFFECTS OF SIGN AND MAGNITUDE

*Keigo Inukai, Taiki Takahashi*

Decision under ambiguity (non-probabilistic uncertainty) has been attracting attention in traditional decision science research. Expected utility theories assume that individuals make decisions based on the probability of an uncertain outcome. However, under most ecological conditions, humans must make decisions with unknown probabilities of outcomes. Although a great deal of research has examined decisions involving ambiguous gains, little attention has been paid to the magnitude and the sign of outcomes. In this study, we examined the effects of sign (i.e. gain and loss) and the magnitude of outcomes in decision under ambiguity and additivity of subjective probabilities, by using the Ellsberg's urn paradox. We observed that ambiguity aversion was observed for both gain and loss signs, but subadditivity of subjective probability was not observed in negative outcomes. These results demonstrate the effectiveness of incorporating ecological and evolutionary perspectives when investigating decision under ambiguity.

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Poster-78

## CONJUNCTIVE ERRORS AS A BY-PRODUCT OF ECOLOGICAL RATIONALITY

*Nina Lauharatanahirun, Heather Coffin, Barbara Drescher, Sun-Mee Kang*

Ecological rationality is described as the performance of a particular heuristic, in the right environment, and in terms of a specific situation (Hutchinson & Gigerenzer, 2005). Heuristics are evolved mechanisms which allow humans to make judgments in situations of uncertainty. They are strategies which are part of a system that operates as a bounded rationality, limited by factors unrelated to reasoning skills (Gigerenzer, 1991), usually resulting in adequate choices. The "Linda problem", first used by Kahneman and Tversky to demonstrate the representativeness heuristic, includes a conjunction error as an answer choice. The conjunction error option has been significantly chosen by participants in previous studies implying that participants fail to use probabilistic reasoning. This study revisits the Linda Problem by including a hint, representative and non-representative descriptions. We discuss how the conjunction error hinders the ecological rationality of the representativeness heuristic.

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Poster-79

## THE HUMAN'S RISK PREFERENCE FOR VARIABLE-TIME CHOICE: WHY HUMANS AND ANIMALS ARE RISK-PRONE?

*Takumi Komuro, Tomohiro Kawaguchi, Tatsuya Kameda*

The energy-budget rule (EBR) is an optimal foraging model that has been proposed to explain animal's food choices when the waiting time until food acquisition is variable (e.g., Stephans, 1981). The EBR predicts that animals are risk averse when they are in "positive energy budget" where net energy gains exceed energy requirements. However, past experiments have failed to support the EBR prediction, often yielding contrary results that animals are consistently risk-prone even though they are in a positive energy budget (e.g., Bateson & Kacelnic, 1997). The EBR hypothesis has not been tested with humans, thus we examined human's risk preference for a variable-time choice with money as targeted resource. Results showed that humans were also risk-prone. However, when statistically controlling for participant's time discount rate, their choices were better characterized to be risk-neutral. Implications for human risk preferences are discussed.

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Poster-80

## WHAT MOTIVATES MEN TO RISK-SEEKING BEHAVIOR?

*Aiko Murata, Takumi Komuro, Minako Ishiyama, Hiroshi Takei, Tatsuya Morimoto, Tatsuya Kameda*

Fear is one of the basic emotions which function is to prepare us against potential dangers and to facilitate avoidance or escape from them (Ohman & Mineka, 2001). However, it is often the case that some people dare to engage in potentially fear-provoking activities, such as riding on a roller coaster or visiting a haunted house in amusement parks. This phenomenon suggests that the risk-seeking behavior may have some adaptive functions. We hypothesized that risk-seeking behavior may enhance one's social status or mate values in a group. We tested this hypothesis by a vignette experiment. Results revealed that men showed a greater risk-taking tendency in the presence of women than in the presence of other men, while women did not differentiate these two cases. These patterns suggest that the doing risk-taking behavior may be seen as men's showing-off strategy to attract potential mates.

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Poster-81

## TIME PERSPECTIVE IS A MEDIATOR OF RISKY BEHAVIORAL STRATEGIES RATHER THAN A BYPRODUCT

*Daniel Kruger, Thomas Reischl, Marc Zimmerman*

Life History Theory is a powerful framework for understanding divergent behavioral strategies as functional adaptations to environmental conditions. Theorists and previous research suggest that individuals developing in relatively less certain environments will exhibit riskier, present oriented, behavioral strategies because of the low probability of reproductive success for more cautious approaches in ancestral times. We found that present and future orientations completely mediated the relationship between positive and negative aspects of inner-city middle school students' neighborhood social environment and reports of interpersonal aggression and illicit resource exploitation. Critics responded that both time perspective and perceptions of environmental conditions could be a byproduct of inherited variation in life history strategies. Additional analyses demonstrated that the mediational model had a superior fit to models depicting time perspective as purely inherited or a byproduct of environmental conditions which is only incidentally related to behavior.

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## Poster-82

## WAS EXPANSION OUT OF PROTOLANGUAGE MOTIVATED BY THE INTERNAL REWARD FROM CONCEPT-MATCHING?

*Brian Bayly*

At the transition from protolanguage to language an issue is motivation. Some present-day apes have language ability but do not use it beyond short-range concerns, whereas in the past, some community started language on exponential growth beyond the here-and-now. Among other factors, different degrees of motivation may have operated.

The copiousness of human language comes from abstract concepts such as "sinuous." Most such words denote categories; forming a category involves similarity; recent experiments\* suggest how in human brains noting similarity elicits pleasure, an internal reward. Earlier experiments suggest that in apes this reward is weaker. If now present, this neurophysiological contrast must have developed since the divergence. Reinforcement for noting similarity would show natural variation in a population. High-reward individuals would find each other and share newly noticed similarities. The internal reward is a candidate motivator for expansion of language.

Lee, B. et al. 2007 *Neuroscience Letters* 413, 210-215.

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## Poster-83

## SPONTANEOUS REGULATION OF THE SYNCHRONIZED ACTIONS WITH HUMANS BY A CHIMPANZEE

*Hiromi Kobayashi, Noritomo Nobuyoshi, Yasushi Kiriyama, Kazuhide Hashiya*

Humans tend to mimic or synchronize behaviors with the partner for interaction, resulting in facilitating prosocial behaviors and functioning to form social bonding. We examined if similar tendency of spontaneous synchronization of actions with others can be observed in a captive chimpanzee. The Subject was a 33-year-old male kept in Itozu-no-Mori Park. The Experimenter faced with S through a cage and interacted with him. After the warm-up period of playing such as chasing, when S started jumping or swinging repeatedly, popular behavioral repertoires for S, E mimicked it in a synchronized manner; E initiated jumping or swinging when S did not do so. In the course of synchronized jumping or swinging, E inserted a violation of the rhythm on the purpose of observing S's reaction. Frame-by-frame analysis of the video recording suggested that the chimpanzee spontaneously regulated the pace of action, adjusting the action of the human.

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## Poster-84

## MEMORY FOR CHEATERS: FACES OR RULES?

*Joann Poh, Laurence Fiddick*

Social Contract Theory predicts enhanced memory for cheaters. Empirical attempts to test this proposal have generally produced weak or non-supportive results. Whereas past studies have focused on facial recognition, the present study tests the proposal that it is memory for rule-governed behaviour that humans are competent at remembering using a novel extension of Taylor et al.'s (1978) person-confusion paradigm. In the main experiment, 106 participants saw faces that were paired with rules and were later asked to recall which particular rule each face was paired with. In a follow-up study, a separate sample of 45 participants rated the personality implications of rule compliance. The results showed no enhanced facial recognition for cheaters, but that people remember the sort of rule that the person broke (based on the rules' content and not their syntax). This effect did not appear to be influenced by either the importance or personality implications of rule-compliance.

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Poster-85

## CAN A VICTIM'S ANGER BE APPEASED BY A TRANSGRESSOR'S VOLUNTARILY ACCEPTING AN APOLOGY COST?

*Esuka Watanabe, Fumiko Masuda, Yohsuke Ohtsubo*

Being apologized, a victim of an interpersonal transgression needs to decide whether to forgive the transgressor. Unwittingly forgiving an exploitative transgressor could invite further victimization. Zahavi's (1975) handicap principle predicts that the transgressor must prove his benign intention by paying some cost that an exploitative transgressor cannot bear. This prediction was supported by a series of vignette experiments. In the present study, we conducted an experiment including a behavioral measure: a modified dictator game. A fictitious partner made an unfair allocation, and then sent an apology message to participants. In the costly apology condition, participants were explained that the partner paid some money to send the apology message. After receiving it, participants were given an opportunity to send a complaint message to the partner. The result supported the prediction: 1/21 participant who received the costly apology sent the complaint message, while 7/21 did so,  $p=.02$  by Fisher's exact test.

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Poster-86

## ARE FEMALES SENSITIVE TO POTENTIAL DECEPTIONS IN MALES' COURTSHIP SIGNALS?

*Yohsuke Ohtsubo, Esuka Watanabe*

Human males may seduce a female by giving expensive gifts or squandering time for her. Although these wastes could be costly (thus ordinarily honest) signals, they leave room for deception: rich men may afford to give many females expensive gifts. If females are sensitive to male's status in assessing courtship signals, opportunities for deceptive signaling are curtailed. The present vignette experiment asked 134 female undergraduates to imagine that their hypothetical boyfriend (rich-busy vs. poor-free) gave them an expensive gift or spent time with them on their birthday. Participants evaluated how much he loves them. Although participants were sensitive to the type of wasted resource ( $p<.001$ ), they were insensitive to the boyfriend's status (ns): 3.84 vs. 3.80 for poor vs. rich boyfriend's spending money, and 4.31 vs. 4.30 for free vs. busy boyfriend's spending time. We discuss implications of these results for potential deceptions in human males' courtship signals.

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Poster-87

## AN EXPERIMENTAL ANALYSIS OF THE BASIS OF INEQUITY AVERSION: SENSITIVITY TO OTHERS' REWARD IN CAPUCHIN MONKEYS (CEBUS APPELLA)

*Ayaka Takimoto, Hika Kuroshima, Kazuo Fujita*

Sensitivity to others' reward is a prerequisite to have inequity aversion. We investigated whether tufted capuchin monkeys have this sensitivity. In an experimental food-sharing situation, the operator monkeys chose one of the two food boxes containing their own reward and the recipient's. The operators obtained the same food regardless of their choice, whereas the recipients got different food depending on the operators' choice without any effort. As a result, the operators chose randomly to the dominant monkey but more often chose the high-value food to the subordinate individual than when the recipient was absent. However, by blocking visual contacts between the two participants the operators chose low-value food to the dominant monkey more often than when they were alone, and they chose randomly to the subordinate monkey. These results suggest that capuchin monkeys are clearly sensitive to others' reward, may sometimes respond tolerantly to others, and may averse inequity.

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## Poster-88

## SELF AWARENESS FOR EMOTION REGULATION AND GENETIC MODULATION

*Hiroki Murakami, Masahiro Matsunaga, Hideki Ohira*

Emotion regulation is a skill needs for adaptation to social environment. Mindfulness is a psychotherapy which has been developed to treat a range of psychological disorders. Mindfulness can be defined, in part, as the self-regulation of attention, which involves sustained attention, attention switching, and the inhibition of elaborative processing. In this context, mindfulness can be considered a metacognitive skill. Additionally, we are interested in the serotonin transporter (5HTT) gene polymorphism. 5HTT genotype is divided into SS, SL, and LL. These genotypes population has ethnic differences, that is, S carrier population is much greater in Asian than Caucasian. We investigated the different effects of 5HTT polymorphism on subjective emotion and physiological responses in metacognitive self awareness. As a result, SS participants increased negative emotion in both metacognitive and control conditions. However, parasympathetic nervous activity enhanced only in metacognitive condition. L carriers showed no change in both psychological and physiological indices.

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## Poster-89

## DISGUST AND AVOIDANCE FOR STIGMATIC PERSONS AS REVERSED MATE PREFERENCE

*Kazuaki Kawano, Takashi Hanari, Kimio Ito*

In previous studies (e.g. Buss, 1989), it was suggested that there are similar sex differences in mate preference among many cultures. This study aimed to clarify some sex differences in disgust and avoidance for persons of opposite sex who have a stigma (then, disadvantageous for mate selection). Questionnaire consisted of items to rate disgust and avoidance for a recalled unpleasant person and supposed persons who have various stigmatic properties. In addition, it included items of mate preferences. Disgusts for supposed stigmatic males were stronger than for females in both sexes. However, male participants showed similar levels of avoidance for both stigmatic males and females, while females were more avoidant for stigmatic males. Female's preference to good-looking mate related to disgust and avoidance, particularly for appearance-related stigma. Functional implications of the results are discussed.

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## Poster-90

## OBJECTIVELY ASSESSED MASCULINITY AND IT'S CORRELATION WITH CATTELL'S PERSONALITY TRAITS

*Vera Pivonkova, Jitka Lindova, Jan Havlicek, Anna Kotrcova*

In previous studies a possible connection between objectively assessed morphological features of masculinity and the results of a personality questionnaire has not been established.

In our study 69 male students filled in Cattell's 16PF questionnaire and their facial photographs with neutral expression, right profile photographs were taken.

Due to a great morphological complexity of most facial features we carried out an anthroposcopic analysis of the target photographs. The anthroposcopic approach provides better information on the relation of particular physical features to their vicinity than the absolute metric data. We created a masculinity index (10 features) which included the most distinctive sexually dimorphic features: the size of arcus superciliares and glabella, chin width, height and chin profile, eyebrow thickness and density, eye opening height, forehead profile, nose height.

The only correlation of the masculinity index with the psychological questionnaire factors was the positive correlation with Dominance.

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## Poster-91

## THE ADAPTIVE SIGNIFICANCE OF HONESTY-HUMILITY, AGREEABLENESS AND CONSCIENTIOUSNESS

*Ai Tee Ho, Laurence Fiddick*

Buss's (1991) and Nettle's (2006) evolutionary theories of personality explain the universality of personality dimensions with respect to psychological adaptations for solving discrete adaptive problems. In this paper, the relation between two adaptive problems: social exchange and hazard management (Fiddick et al., 2000), and three personality dimensions: honesty-humility, agreeableness and conscientiousness (Ashton & Lee, 2001) are considered in more detail. Specifically, it is proposed that there is an association between honesty-humility/agreeableness and the breaking of social contract rules (social exchange), and an association between conscientiousness and the breaking of precautionary rules (hazard management). These predictions were tested on a total of 134 participants in two separate studies with separate Singaporean and Indian participant samples. While overall results are supportive of the predicted associations, the limitations and suggestions for future replication studies are given in view of the discrepant findings generated by the Indian sample in one of the study.

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## Poster-92

## ESCALATION FROM INDIVIDUAL HARMFUL BEHAVIOR TO INTERGROUP CONFLICT - EXPERIMENTAL STUDY OF INTERGROUP VICARIOUS RETRIBUTION -

*Kengo Nawata, Hiroyuki Yamaguchi*

The purpose of this study is to examine whether intergroup vicarious retribution also occurs in a temporary group of a laboratory experiment. When a harmful behavior is from an outgroup member to an ingroup member, revenge between unrelated third parties in the same groups will often boils up. This is called vicarious retribution (Lickel et al., 2006). Intergroup vicarious retribution acts as a trigger for escalation from individual harmful behavior to intergroup conflict by the chain of revenge. The experiment is designed to compare the extent of harm to an outgroup member between two condition; after saw harm from another outgroup member to an ingroup member v.s. after saw harm of unknown direction. As predicted, more harm is done in the former condition than in the latter condition. We discussed these results from the social psychological perspective of social identity and evolutionary one of group-level protection from danger.

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## Poster-93

## WOMEN'S COALITIONAL AGGRESSION: THE INFLUENCE OF ALLIES AND COMPETITION ON GOSSIPING

*Nicole Hess, Edward Hagen*

Evolutionary theories of human coalitional aggression focus almost exclusively on men. Evolutionary theories of women's cooperative behavior, in contrast, emphasize nurturing and childcare. Among non-human primates, however, females often cooperate in physical contests with other females over access to resources. We have proposed an account of human female coalitional aggression that emphasizes the cooperative collection, analysis, and dissemination of information ('gossiping') as a strategy to manipulate reputations, thereby increasing access to contested material and social resources. We report results of a study investigating the influence of allies, competition, and sex on gossiping behavior. Specifically, we tested the effects on gossiping of the value and contestability of the resource, the presence of allies, the relevance of the gossip to the competition, and sex.

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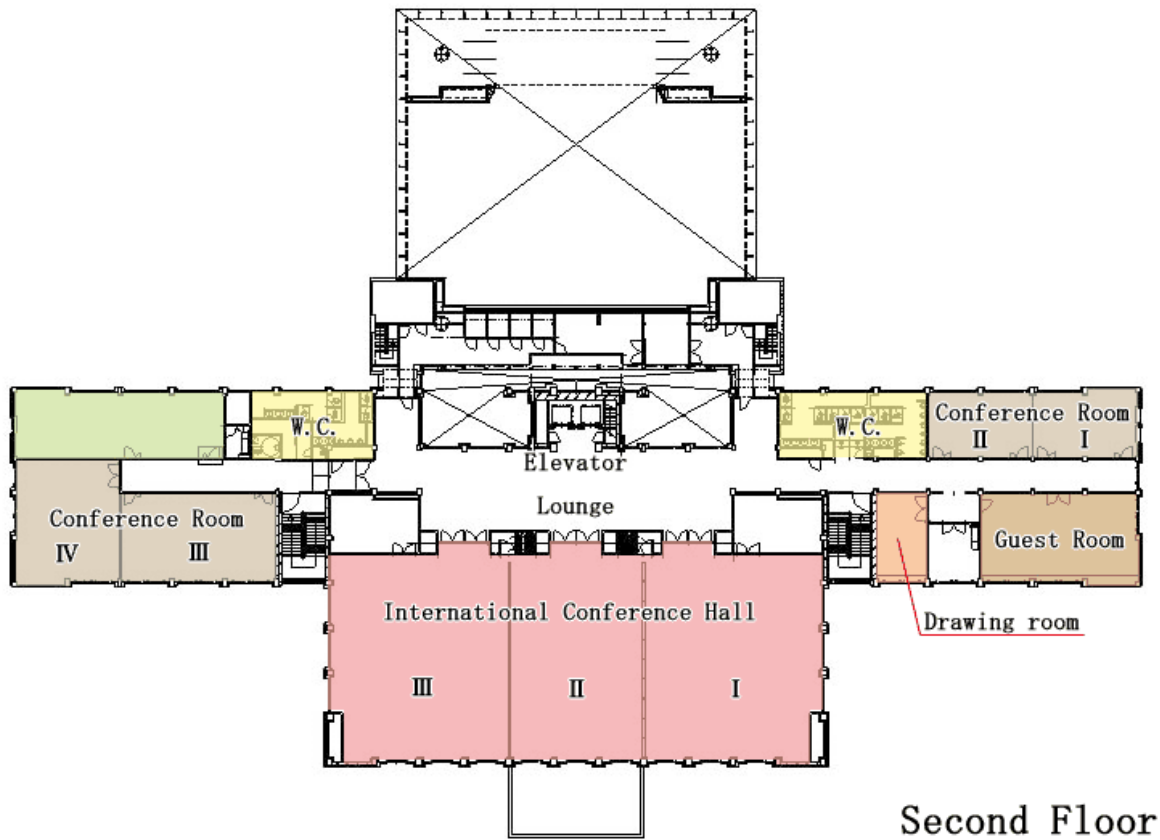
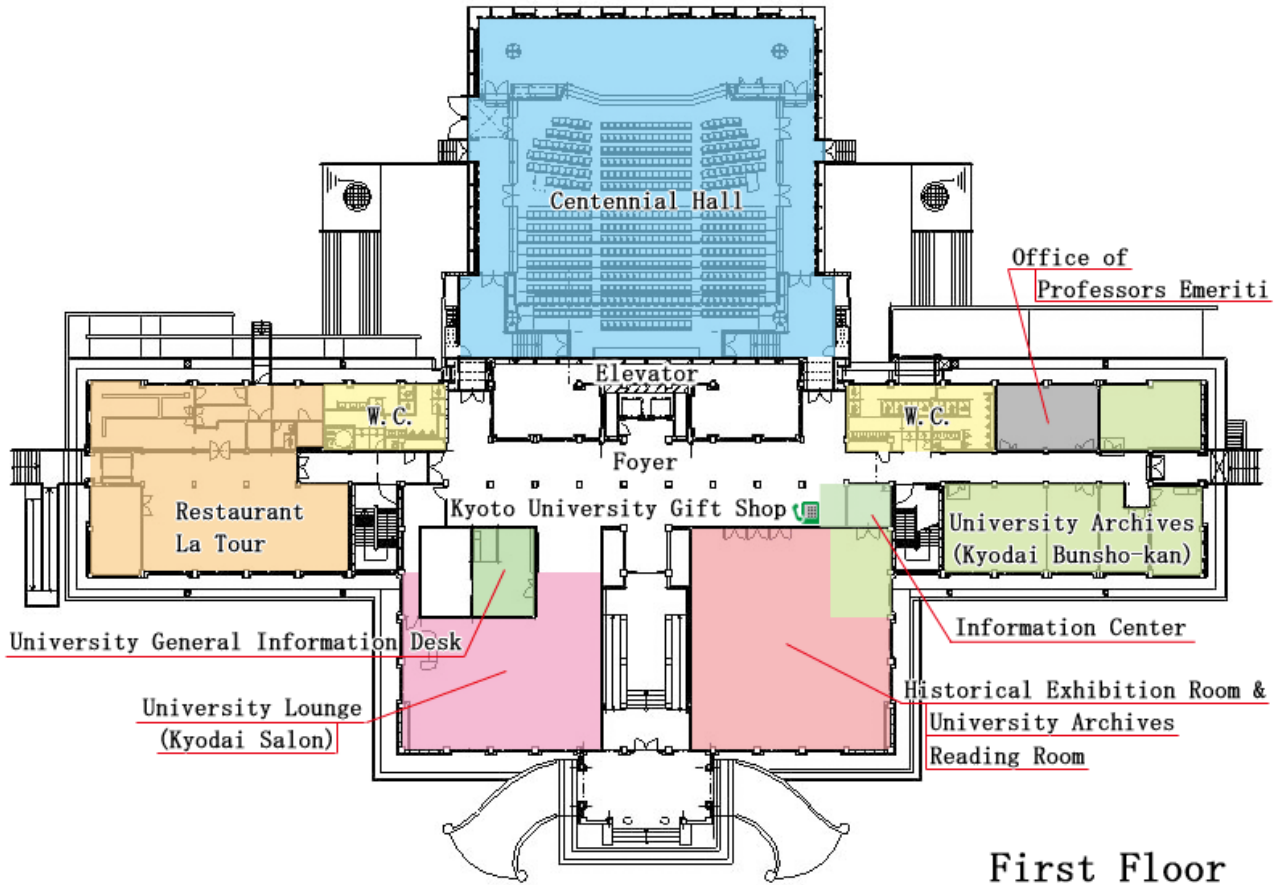
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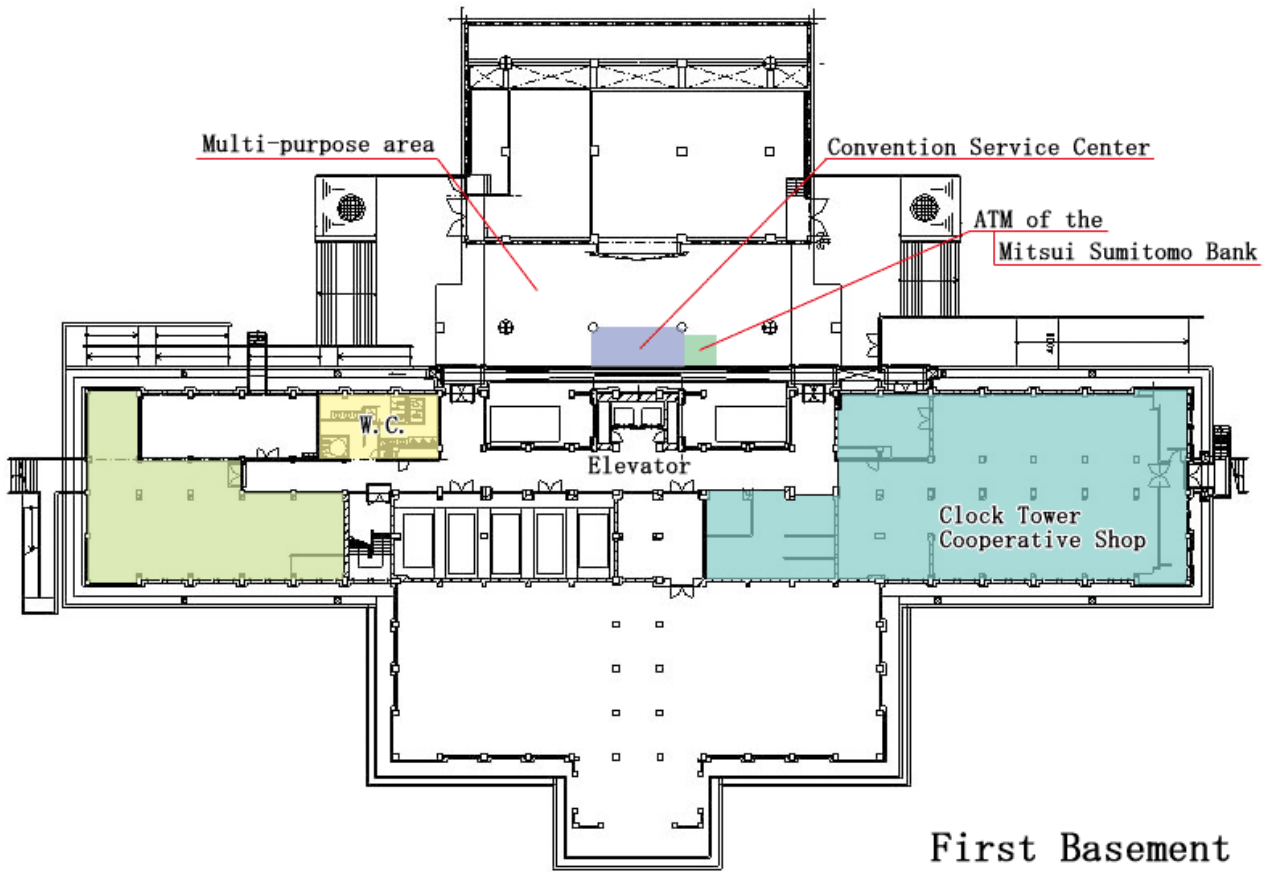
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# Main Campus / West Campus / Yoshida-South Campus

## Main Campus

1. Main Gate
2. Clock Tower Centennial Hall  
University Archives  
Restaurant "La Tour"
3. University Head Office
4. Student Lounge KI-ZU-NA
5. Center for Student Health  
The Health and Medical Services
6. Student Affairs Department  
Foreign Student Division  
International Center  
Counseling Center
7. University Library (Central Library)
8. Institute of Economic Research
9. Center for Archaeological Operations
10. Faculty of Education
11. Faculty of Letters Exhibition Hall
12. Kyoto University Museum

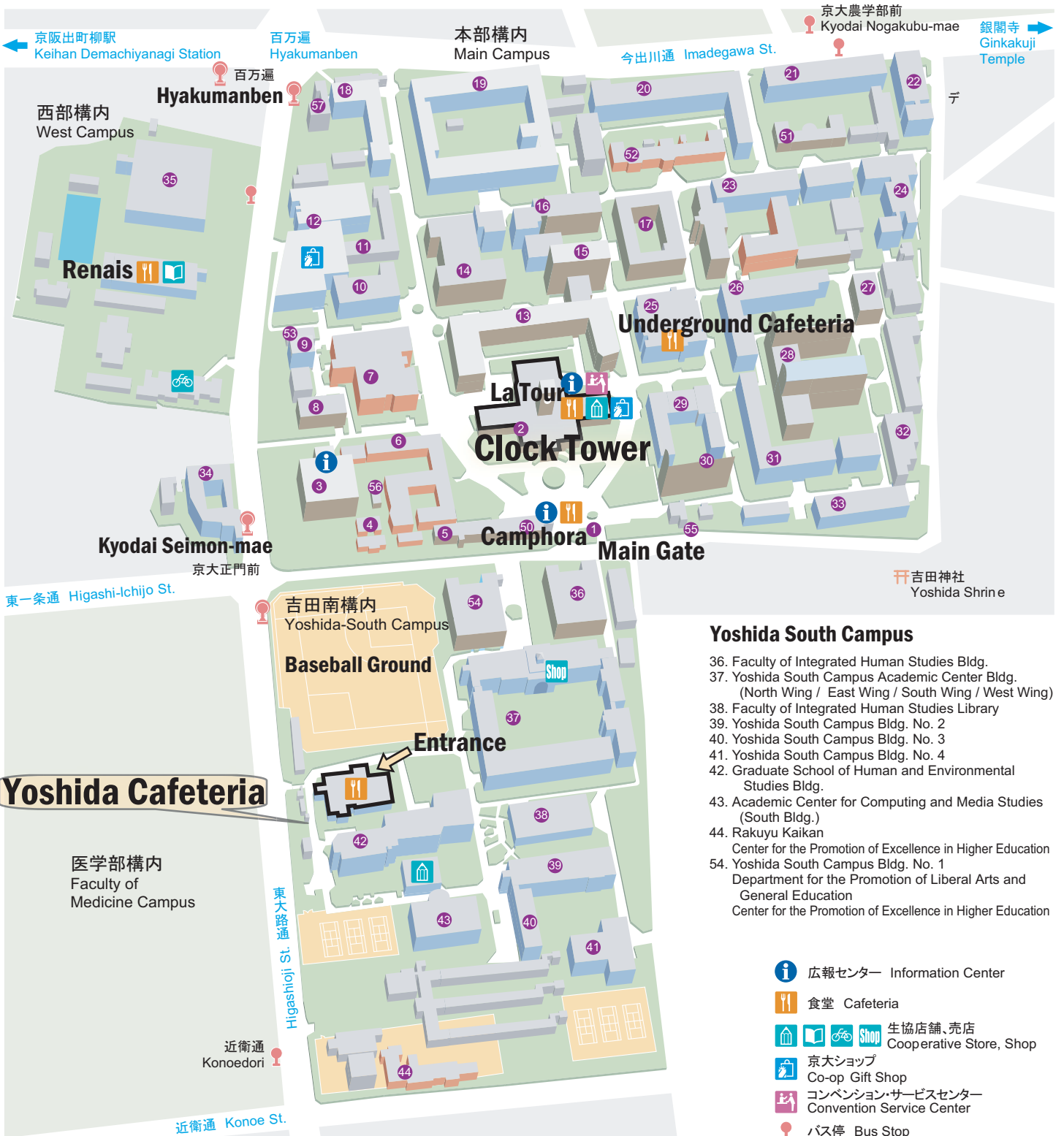
13. Faculty of Law and Economics Main Bldg.  
Faculty of Law
14. Faculty of Law and Economics North Bldg.
15. Faculty of Law and Economics Research Bldg.  
Faculty of Economics  
Graduate School of Management
16. Faculty of Letters
17. Faculty of Letters East Bldg.
18. Faculty of Engineering Bldg. No.9  
School of Global Environmental Studies /  
Hall of Global Environmental Research  
Graduate School of Biostudies
19. Faculty of Engineering Bldg. No.4  
Environment Preservation Center  
International Innovation Center (IIC) Yoshida  
Law School  
School of Government
20. Faculty of Engineering Bldg. No.5

21. Faculty of Engineering Bldg. No.7
22. Academic Center for Computing and  
Media Studies (North Bldg.)
23. Faculty of Engineering Bldg. No.3
24. Faculty of Engineering Bldg. No.10  
Graduate School of Informatics
25. Faculty of Engineering Bldg. No.8  
Career Support Center
26. Faculty of Engineering Bldg. No.1
27. Venture Business Laboratory (VBL)
28. Faculty of Engineering  
Engineering Science Depts Bldg.
29. Faculty of Engineering Bldg. No.6
30. Faculty of Engineering Integrated  
Research Bldg.
31. Faculty of Engineering Bldg. No.2  
Graduate School of Energy Science
32. Faculty of Engineering Radioisotope  
Research Laboratory

33. Faculty of Engineering Bldg. No.11
34. Institute for Research in Humanities
50. Cafe-Restaurant "Camphora"
51. Faculty of Engineering Department  
of Architecture Historic Bldg.
52. Faculty of Engineering Department  
of Civil Engineering
53. Sonjo-do
55. Cooperative Store Head Office
56. International Seminar House
57. Center for Integrated Area Studies

## West Campus

35. Sports Gymnasium



## Yoshida South Campus

36. Faculty of Integrated Human Studies Bldg.
37. Yoshida South Campus Academic Center Bldg.  
(North Wing / East Wing / South Wing / West Wing)
38. Faculty of Integrated Human Studies Library
39. Yoshida South Campus Bldg. No. 2
40. Yoshida South Campus Bldg. No. 3
41. Yoshida South Campus Bldg. No. 4
42. Graduate School of Human and Environmental  
Studies Bldg.
43. Academic Center for Computing and Media Studies  
(South Bldg.)
44. Rakuyu Kaikan  
Center for the Promotion of Excellence in Higher Education
54. Yoshida South Campus Bldg. No. 1  
Department for the Promotion of Liberal Arts and  
General Education  
Center for the Promotion of Excellence in Higher Education

- 広報センター Information Center
- 食堂 Cafeteria
- 生協店舗、売店  
Cooperative Store, Shop
- 京大ショップ  
Co-op Gift Shop
- コンベンション・サービスセンター  
Convention Service Center
- バス停 Bus Stop