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## WELCOME TO HBES 2006

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Conference Participants:

It is with great pleasure that we welcome you to the 18<sup>th</sup> annual meeting of the Human Behavior and Evolution Society at the University of Pennsylvania and Drexel University.

We would like to thank our very generous Sponsors and the many people who volunteered their time to make this conference possible. We and the Society owe many people a great debt, and we genuinely appreciate their service.

Note there are some changes to the Conference this year. Thursday and Friday evenings will both have Poster Sessions. Posters will be placed in four different locations, and will be up during the conference. Also, we have introduced a system to keep Oral Presentations in close synchrony. Details on the Poster Sessions and the timing of the Sessions are available in your Registration Package. Finally, because of the overwhelming number of submissions for the New Investigator and Postdoctoral Competitions, we will be announcing the winners after the conference rather than during the banquet. Please be sure to check the conference web site for this information.

If you have any questions or difficulties, the Registration Desk in the Houston Hall lobby will be staffed throughout the conference. In addition, people from host institutions are recognizable by their distinctive name tags, and will be able to answer many of your questions.

We hope that your conference experience will be both enjoyable and intellectually enriching.

Robert Kurzban  
Steve Platak  
Conference Organizers

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# ACKNOWLEDGEMENTS

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# QUICK TIMETABLE

## Wednesday June 7<sup>th</sup>

12:00-9:00 p.m.	Registration	Houston Hall Lobby
7:00-9:00 p.m.	Welcome Reception	Houston Hall Lobby

## Thursday June 8<sup>th</sup>

8:00-8:45 a.m.	Coffee	Houston Hall Lobby
8:45-9:00 a.m.	Special Welcome – Provost Daniels, University of Pennsylvania	Irvine Auditorium
8:00a-5:00 p.m.	Registration	Houston Hall Lobby
9:00-10:00 a.m.	Morning Plenary – Robert Frank	Irvine Auditorium
10:00-10:30 a.m.	Break	Houston Hall Lobby
10:30a-12:10 p.m.	Morning Sessions (A)	Houston Hall Session Rooms
12:10-1:30 p.m.	Lunch on Your Own	
1:30-2:30 p.m.	Afternoon Plenary – Marlene Zuk	Irvine Auditorium
2:30-3:00 p.m.	Break	Houston Hall Lobby
3:00-4:40 p.m.	Afternoon Sessions (B)	Houston Hall Session Rooms
4:40-5:00 p.m.	Break	Houston Hall Lobby
5:00-6:00 p.m.	Evening Sessions (C)	Houston Hall Session Rooms
6:00-7:30 p.m.	Dinner on Your Own	
6:00 p.m.	HBES Executive Council Meeting	Golkin Room
7:30 p.m.	Poster Session 1	Houston Hall Poster Rooms

## Friday June 9<sup>th</sup>

8:00-9:00 a.m.	Coffee	Houston Hall Lobby
8:00a-5:00 p.m.	Registration	Houston Hall Lobby
9:00-10:00 a.m.	Morning Plenary – Joan Silk	Irvine Auditorium
10:00-10:30 a.m.	Break	Houston Hall Lobby
10:30a-12:10 p.m.	Morning Sessions (D)	Houston Hall Session Rooms
12:10-1:30 p.m.	Lunch on Your Own	
12:10-1:30 p.m.	HBES Publications Committee Meeting	Golkin Room
1:30-2:30 p.m.	Afternoon Plenary – Hillard Kaplan	Irvine Auditorium
2:30-3:00 p.m.	Break	Houston Hall Lobby
3:00-4:40 p.m.	Afternoon Sessions (E)	Houston Hall Session Rooms
4:40-5:00 p.m.	Break	Houston Hall Lobby
5:00-6:00 p.m.	Evening Sessions (F)	Houston Hall Session Rooms
6:00-7:30 p.m.	Dinner on Your Own	
7:30 p.m.	Poster Session 2	Houston Hall Poster Rooms

**Saturday June 10<sup>th</sup>**

8:00-9:00 a.m.	Coffee	Houston Hall Lobby
8:00a-5:00 p.m.	Registration	Houston Hall Lobby
9:00-10:00 a.m.	Morning Plenary – Joseph J. Campos	Irvine Auditorium
10:00-10:30 a.m.	Break	Houston Hall Lobby
10:30a-12:10 p.m.	Morning Sessions (G)	Houston Hall Session Rooms
12:10-1:30 p.m.	Lunch on Your Own	
	Brownbag Presentation	Class of 1949 Auditorium
1:30-2:30 p.m.	Afternoon Plenary – Jim Sidanius	Irvine Auditorium
2:30-3:00 p.m.	Break	Houston Hall Lobby
3:00-4:40 p.m.	Afternoon Sessions (H)	Houston Hall Session Rooms
4:40-5:00 p.m.	Break	Houston Hall Lobby
5:00-6:00 p.m.	Evening Sessions (I)	Houston Hall Session Rooms
6:00-7:00 p.m.	Break	
7:00-8:30 p.m.	Keynote Address – Daniel C. Dennett	Drexel's Main Auditorium
8:30 p.m.	Banquet	Drexel's Great Court

**Sunday June 11<sup>th</sup>**

8:00-9:00 a.m.	Coffee	Houston Hall Lobby
9:00a-12:20 p.m.	Registration	Houston Hall Lobby
9:00-10:40 a.m.	Early Morning Sessions (J)	Houston Hall Session Rooms
10:40-11:00 a.m.	Break	Houston Hall Lobby
11:00a-12:20 p.m.	Late Morning Sessions (K)	Houston Hall Session Rooms
12:20-1:40 p.m.	Special Session on Literature	Class of 1949 Auditorium

**1:40 p.m. Conference Ends**

# PROGRAM OF EVENTS

## WEDNESDAY, JUNE 7

12:00-9:00 p.m.	Registration	Houston Hall Lobby
7:00-9:00 p.m.	Welcome Reception	Houston Hall Lobby

## THURSDAY, JUNE 8

8:00-8:45 a.m.	Coffee	Houston Hall Lobby
8:45-9:00 a.m.	Special Welcome – Provost Daniels, University of Pennsylvania	Irvine Auditorium
9:00-10:00 a.m.	Morning Plenary by Robert Frank <i>A Darwinian Perspective on Adam Smith's Invisible Hand</i> <i>Abstract p. 24</i>	Irvine Auditorium
10:00-10:30 a.m.	Break	Houston Hall Lobby

### Morning Sessions

Session A-1: *Cooperation in Groups: The Role of Punishment*  
Chair: John Tooby  
Bodek Lounge  
*Abstracts pp. 28-29*

TH 10:30	<i>Does an Unfair Intention Increase Third-Party Punishment?</i> Takahashi, Nobuyuki; Takagishi, Haruto; Mashima, Rie
TH 10:50	<i>The Coevolution of Altruism and Punishment: Role of the Selfish Punisher.</i> Nakamaru, Mayuko; Iwasa, Yoh
TH 11:10	<i>Punishing Non-Cooperators Doesn't Yield a Solution to the Problem of Cooperation but Rewarding Cooperators Does.</i> Kiyonari, Toko; Barclay, Pat; Wilson, Margo; Daly, Martin
TH 11:30	<i>For Whom Do We Reciprocate? The Effects of Dominance Relationships on the Use of Incentives in Collective Action.</i> Kim, Sangin
TH 11:50	<i>The Role of "Outrages" in the Evolved Psychology of Intergroup Conflict.</i> Tooby, John; Thrall, Nathan; Cosmides, Leda

**Session A-2: *Symposium: Literature and the Logic of Inclusive Fitness***

Chair: Joseph Carroll

Hall of Flags

*Abstracts pp. 29-31*

TH 10:30	<i>Toward a New Humanities.</i> Gottschall, Jonathan A.
TH 10:50	<i>Graphing Jane Austen.</i> Carroll, Joseph C.; Johnson, John A.; Kruger, Daniel J.; Gottschall, Jonathan A.
TH 11:10	<i>Adaptive Functions of Literature: Why the Author Won't Die.</i> Turpin, Jeff P.
TH 11:30	<i>The Historical Reception of Shirley Jackson's "The Lottery".</i> Michelson, David M.
TH 11:50	<i>Genes vs. Resources: Mate Selection in Wharton's Glimpses of the Moon.</i> Saunders, Judith P.

**Session A-3: *Symposium: Mating Intelligence: Toward an Evolutionarily Informed Construct***

Chair: Glenn Geher

Class of 1949 Auditorium

*Abstracts pp. 31-32*

TH 10:30	<i>A Psychometric Validation of Mating Intelligence: Verbal Creativity, General Intelligence, Personality, Psychopathology, and Sexual History.</i> Tal, Ilanit R.; Miller, Geoffrey F.; Swegel, Paul J.
TH 10:50	<i>Mating Intelligence and General Intelligence as Independent Constructs.</i> Kanazawa, Satoshi
TH 11:10	<i>For the Love of the Muse.</i> Kaufman, Scott Barry; Bromley, Melanie L.; Kaufman, James C.
TH 11:30	<i>Studying Mating Intelligence in the Speed Dating Context.</i> Todd, Peter M.
TH 11:50	<i>Deception as a Strategy in Long-Term and Short-Term Mating.</i> O'Sullivan, Maureen

**Session A-4: Signaling**

Chair: Thomas Flamson

Ben Franklin Room

*Abstracts pp. 32-33*

TH 10:30	<i>Indices of Quality? Multivariate Analyses of Motion-Captured Dance Movement.</i> Brown, William M.; Cronk, Lee; Grochow, Keith; Jacobson, Amy; Liu, C. Karen; Popovic, Zoran; de Aguiar, Rolando; Trivers, Robert
TH 10:50	<i>I Don't Get It: Further Evidence for the Encryption Theory of Humor.</i> Flamson, Thomas J.
TH 11:10	<i>Is Iban Hunting a Costly Signal? An Evaluation of the Scale and Context of Signal Production.</i> Pomianek, Christina N.
TH 11:30	<i>Risk-Taking and Competitive Status-Signaling in P2P File-Sharing Networks.</i> Lyle, Henry F. III; Sullivan, Roger J.
TH 11:50	<i>Peacocks, Picasso, and Parental Investment: The Effects of Romantic Motives on Creativity.</i> Griskevicius, Vladas; Cialdini, Robert B.; Kenrick, Douglas T.

**12:10-1:30 p.m. Lunch on Your Own**

**1:30-2:30 p.m. Afternoon Plenary by Marlene Zuk Irvine Auditorium**  
***Evolutionary Medicine: Promise and Pitfalls***  
*Abstract p. 25*

**2:30-3:00 p.m. Break Houston Hall Lobby**

**Afternoon Sessions**

**Session B-1: Symposium: The Ecology of Intelligence**

Chair: Paul Andrews

Bodek Lounge

*Abstracts pp. 34-35*

TH 3:00	<i>How Fatal "Accidents" Select for Higher General Intelligence (g).</i> Gottfredson, Linda S.
TH 3:20	<i>Little Boy Bright, Little Boy Blue: The Social Ecology of Intelligence and Depressed Affect in Adolescence.</i> Andrews, Paul W.; Keller, Matthew C.; Neale, Michael C.; Aggen, Steven H.; Silberg, Judy L.
TH 3:40	<i>Surprisingly Low Additive Genetic Variance in Human Brain Size.</i> Miller, Geoffrey; Penke, Lars
TH 4:00	<i>Creativity and Mating Success: Two Empirical Studies.</i> Nettle, Daniel; Clegg, Helen
TH 4:20	<i>Lessons About the Ecology of Intelligence from the Twin's Early Development Study (TEDS).</i> Arden, Rosalind

Session B-2: *Cooperation in Groups: Models and Simulations*

Chair: Karthik Panchanathan

Hall of Flags

*Abstracts pp. 35-36*

TH 3:00	<i>Why Indirect Reciprocity Isn't a Good Explanation of Large-Scale Cooperation.</i> Panchanathan, Karthik
TH 3:20	<i>Reciprocity and Contingent Movement in the Evolution of Cooperation in Groups.</i> Aktipis, Athena
TH 3:40	<i>Errors and Reciprocity in Sizable Groups.</i> Boyd, Rob; Panchanathan, Karthik
TH 4:00	<i>Evolutionary Dynamics of the Continuous Iterated Prisoner's Dilemma: Computer Simulation Results.</i> Le, Stephen; Boyd, Robert
TH 4:20	<i>The Effect of Excludability in Stabilising Cooperation in a Public Goods Game.</i> Mathew, Sarah; Boyd, Robert

Session B-3: *Emotions & Emotional Expressions*

Chair: Timothy Ketelaar

Class of 1949 Auditorium

*Abstracts pp. 36-38*

TH 3:00	<i>They All Look the Same to Me (Unless They're Angry): From Out-Group Homogeneity to Out-Group Heterogeneity.</i> Ackerman, Joshua M.; Shapiro, Jenessa R.; Neuberg, Steven L.; Kenrick, Douglas T.; Becker, D. Vaughn; Griskevicius, Vldas; Maner, Jon K.; Schaller, Mark
TH 3:20	<i>Not All Social Exclusion Is Created Equal: Different Types of Exclusion Lead to Qualitatively Distinct Responses.</i> Robertson, Theresa E.; Delton, Andrew W.; Klein, Stanley B.
TH 3:40	<i>Context Sensitivity of the Evolved Jealousy Mechanism.</i> Schuetzwohl, Achim
TH 4:00	<i>Why Hunter-Gatherers Don't Typically Smile When Complimented for Successful Foraging: How Emotional Displays Signal Strategy Types.</i> Ketelaar, Timothy V.; Koenig, Bryan; Burkett, Brandy; Davis, Mark
TH 4:20	<i>Anger Expressions Dissected: What's With All the Yelling and Why Does His Face Look Like That?</i> Sell, Aaron N.; Tooby, John; Cosmides, Leda

Session B-4: *Speech*  
 Chair: Ian Penton-Voak

Ben Franklin Room  
*Abstracts pp. 38-39*

TH 3:00	<i>An Evolutionary Explanation for a Deep Voice in the Human Male.</i> Evans, Sarah C.; Neave, Nick; Wakelin, Delia; Hamilton, Colin
TH 3:20	<i>Maintenance of Vocal Sexual Dimorphism: Adaptive Selection Against Androgyny.</i> Feinberg, David R.; Jones, Benedict C.; Debruine, Lisa M.; Law Smith, Miriam J.; Cornwell, R. Elisabeth; Hillier, Stephen G.; Urquhart, Martha; Perrett, David I.
TH 3:40	<i>Male Facial Attractiveness, Perceived Personality, and Child Directed Behaviour.</i> Penton-Voak, Ian S.; Cahill, S.; Pound, N.; Morrison, E.; Kempe, V.
TH 4:00	<i>Evidence for Universals in Infant-Directed Speech.</i> Bryant, Greg; Barrett, Clark
TH 4:20	<i>Is Low Voice Pitch a Male Dominance Display?</i> Puts, David A.; Gaulin, Steven J.C.; Verdolini, Katherine; Hodges, Carolyn R.

**4:40-5:00 p.m. Break**

**Houston Hall Lobby**

**Evening Sessions**

Session C-1: *Evolution and Psychopathology*  
 Chair: Shani Robins

Bodek Lounge  
*Abstracts pp. 39-40*

TH 5:00	<i>Evolutionary Psychology Meets Clinical Psychology.</i> Robins, Shani; Kurzban, Robert
TH 5:20	<i>Risk-Taking as a Potentially Adaptive Function of Psychopathy.</i> Krishnan, Shilpa; Falkenbach, Diana
TH 5:40	<i>Adaptive Overconfidence and War</i> Johnson, Dominic

Session C-2: *Kinship*  
 Chair: Robert Oum

Hall of Flags  
*Abstracts pp. 40-41*

TH 5:00	<i>Kinship as Another Primitive Used in Social Categorization.</i> Oum, Robert E.; Lieberman, Debra
TH 5:20	<i>Royal Heirs and Royal Bastards: Mini-Maxing Reproductive Success.</i> Heath, Kathleen M.; Fields, Jessica D.; McCullough, John; Lowe, Matthew E.
TH 5:40	<i>Kin-Based Resource Allocation: Inclusive Fitness and Emotional Closeness.</i> Webster, Gregory D.

Session C-3: *Personality and Individual Differences*

Chair: Nick Pound

Class of 1949 Auditorium

*Abstracts pp. 41-42*

TH 5:00	<i>Life History, Social Deviance, Personality, and Intelligence: A Psychometric Study.</i> Gladden, Paul R.; Burger, Sarah B.; Figueredo, Aurelio J.; Jacobs, W. Jake
TH 5:20	<i>Facial Symmetry Predicts Personality.</i> Pound, Nicholas; Penton-Voak, Ian S.
TH 5:40	<i>Intelligence, Conscientiousness, and Life History Strategy.</i> MacDonald, Kevin B.

Session C-4: *2D:4D*

Chair: Bernhard Fink

Ben Franklin Room

*Abstracts pp. 42-43*

TH 5:00	<i>Second to Fourth Digit Ratio (2D:4D) and Fluctuating Asymmetry as Predictors of Reproductive and Growth Parameters in Dutch Women.</i> Dubas, Judith Semon; van Noord, Paulus A.H.
TH 5:20	<i>The Impact of Prenatal Testosterone on Female Interest in Male-Male Romance.</i> Salmon, Catherine A.
TH 5:40	<i>Finger-Length Ratios and Women's Perception of Men's Dance.</i> Fink, Bernhard; Seydel, Hanna; Manning, John T.

**Thursday Poster Session – Houston Hall 7:30 p.m.**

**See pages 89-109 for locations and abstracts.**

## FRIDAY, JUNE 9

8:00-9:00 a.m.	Coffee	Houston Hall Lobby
9:00-10:00 a.m.	Morning Plenary by Joan Silk <i>No Female is an Island: The Adaptive Value of Social Bonds</i> Abstract p. 25	Irvine Auditorium
10:00-10:30 a.m.	Break	Houston Hall Lobby

## Morning Sessions

Session D-1: <i>Symposium: Household Networks, Family Composition and Reproductive Decisions</i> Chairs: Rebecca Sear and Mhairi Gibson	Bodek Lounge  Abstracts pp. 44-45
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FR 10:30	<i>The Rapid Pace of Human Reproduction: Furthering a Demand and Opportunity for Cooperative Breeding.</i> Kramer, Karen L.
FR 10:50	<i>Polygyny, Reproductive Success and Child Health in Rural Ethiopia: Why Marry a Married Man?</i> Gibson, Mhairi A.
FR 11:10	<i>The Cost of Siblings: Competition for Parental Resources in Contemporary British Families.</i> Lawson, David W.; Mace, Ruth
FR 11:30	<i>Husbands and Grandmothers in Conflict: Effects on Reproductive Success Among the Khasi.</i> Leonetti, Donna L.
FR 11:50	<i>A Review of the Impact of Kin on Child Survival: It Takes a Grandmother to Raise a Child?</i> Sear, Rebecca; Mace, Ruth

Session D-2: <i>Cooperation in Groups</i> Chair: Rick O'Gorman	Hall of Flags Abstracts pp. 45-46
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FR 10:30	<i>Critique of So-Called "Strong-Reciprocity".</i> Burnham, Terence C.; Johnson, Dominic D.P.
FR 10:50	<i>The Effects of Limited Contribution Information in a Public Goods Game.</i> Chavez, Alex K.
FR 11:10	<i>Ingroup Love or Ingroup Scrounging?</i> Yamagishi, Toshio; Mifune, Nobuhiro
FR 11:30	<i>Free Riders and Incompetents: Psychologically Distinct Categories.</i> Delton, Andrew W.; Robertson, Theresa E.; Cosmides, Leda; Tooby, John
FR 11:50	<i>Functions of Leadership: An Evolutionary Approach.</i> O'Gorman, Rick; van Vugt, Mark

**Session D-3: *Effects of the Menstrual Cycle on Behavior and Preferences***

Chair: Diana S. Fleischman

Class of 1949 Auditorium

*Abstracts pp. 47-48*

FR 10:30	<i>Luteal Phase and Progesterone Effects on OCD Measures, and Disgust Sensitivity.</i> Fleischman, Diana S.; Fessler, Daniel M.T.
FR 10:50	<i>Estradiol and Progesterone Levels and Woman's Preference for Resourceful Partners.</i> Pawlowski, Boguslaw; Grazyna, Jasienska
FR 11:10	<i>Beauty is in the Fertility of the Beholder.</i> Hancock, Peter J.B.; Collet, Amy J.; Smith, Katy L.; Tovee, Martin J.
FR 11:30	<i>Male Facial Attractiveness: Shifting Female Cognitive Preference.</i> Patel, Shilpa; Thomson, Jaime W.; Platek, Steven M.
FR 11:50	<i>Ovulatory Shifts in Human Female Ornamentation: Near Ovulation, Women Dress to Impress.</i> Haselton, Martie G.; Mortezaie, Mina; Pillsworth, Elizabeth G.; Bleske-Rechek, April; Frederick, David A.

**Session D-4: *Life History***

Chair: Daniel J. Kruger

Ben Franklin Room

*Abstracts pp. 48-49*

FR 10:30	<i>Time Perspective as a Psychological Mechanism for Functional Developmental Adaptation.</i> Kruger, Daniel J.; Reischl, Thomas; Zimmerman, Marc A.
FR 10:50	<i>Do Attitudes to Abortion Have a Biological Basis? An Investigation of the Evolved Psychology of Morality.</i> Curry, Oliver S.; Dickins, Thomas E.; Potton, Anita I.
FR 11:10	<i>Adolescent Predictors of Young Adult Life History Strategy.</i> Brumbach, Barbara H.; Figueredo, Aurelio Jose; King, James E.
FR 11:30	<i>Life History Consequences of Density Dependence in the Evolution of Hunter-Gatherer Body Sizes.</i> Walker, Robert S.
FR 11:50	<i>Early Environments, Developmental Plasticity and Human Life History.</i> Kuzawa, Christopher

**12:10-1:30 p.m. Lunch on Your Own**

**1:30-2:30 p.m. Afternoon Plenary by Hillard Kaplan Irvine Auditorium**  
***Lifespan Evolution and the Human Adaptive Complex:***  
***Is Seven Decades a Good Candidate?***  
*Abstract p. 26*

**2:30-3:00 p.m. Break Houston Hall Lobby**

<b>Afternoon Sessions</b>
---------------------------

Session E-1: *Symposium: Tsimane Life History*  
Chair: Michael Gurven

Bodek Lounge  
Abstracts pp. 50-51

FR 3:00	<i>Household Compositional Effects on Tsimane' Children's Time Allocation: Implications for Helping at the Nest and Intrafamilial Conflict.</i> Stieglitz, Jonathan P.; Kaplan, Hillard; Gurven, Michael
FR 3:20	<i>Skills Development and Extended Childhood: An Instructive Case.</i> Gurven, Michael; Kaplan, Hillard; Gutierrez, Maguin
FR 3:40	<i>Infant Feeding Practices and Health Outcomes Among Tsimane of Bolivia.</i> Veile, Amanda J.; Kaplan, Hillard S.; Gurven, Michael D.; Juana Vani Cuatano
FR 4:00	<i>Measuring the Impacts of Fathers Among the Tsimane of Bolivia.</i> Winking, Jeffrey W.; Gurven, Michael; Kaplan, Hillard
FR 4:20	<i>Components of Male Status Amongst the Tsimane of Bolivia.</i> von Rueden, Christopher R.; Gurven, Michael; Kaplan, Hillard

Session E-2: *Sociosexuality*  
Chair: Meghan P. Provost

Hall of Flags  
Abstracts pp. 51-53

FR 3:00	<i>Measurement of Human Mating Strategies: Replication and Extension of the Three-Factor Model of Sociosexuality.</i> Jackson, Jenee James; Kruger, Daniel J.
FR 3:20	<i>Maidens or Matriarchs: Who Has More Casual Sex?</i> Andrews, Tessa M.; Handley, Ian M.
FR 3:40	<i>Correlates with Unrestricted Sociosexuality Across Sex and Sexual Orientation.</i> Sakaguchi, Kikue; Sakai, Yoshiko; Ueda, Keisuke; Hasegawa, Toshikazu
FR 4:00	<i>Dissecting the Pathway from Good Condition to Quantitative Mating Success in Men: Independent Roles for Fitness Indicators, Sociosexuality, Extraversion, and Current Relationship Involvement.</i> Penke, Lars; Asendorpf, Jens B.
FR 4:20	<i>The Effect of Sociosexuality on Ratings of Physical Attractiveness of Male and Female Point Light Walkers.</i> Provost, Meghan P.; Troje, Nikolaus F.; Quinsey, Vernon L.

**Session E-3: *Trust and Cooperation***

Chair: Pat Barclay

Class of 1949 Auditorium

*Abstracts pp. 53-54*

FR 3:00	<i>You Can Judge a Book By Its Cover: The Sequel. A Kernel of Truth in Predictive Cheating Detection.</i> Vanneste, Sven; Braeckman, Johan
FR 3:20	<i>Recordkeeping and Exchange: Experimental Evidence.</i> Waymire, Gregory B.; Basu, Sudipta; Dickhaut, John W.; Hecht, Gary; Tafkov, Ivo; Towry, Kristy
FR 3:40	<i>Enhanced Recognition of Defectors Depends on Their Rarity.</i> Barclay, Pat
FR 4:00	<i>Health Appearance Influences Trust Judgments.</i> Stirrat, Michael R.; Zubko, Olga; Lawson, Jamie F.; Law Smith, Miriam J.; Perrett, David I.; Jones, Ben; DeBruine, Lisa
FR 4:20	<i>Machiavellianism in Strangers Affects Cooperation.</i> Lyons, Minna; Aitken, Susan

**Session E-4: *Hormones and Physiology***

Chair: Elizabeth R. Blum

Ben Franklin Room

*Abstracts pp. 54-56*

FR 3:00	<i>Performance of Women with Androgenic Disorders on Male and Female Advantage Cognitive Tasks.</i> Blum, Elizabeth R.; Månsson, Mattias; Jägerfeld, Tsahai; Cars, Izabella; Landén, Mikael; Pound, Nicholas
FR 3:20	<i>Dominance and Olfactory Sensitivity in Humans.</i> Lawson, Jamie F.; Cornwell, R. Elizabeth; Law Smith, Miriam J.; Stirrat, Michael R.; Perrett, David I.
FR 3:40	<i>Reproductive Hormones, Apparent Health and Human Face Color.</i> Law Smith, Miriam J.; Perrett, David I.; Stirrat, Michael R.; Coetzee, Vinet; Jones, Benedict C.; Cornwell, R. Elisabeth; Feinberg, David R.; Hillier, S.G.; Rankin, Amanda; Greeff, J.; Henzi, S.P.; Sharp, Martin A.; Dujaili, Emad A.S.
FR 4:00	<i>Can Social Support Influence Oxytocin Release in Bonded Couples? An Attachment Perspective.</i> Chen, Jennie Y.; Simpson, Jeffrey A.; Rholes, W. Steve
FR 4:20	<i>Testing a New Theory of Biological Altruism.</i> Brown, Stephanie, L.; Brown, R. Michael

**4:40-5:00 p.m. Break**

**Houston Hall Lobby**

<b>Evening Sessions</b>
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Session F-1: *Mating Motives*  
Chair: Norman Li

Bodek Lounge  
*Abstracts pp. 56-57*

FR 5:00	<i>Why Women Want Sex: The Functions of Sexual Motivation.</i> Buss, David M.; Meston, Cindy
FR 5:20	<i>Deception in Young Adult Opposite-Sex Friendship.</i> Bleske-Rechek, April; Matteson, Lindsay K.; Gragg, Brittany I.; Stocco, Corey S.
FR 5:40	<i>Sex Similarities and Differences in Preferences for Short-Term Mates.</i> Li, Norman

Session F-2: *Theoretical Modeling of Social Behavior*  
Chair: Peter J. DeScioli

Hall of Flags  
*Abstracts p. 57*

FR 5:00	<i>A Unified Sequential Mate Selection Model.</i> Saad, Gad; Sejean, Richard
FR 5:20	<i>Evolution of Alternative Mating Systems in Human and Non-Human Primates.</i> White, Frances J.; Orbell, John; Malone, Nicholas
FR 5:40	<i>The Four Basic Games.</i> DeScioli, Peter J.

Session F-3: *Aggression and Crime*  
Chair: Arjan A.J. Blokland

Class of 1949 Auditorium  
*Abstracts p. 58*

FR 5:00	<i>The "Cinderella Effect": A Sample from Brazil.</i> Tokumaru, Rosana S.; Bergamin, Margareth P.
FR 5:20	<i>Sexual Coercion in Intimate Relationships Is Better Predicted by Women's Infidelity than by Men's Dominance and Violence.</i> Goetz, Aaron T.; Shackelford, Todd K.
FR 5:40	<i>Can Evolutionary Psychology Account for Life Course Variations in Crime?</i> Blokland, Arjan A.J.; Nieuwbeerta, Paul

Session F-4: *Food & Eating*  
Chair: Siegfried Dewitte

Ben Franklin Room  
*Abstracts p. 59*

FR 5:00	<i>Shedding Light on Food Choices: Neonatal Exposure to Sunlight Reduces Variety Seeking Tendencies.</i> Goukens, Caroline; Bruyneel, Sabrina; Dewitte, Siegfried
FR 5:20	<i>Hungry for Money: The Desire for Caloric Resources Increases the Desire for Financial Resources and Vice Versa.</i> Briers, Barbara; Pandelaere, Mario; Dewitte, Siegfried; Warlop, Luk
FR 5:40	<i>Is There Evidence for the Antimicrobial Hypothesis in Japanese Local Cuisines?</i> Ohtsubo, Yohsuke

**Friday Poster Session – Houston Hall 7:30 p.m.**

**See pages 110-129 for locations and abstracts.**

**SATURDAY, JUNE 10**

<b>8:00-9:00 a.m.</b>	<b>Coffee</b>	<b>Houston Hall Lobby</b>
<b>9:00-10:00 a.m.</b>	<b>Morning Plenary by Joseph J. Campos</b> <i>Epigenetic Processes in Human Infant Development</i> Abstract p. 26	<b>Irvine Auditorium</b>
<b>10:00-10:30 a.m.</b>	<b>Break</b>	<b>Houston Hall Lobby</b>

**Morning Sessions**

Session G-1: <i>Symposium: Family Experience, Pubertal Development, and Life History Models: New Evidence</i> Chair: Bruce Ellis	<b>Bodek Lounge</b>  <i>Abstracts pp. 60-61</i>
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SA 10:30	<i>Family and Child Care Antecedents of Pubertal Timing.</i> Belsky, Jay; Steinberg, Laurence D.; Houts, Renate; Friedman, Sarah L.; de Hart, Ganie; Kaufmann, Beth; Roisman, Glenn; Halpern-Felsher, Bonnie; Susman, Elisabeth
SA 10:50	<i>Family Environments, Adrenarche, and Pubertal Timing: A Longitudinal Test of a Life History Model.</i> Ellis, Bruce J.; Essex, Marilyn J.
SA 11:10	<i>Family Composition and Menarcheal Age: Anti-Inbreeding Strategies.</i> Matchock, Robert L.; Susman, Elizabeth J.
SA 11:30	<i>Why Are Father Absent Girls at Special Risk for Early Pubertal and Sexual Development? Preliminary Answers from a Genetically Controlled Sibling Study.</i> Tither, Jacqueline M.; Ellis, Bruce J.
SA 11:50	<i>Age of Menarche in Children-of-Twins: A Re-Evaluation of the Belsky-Draper Hypothesis.</i> Mendle, Jane E.; Turkheimer, Eric; Emery, Robert E.; D'Onofrio, Brian M.; Slutske, Wendy S.; Martin, Nicholas G.

Session G-2: <i>Religion</i> Chair: Paul Watson	<b>Hall of Flags</b> <i>Abstracts pp. 61-63</i>
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SA 10:30	<i>Religiosity and Reproductive Strategies.</i> Weeden, Jason
SA 10:50	<i>Coalitional Religiosity, Devotional Religiosity and Religious Violence.</i> Hansen, Ian G.; Norenzayan, Ara; Gingesllan, Jeremy; Dar-Nimrod
SA 11:10	<i>The Moral Consequence of Religion.</i> Shariff, Azim F.; Norenzayan, Ara
SA 11:30	<i>Religious Behaviors with Social Costs as Signals of Commitment: Supernatural Unpredictability Inhibits Defections of Valuable Social Partners.</i> Watson, Paul J.
SA 11:50	<i>Islam: A Religion of Sex?</i> Cvorovic, Jelena; Steadman, Lyle

**Session G-3: Preferences for Faces**

Chair: Anthony Little

Class of 1949 Auditorium

*Abstracts pp. 63-64*

SA 10:30	<i>Women Track Facial Cues of Men's Testosterone and Interest in Infants.</i> Roney, James R.
SA 10:50	<i>Sexual Dimorphism in Facial Movement.</i> Morrison, Edward R.; Gralewski, Lisa; Campbell, Neil; Penton-Voak, Ian
SA 11:10	<i>Women's Attention-Memory Disjunction for Attractive Male Faces.</i> Perea, Elaine F.; Anderson, Uriah S.; Kenrick, Douglas T.; Neuberg, Steven L.
SA 11:30	<i>Unconscious Preferences for Familiar Faces in Females While Males Prefer More Novel Female Faces: Evidence for the Coolidge Effect in Humans.</i> Little, Anthony C.; Jones, Benedict C.; DeBruine, Lisa M.
SA 11:50	<i>Integrating Physical and Social Signals when Forming Face Preferences.</i> Jones, Benedict C.; Bestelmeyer, P.E.G.; DeBruine, L.M.; Little, A.C.; Conway, C.A.; Welling, L.M.; Feinberg, D.R.; Schneider, A.

**Session G-4: Cooperation in Cultural Context**

Chair: John Ziker

Ben Franklin Room

*Abstracts pp. 64-66*

SA 10:30	<i>Food Distribution in Northern Siberia and the Evolution of Cooperation.</i> Ziker, John
SA 10:50	<i>Friends Won't Let You Down? The Effect of Common History on Commitment to "Old Interaction Partners".</i> Back, Istvan; Smaniotto, Rita C.
SA 11:10	<i>Locally Salient Rhetorical Framing Changes How People Play the Trust Game.</i> Cronk, Lee
SA 11:30	<i>The Racial Double Standard in Welfare State Attitudes: Unpackaging Parochial Social Exchange.</i> Navarrete, Carlos David; Sidanius, James; Takemura, Kosuke; Yuki, Masaki
SA 11:50	<i>On the Default Assumption of Monitoring and Sanctioning Behind Japanese Collectivism: A View from the Social Institutional Analysis and Error Management Theory.</i> Takemura, Kosuke; Yuki, Masaki; Rumble, Ann C.; Horikawa, Hiroki

**12:10-1:30 p.m. Lunch on Your Own**

**Brownbag Lunch Presentation**

**Class of 1949 Auditorium**

***It's Time to Speak Up: A Panel Discussion on the Role of Evolutionary Scientists in Contemporary Public Discourse***

*Abstract p. 27*

**1:30-2:30 p.m. Afternoon Plenary by Jim Sidanius**

**Irvine Auditorium**

***The Interactive Nature of Patriarchy and Arbitrary-set Hierarchy: The Dynamics of Sexism and Racism from an Evolutionary and Social Dominance Perspective***

*Abstract p. 27*

**2:30-3:00 p.m. Break**

**Houston Hall Lobby**

<b>Afternoon Sessions</b>
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Session H-1: *Symposium: Discrimination and the Psychology of Coalitions*

Chair: Carlos David Navarrete

Bodek Lounge

*Abstracts pp.66-67*

SA 3:00	<i>A Sociofunctional Perspective on the Complexity of Intergroup Interactions.</i> Cottrell, Catherine A.; Neuberg, Steven L.
SA 3:20	<i>Social Group Essentialism: Inferential Reasoning about Ethnic, Coalitional, and Occupational Categories.</i> Moya, Cristina M.; Gil-White, Francisco; Boyd, Robert T.; Fessler, Daniel M.T.
SA 3:40	<i>'Erasing Race' with Cooperation: Tracking Down the Dynamics of Social Alliance Representations.</i> Pietraszewski, D.; Cosmides, L.; Tooby, J.
SA 4:00	<i>Up and Down, In and Out: Social Grammars of Dominance and Exclusion.</i> Thomsen, Lotte; Sidanius, Jim; Fiske, Alan Page
SA 4:20	<i>North American Intergroup Orientation: Coalition Formation Among Self-Interested Individualists?</i> Yuki, Masaki; Maddux, William W.; Takemura, Kosuke

Session H-2: *Symposium: Religion and the Honest Signaling of Social Commitments*

Chair: James Boster

Hall of Flags

*Abstracts pp. 67-68*

SA 3:00	<i>Varieties of Religious Experience in Everyday American Life.</i> Wilson, David Sloan; Storm, Ingrid
SA 3:20	<i>Youth Religious Participation and Socio-Emotional Learning: An Evolutionary Model.</i> Alcorta, Candace Storey
SA 3:40	<i>How Religions Regulate Sexuality and Negotiate Marriage Contracts.</i> Schindler, Dianne M.; Srinivasan-Shipman, Asha C.; Maltseva, Kateryna; Boster, James S.
SA 4:00	<i>Yomut Religious Practices.</i> Irons, William G.
SA 4:20	<i>Design Features of Patriarchy: Paternity Certainty and Jewish Law.</i> Boster, James S.

**Session H-3: *Modularity: Theory and Applications***  
 Chair: Clark Barrett

Class of 1949 Auditorium  
*Abstracts pp. 69-70*

SA 3:00	<i>Massive Modularity and Brain Evolution.</i> Machery, Edouard
SA 3:20	<i>Prepared Learning About Danger in Humans.</i> Barrett, Clark
SA 3:40	<i>Fractionating the Visual Architecture for Natural Category Recognition Using the "Attentional Blink" Paradigm.</i> New, Joshua J.; Cosmides, Leda; Tooby, John
SA 4:00	<i>What You See Is Not What You Get: Novel Illusions Discovered Under Evolved Navigation Theory.</i> Jackson, Russell E.; Cormack, Lawrence K.
SA 4:20	<i>Mapping the Design of "Theory of Mind": Do Actions Speak Louder than Words?</i> Wertz, Annie E.; German, Tim P.

**Session H-4: *Mate Choice - U.S. & Cross-Cultural Studies***  
 Chair: Lee Kirkpatrick

Ben Franklin Room  
*Abstracts pp. 70-71*

SA 3:00	<i>What are Deal Breakers in a Mate: Characteristics that are Intolerable in a Potential Mate.</i> Burkett, Brandy N.; Kirkpatrick, Lee A.
SA 3:20	<i>Long-Term Mate Preferences Among the Shuar of Ecuador.</i> Pillsworth, Elizabeth G.
SA 3:40	<i>Socioeconomic Development and Shifts in Mate Preferences.</i> Stone, Emily A.; Shackelford, Todd K.; Buss, David M.
SA 4:00	<i>Waist-to-Hip Ratio: A Profile View.</i> Apicella, Coren L.; Marlowe, Frank W.
SA 4:20	<i>The Relative Importance of the Face and Body in Judgements of Physical Attractiveness.</i> Currie, Thomas E.

**4:40-5:00 p.m. Break**

**Houston Hall Lobby**

**Evening Sessions**

**Session I-1: *Foraging***

Chair: Andreas Wilke

Bodek Lounge

*Abstracts p. 72*

SA 5:00	<i>Sex Differences in Spatial Cognition Among Hadza Foragers.</i> Cashdan, Elizabeth; Marlowe, Frank
SA 5:20	<i>The Adaptive Problem of Exploiting Resources: Human Foraging Behavior in Patchy Environments.</i> Wilke, Andreas; Hutchinson, John M.C.; Todd, Peter M.
SA 5:40	<i>Shopping is Foraging: Data and Theory.</i> Hantula, Donald A.; Smith, Carter; BioVid, Inc.

Session I-2: *Sex Differences: Investigations*  
 Chair: Gary Brase

Hall of Flags  
*Abstracts p. 73*

SA 5:00	<i>Social Comparison and Decision Making with Respect to Income.</i> Falcon, Rachael G.
SA 5:20	<i>Individual Differences in Reactions to Relationship Infidelities: Gender, Personality, and Measurement Options.</i> Brase, Gary L.
SA 5:40	<i>Sex Differences in Abstract Spatial Cognition.</i> Cox, Anthony M.; Zhao, Lin; Fisher, Maryanne L.

Session I-3: *Comparative Analysis*  
 Chair: Stephen Shepherd

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*Abstracts p. 74*

SA 5:00	<i>Ecology, Sociality, and the Understanding of Referential Cues: A Case Study in Wolves and Dogs.</i> Naficy, Siamak T.
SA 5:20	<i>Fluctuating Dental Asymmetry in Great Apes, Fossil Hominids, and Modern Humans.</i> Frederick, Michael J.; Gallup, Gordon G.
SA 5:40	<i>Social Orienting by Prosimian Primates in Naturalistic Conditions.</i> Shepherd, Stephen V.; Platt, Michael L.

Session I-4: *Symposium: The Evolution of Social Representation: Behavioral and Neurological Evidence*  
 Chair: Julian Keenan

Ben Franklin Room  
*Abstracts p. 75*

SA 5:00	<i>I Know What You Will Do! Shared Task Representation in the Service of Action Anticipation.</i> Atmaca, Silke; Sebanz, Natalie; Knoblich, Guenther
SA 5:20	<i>Theory of Mind and Deception: The Evolution of the Hemispheres.</i> Keenan, Julian Paul
SA 5:40	<i>The Social Neuroscience of False Memories.</i> Stevens, Sean T.; Keenan, Julian Paul

**7:00-8:30 p.m.**

**Keynote Address**  
**Daniel C. Dennett**

*Domesticating the Wild Memes of Folk Religion*  
*Abstract p. 24*

**Drexel's Main Auditorium**

**8:30pm**

**Banquet**

**Drexel's Great Court**

**SUNDAY, JUNE 11****8:00-9:00 a.m. Coffee****Houston Hall Lobby****Early Morning Sessions**

Session J-1: *Learning and Cultural Transmission*  
 Chair: Alex Mesoudi

Bodek Lounge  
 Abstracts pp. 76-77

SU 9:00	<i>Skinner's Ghost is Stalking Chomsky: The Pleistocene EEA Selected for General Purpose Rather than Domain Specific Psychological Mechanisms.</i> Richerson, Peter J.
SU 9:20	<i>The Evolution of Vertical Transmission: Reasons to and not to Learn from Parents.</i> McElreath, Richard; Strimling, Pontus
SU 9:40	<i>Experimental Simulations of Human Cultural Transmission Can Help to Explain Patterns in the Archaeological Record.</i> Mesoudi, Alex; O'Brien, Michael J.
SU 10:00	<i>A Preliminary Test of the Nonparental Transmission Hypothesis.</i> Alvard, Michael; Poston, Dudley; Cherry, Chris
SU 10:20	<i>The Transmission of Ceramic Style in the Ecuadorian Amazon: Design Similarity and Variation Within and Across Group Boundaries.</i> Patton, John Q.; Bowser, Brenda J.

Session J-2: *Mating and Life History Variables*  
 Chair: M. Emilia Yamamoto

Hall of Flags  
 Abstracts pp. 77-78

SU 9:00	<i>Height and Body Mass as Predictors of Lifetime Partner Number.</i> Frederick, David A.; Haselton, Martie G.; Laird, Kelsey
SU 9:20	<i>Status and Reproduction in Humans: Recent Data Supporting Evolutionary Assumptions.</i> Fieder, Martin; Huber, Susanne
SU 9:40	<i>Discounting Behavior and Fertility in Large Sample of Young Adults.</i> Davis, Jeff
SU 10:00	<i>Father's Absence During Childhood and Female Reproductive Strategy: Evidence, in a Brazilian Sample, for the Belsky, Steinberg and Draper Hypotheses.</i> Yamamoto, M. Emilia; Spinelli, Lulsa H.; Sousa, M. Bernardete
SU 10:20	<i>Ethnocentrism and Life History Strategy.</i> Figueredo, Aurelio J.; Jones, Daniel N.; Smith, Vanessa

**Session J-3: *Symposium: Evolutionary Analysis in Law***  
 Chair: Owen Jones

Class of 1949 Auditorium  
*Abstracts pp. 79-80*

SU 9:00	<i>Where Law &amp; Economics Meets Law &amp; Biology.</i> Jones, Owen D.
SU 9:20	<i>Intuitions of Justice.</i> Robinson, Paul H.; Kurzban, Robert
SU 9:40	<i>Westermarck Rulings: The Influence of Evolved Mechanisms for Inbreeding Avoidance on Jury and Judicial Decisions Involving Incest.</i> Lanou, John; Lieberman, Debra
SU 10:00	<i>Bio-Legal History and Gene-Culture Co-Evolutionary Theory.</i> Du Laing, Bart W.
SU 10:20	<i>Evolutionary Psychology, Child Abuse, and Family Law: Some Implications for Forensic Social Workers.</i> Kaufman, Mark

**Session J-4: *Parental Investment***  
 Chair: Robert J. Quinlan

Ben Franklin Room  
*Abstracts pp. 80-81*

SU 9:00	<i>Fitness Differences Between Siblings: Does Birth Order Matter?</i> Faurie, Charlotte; Lummaa, Virpi
SU 9:20	<i>Human Parental Effort and Environmental Risk.</i> Quinlan, Robert J.
SU 9:40	<i>Subsistence and Long-Term Reproductive Strategies.</i> Josephson, Steven C.
SU 10:00	<i>Paternity Uncertainty, Paternal Investment, and Paternal Identity Cues: Do Children Look Like Their Fathers? A Quantitative Genetic Approach.</i> Alvergne, Alexandra; Caillaud, Damien; Raymond, Michel
SU 10:20	<i>Family Relationships and Kin Investment Biases: A Two Generational Questionnaire Study.</i> McBurney, Donald H.; Pashos, Alexander; Gaulin, Steven J.C.

**10:40-11:00 a.m. Break**

**Houston Hall Lobby**

<b>Late Morning Sessions</b>
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Session K-1: *Symposium: Resemblance and Kinship Mechanisms*  
Chair: Anthony A. Volk

Bodek Lounge  
*Abstracts pp. 82-83*

SU 11:00	<i>Preferences for Self-Resembling Faces.</i> DeBruine, Lisa M.; Jones, Benedict C.; Perrett, David I.; Welling, Lisa L.M.; Conway, Claire C.; Little, Anthony C.
SU 11:20	<i>Influence of Cues of Resemblance on Hypothetical Adoption Preference.</i> Volk, Anthony A.
SU 11:40	<i>Information Confidence and Facial Resemblance in Situations of Infidelity.</i> Platek, Steven M.; Thomson, Jaime W.
SU 12:00	<i>Kinship, Friendship, and Helping: Effects of Relatedness, Cost of Helping, and Reciprocal Exchange History.</i> Stewart-Williams, Steve

Session K-2: *Symposium: A New Dawn on the Horizon: Bringing a Better Understanding to Clinical Disorders*  
Chair: Judith Easton

Hall of Flags  
*Abstracts pp. 83-84*

SU 11:00	<i>Sex Differences in Rival Characteristics and Use of Violence in the Morbidly Jealous.</i> Schipper, Lucas D.; Easton, Judith A.; Shackelford, Todd K.
SU 11:20	<i>Rethinking Morbid Jealousy: Adaptation or Clinical Disorder?</i> Easton, Judith A.; Schipper, Lucas D.; Shackelford, Todd K.
SU 11:40	<i>The Evolutionary Significance of Depressive Symptoms: Different Adverse Situations Lead to Different Depressive Symptoms Patterns.</i> Keller, Matthew C.; Nesse, Randolph M.
SU 12:00	<i>Self-Face Recognition and Theory of Mind in Schizophrenia.</i> Irani, Farzin

Session K-3: *Physiology/Sexual Orientation*  
Chair: Matthew H. McIntyre

Class of 1949 Auditorium  
*Abstracts pp. 84-85*

SU 11:00	<i>Testosterone and Non-Physical Competition in Human Females.</i> Sharp, Martin A.; Xinari, Charis; Al-Dujaili, Emad
SU 11:20	<i>Romantic Involvement Often Reduces Men's Testosterone: The Moderating Role of Extra-Pair Sexual Interest.</i> McIntyre, Matthew H.; Gangestad, Steven W.; Gray, Peter B.; Flynn Chapman, Judith; Burnham, Terence C.; O'Rourke, Mary T.; Thornhill, Randy
SU 11:40	<i>Sexual Orientation Influences the Importance of Olfaction During Mate Choice.</i> Sergeant, Mark J.T.; Davies, Mark N.O.; Dickins, Thomas E.; Griffiths, Mark D.
SU 12:00	<i>Explaining Sex-Related Traits in Structured Human Societies: An Illustration with Male Homosexuality.</i> Raymond, Michel

Session K-4: *Initiating Reproduction*  
 Chair: Anne V. Grossestreuer

Ben Franklin Room  
*Abstracts p. 86*

SU 11:00	<i>Menstruation Starts Earlier for Girls Raised in Extended Families, Father Present or Not: Findings from a Quantitative Measure of Family Extent.</i> Bear, Gordon; Staley, Judith M.
SU 11:20	<i>Intergenerational Patterns in Father Absence and Age of Menarche.</i> Boothroyd, Lynda G.
SU 11:40	<i>Environmental Uncertainty and Reproductive Patterns in Contemporary US Populations.</i> Grossestreuer, Anne V.; Vallengia, Claudia R.
SU 12:00	<i>Menarche Depends on Fat Distribution.</i> Lassek, William D.; Gaulin, Steven J.C.

**Special Session**

Special Session on Literature: *Literature and Evolution:  
 Narrative Old and New*  
 Chair: Brian Boyd

Class of 1949 Auditorium  
*Abstracts pp. 87-88*

SU 12:20	<i>The Evolution of Cooperation: The Odyssey.</i> Boyd, Brian
SU 12:40	<i>Reclaiming Virginity: Chaucer's Wife of Bath.</i> Martin, Louis
SU 1:00	<i>Natural Psychology in the Evolution of Russian Literature.</i> Cooke, Brett
SU 1:20	<i>"The Glint off the Lion's Molars": Narrative and Experience from an Evolutionary Standpoint.</i> Horvath, Tim

**1:40 p.m. Conference ends.**

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# Keynote and Plenary Abstracts

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**Keynote – Saturday, June 10**

**Drexel's Main Auditorium**

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***Domesticating the Wild Memes of Folk Religion***

**Daniel C. Dennett**  
**Department of Philosophy**  
**Tufts University**

Organized religions are brilliantly designed social systems. Reverse engineering them suggests that some of their features are ancient, and have no authors, while others are the more or less deliberate brainchildren of religion-designers--and these answer to rather different selection pressures. Like features under sexual selection, which are shaped by interactions with the perceptual and cognitive systems of potential mates, some features of organized religions are "intelligently" selected. But still, Orgel's Second Rule applies: Evolution is cleverer than you are.

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**Invited Talks**

**Irvine Auditorium**

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**Thursday Morning Plenary, 9 a.m.**

***A Darwinian Perspective on Adam Smith's Invisible Hand***

**Robert Frank**  
**Johnson School of Business**  
**Cornell University**

A nice suit is one that compares favorably with those worn by others in the same local environment. Similarly, a house of any given size is more likely to be viewed as adequate the larger it is relative to other houses in the same locale. Context shapes evaluations of goods for obvious psychological reasons, but more concrete payoffs are also at stake in many cases. The candidate with the nicer suit is more likely to land the job, for example, and the children of the owner of the larger house are more likely to attend good schools.

If evaluations of goods in different categories depend on context to different degrees, spending patterns will not be collectively optimal. The classic example is the distortion illustrated by military arms races. Each rival nation must apportion its resources between armaments and consumption goods. When the living standards in Nation A fall behind those in Nation B, the citizens of nation A may experience psychological discomfort. But they risk more profound discomfort if their stocks of arms fall behind those of Nation B, placing their political independence in jeopardy. The standard result is an equilibrium in which rival nations spend too much on arms and too little on consumption.

By the same token, if evaluations of some goods are more sensitive to context than others, there can be no presumption that privately optimal consumption patterns will be socially optimal. Rather, consumers will spend too much on goods whose evaluations depend most strongly on context and too little on those whose evaluations depend least strongly on context. For instance, if evaluations of houses are more sensitive to context than evaluations of leisure, then people will spend too much on houses and too little time with family and friends.

Darwinian theory suggests a number of specific predictions about the extent to which evaluation should depend of context in different domains. I will describe a list of these predictions and examine what existing empirical evidence has to say about each of them.

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**Thursday Afternoon Plenary 1:30 p.m.**  
***Evolutionary Medicine: Promise and Pitfalls***  
**Marlene Zuk**  
**Department of Biology,**  
**University of California, Riverside**

Evolutionary or Darwinian medicine has given us a new perspective on why we get sick. By viewing infectious disease as an ongoing interaction between a host and a pathogen, both living things, it suggests that some symptoms such as fever may be adaptations of the host to rid the body of the parasite, while others enable the pathogen's spread. It also makes sense of the apparent mismatch between the way our bodies often work and the way we would like them to. But Darwinian medicine has also fed the popular idea that somehow, somewhere, we have gone terribly wrong as we came down from the trees, stopped hunting and gathering for a living, started wearing stiletto shoes and began eating Mars bars and hamburgers. Nowhere is this more apparent than in the mountain of dietary advice suggesting that we would live longer and weigh less if we ate more like our ancestors. Superficially, this sounds like the new, evolution-savvy way to look at disease. But a closer look reveals that not all Darwinians are created equal; even if one agrees that an evolutionary perspective is helpful, the devil, even for Darwinians, is in the details. What do the data show about our real ancestral diet, and what does this mean for evolutionary medicine and our analysis of the adaptations of disease? Furthermore, what if parasites are, while not desirable, still somehow essential? Recent research on the diseases of civilization – hypertension, autoimmunity, obesity – suggests that disease is not the exception to a normal state – it is the normal state.

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**Friday Morning Plenary, 9 a.m.**  
***No Female is an Island: The Adaptive Value of Social Bonds***  
**Joan Silk**  
**Department of Anthropology**  
**University of California Los Angeles**

Social support has beneficial effects on human health and well-being across the life span. A growing body of evidence from a wide range of species suggests that these effects are not limited to humans. In a wide range of mammalian species, sociality enhances lifetime fitness. Some of the most detailed information about the structure and function of social bonds comes from long-term studies of female baboons. Females' social lives revolve around a tight core of close associates, who are mainly close maternal kin. However, baboons also recognize paternal kin, and females selectively associate with paternal sisters. The size and composition of females' social networks is linked to the availability of preferred types of partners, and females adjust to the absence of favorite partners by strengthening their ties to others. Such adjustments may have important fitness consequences because females who are more socially integrated than other females living in the same groups at the same time reproduce more successfully than females who were more socially isolated. There is also compelling evidence that females' relationships with adult males may influence the survivorship of their offspring. Females form close associations with the likely fathers of their offspring, and in some populations these associations seem to be designed to protect infants from infanticide. Moreover, fathers continue to support their own juvenile offspring in conflicts with peers. While these data suggest that there are important similarities between humans and other primates in the importance of social bonds, there may be important differences in the evolutionary forces that sustain social bonds across species. Thus, close social bonds in baboons and friendship in humans may not be equivalent kinds of relationships.

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**Friday Afternoon Plenary, 1:30 p.m.*****Lifespan Evolution and the Human Adaptive Complex: Is Seven Decades a Good Candidate?*****Hillard Kaplan****Department of Anthropology****University of New Mexico****Co-authors: Michael Gurven and Jeff Winking**

A cross-cultural analysis of all quantitative data available from extant hunting and gathering groups reveals significant convergences in adult mortality profiles. The average modal age of adult death in these groups is about 72 years, with a standard deviation of only 3.2 years across groups. This talk proposes that seven decades is a good candidate for the evolved human lifespan. It considers the meaning of an evolved lifespan from both proximate and ultimate perspectives. Using data from various societies, particularly the Tsimane of Bolivia, it then presents some tests of four alternative theories of human lifespan extension: The grandmother hypothesis (selection operating through women and their grandparenting effects;) the mother hypothesis (through women but via post-menopausal mothering effects on dependent children); the patriarch hypothesis, (through men and their late age fertility); and embodied capital theory, (through both men and women, as part of a larger human adaptive complex - HAC). The talk concludes by further developing the concept of the HAC, and offering a vision for future research in human life history evolution, including genetic, physiological and behavioral perspectives. We are on the frontier of great change in human longevity, and there is much to contribute to our understanding of the fundamental processes underlying mortality distributions and their links to other features of the human lifecycle.

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**Saturday Morning Plenary, 9 a.m.*****Epigenetic Processes in Human Infant Development*****Joseph J. Campos****Department of Psychology****University of California, Berkeley**

Between 7- and 9-months of age, human infants undergo an enormously broad array of perceptual, cognitive, emotional, social, and neurophysiological changes – changes so widespread and closely linked in time that a common underlying maturational factor has been postulated to account for this period of rapid developmental transition. In this presentation, a very different, non-maturationist, interpretation of many of these changes will be put forth on the basis of empirical data encountered incidentally while testing the maturation hypothesis. We call our interpretation of the developmental findings epiphenomenal to indicate that a developmental acquisition can create experiences that, in turn, generate new psychological and relational structures. The epiphenomenal event in this case is locomotor experience (e.g., crawling). For instance, experience crawling affects the onset of wariness of heights, the ability to follow another person's point and gaze gesture, the use of landmarks, a new level of the sense of self (i.e., visual proprioception), the ability to find an object hidden in one of two locations following a delay, working memory, and parent-infant emotional communication.

Pinpointing the role of locomotor experience in this wide array of psychological and relational changes has not come easily. A variety of quasi-experimental methods have been used in this research, including holding age constant, providing locomotor experience to otherwise-prelocomotor infants (through "walkers"), studying infants delayed in locomotor onset for orthopedic, neurological, and cultural/ecological conditions, and using lag sequential designs. Most recently, to address criticisms of quasi-experimentation, we have begun to use true random assignment of subjects to conditions. Specifically, as a first step in true experimentation, prelocomotor infants have been assigned to conditions wherein the infant can control a powered mobility device (PMD), while others cannot. So far, PMD experience has been found to bring about wariness of heights and affect visual proprioception.

These findings have implications for understanding sequence and synchrony in psychological development, the long-lasting consequences of motoric development, and interventions for locomotor delayed infants. Extensive use of video clips will be helpful to those not familiar with research on human infants.

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**Saturday Brownbag Lunch Presentation, 12:10 p.m.*****It's Time to Speak Up: A Panel Discussion on the Role of Evolutionary Scientists in Contemporary Public Discourse***

In this noontime meeting (bring your own lunch!), Daniel Dennett, Owen Jones, Paul Gross, R. Elisabeth Cornwell, and J. Anderson Thomson will tackle the broad question of how scientists can reach out beyond their disciplines to engage the larger world about science, evolution, human origins, and human nature. To date, the engagement has been defensive, only mobilized when there are immediate threats such as the Kansas, Georgia, and Dover (PA) cases. How do we move to a proactive engagement with education and the dominant cultures to promote science?"

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**Saturday Afternoon Plenary, 1:30 p.m.*****The Interactive Nature of Patriarchy and Arbitrary-set Hierarchy: The Dynamics of Sexism and Racism from an Evolutionary and Social Dominance Perspective*****Jim Sidanius****Department of Psychology  
Harvard University**

Using evolutionary psychology and social dominance theory (SDT) as theoretical frameworks, this presentation will suggest that we need to re-think the problem of prejudice and discrimination. This re-thinking includes: a) fully appreciating the fact that the problems of prejudice and discrimination are most probably not primarily a question of intergroup antipathy, b) possibly accepting the fact that discrimination and intergroup oppression are intimately associated with the apparently ubiquitous tendency for human social systems to form and maintain group-based social hierarchies, c) fully embracing the necessity of understanding the problems of discrimination and intergroup conflict using multiple levels of analysis, and theorizing about the intersections among these levels of analysis, and d) accepting the fact that some of the essential dynamics of discrimination and prejudice might be qualitatively different, depending upon the targets of that discrimination. Thus, what is known as the "subordinate-male-target hypothesis" within SDT suggests that, while related to one another, sexism is a qualitatively different phenomenon than racism.

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## Session Talk Abstracts

Thursday, June 8

### Thursday Morning Sessions

**Session A-1 Cooperation in Groups: The Role of Punishment** Bodek Lounge  
Chair: John Tooby

TH 10:30 a.m.

***Does an Unfair Intention Increase Third-Party Punishment?***

Takahashi, Nobuyuki (Hokkaido University, [ntakahas@let.hokudai.ac.jp](mailto:ntakahas@let.hokudai.ac.jp)); Takagishi, Haruto; Mashima, Rie

Third-party punishment may play a critical role in explaining social order. Following the inconclusive results of Takahashi and Mashima (2005), we conducted a strategy method experiment to examine whether a dictator's unfair intention increases third-party punishment. A truncated dictator game with the option of third-party punishment was employed. A first-party was given two options to allocate 1600 yen (\$14) between himself and a second-party. In the intention condition, Option X was an 80/20 split between the first and second-party, and option Y was 50/50. In the no intention condition, X and Y were both 50/50. A third-party was given 500 yen and decided the amount used to punish the first-party by subtracting from the first-party's profit. Results showed that when a first-party chose X the mean punishment level was higher in the unfair intention condition than in the no intention condition.

TH 10:50 a.m.

***The Coevolution of Altruism and Punishment: Role of the Selfish Punisher***

Nakamaru, Mayuko (Tokyo Institute of Technology, [nakamaru@valdes.titech.ac.jp](mailto:nakamaru@valdes.titech.ac.jp)); Iwasa, Yoh (Kyushu University)

Punishment is an important mechanism promoting the evolution of altruism among nonrelatives. We investigate the coevolution of altruism and punitive behavior, considering four strategies: a cooperator who punishes defectors (AP), a pure cooperator (AN), a defector who punishes defectors (selfish punisher or SP), and a pure defector (SN). We analyze the effects of SP on the coevolution of altruism and punishment, studying both the score-dependent viability model (whereby the game's score affects survivorship only) and the score-dependent fertility model (whereby the score affects fertility only). In the viability model of a completely mixed population, SP helps cooperators to evolve, but SP does not in the fertility model. In both models of a lattice-structured population, SP promotes the spread of AP, but AN discourages it. These results can be understood that punishment is a form of spite behavior and that different models give different magnitude of advantage to spite behavior.

TH 11:10 a.m.

***Punishing Non-Cooperators Doesn't Yield a Solution to the Problem of Cooperation but Rewarding Cooperators Does***

Kiyonari, Toko (McMaster University, [kiyonar@mcmaster.ca](mailto:kiyonar@mcmaster.ca)); Barclay, Pat (Cornell University); Wilson, Margo (McMaster University); Daly, Martin (McMaster University)

\* Postdoctoral Award Candidate

Cooperation within non-kin groups presents an evolutionary puzzle. Punishment can sustain cooperation, but the provision of such "altruistic punishment" suffers from a second-order free-riding problem since non-punishers can free-ride on the costly punishment provided by others. A possible solution to this problem is "second-order punishment" of non-punishers; more generally, the threat or promise of higher-order sanctions might be what maintains the lower-order sanctions that enforce cooperation in collective action problems. We found that voluntary second-order punishment was very rare, but second-order rewarding was common enough to cover the costs of first-order rewarding. Furthermore, people typically didn't reward those who "altruistically" punished non-

cooperators, but punished those who failed to reward cooperators. This suggests that people are more inclined to reward those who deliver altruistic benefits than those who deliver altruistic punishment, and thus that rewards may have played a more important role than punishment in the emergence of human non-kin cooperation.

**TH 11:30 a.m.**

***For Whom Do We Reciprocate? The Effects of Dominance Relationships on the Use of Incentives in Collective Action***

**Kim, Sangin (Seoul National University, no78ok78@snu.ac.kr)**

*\* New Investigator Award Candidate*

Dominance relationships affect our perceptions of fairness (Cummins 2001). Thus, I hypothesize it will also influence the use of incentives and, more specifically, in a way that is favorable for social animals to enhance and maintain their status in the group. Among the competitive matches, punishment may be preferred for relative fitness while individuals of disparity have room for coalition-promoting rewards. I conducted public goods games in 2x2 conditions (punishment/reward  $\diamond$  symmetry/asymmetry). In the asymmetric treatments, group members were allotted unequal endowments and benefit ratios, which were correlated. The equalized participants punished one another more severely than the differentiated ones did. Contrarily, the differentiated participants rewarded one another more generously than the equalized ones did. Rewards facilitated group cooperation only in the asymmetric condition, while punishment had effects in both conditions. The results suggest that humans may have evolved to utilize incentives as a dominance striving strategy.

**TH 11:50 a.m.**

***The Role of "Outrages" in the Evolved Psychology of Intergroup Conflict***

**Tooby, John (University of California, Santa Barbara, tooby@anth.ucsb.edu); Thrall, Nathan (Columbia University); Cosmides, Leda (University of California, Santa Barbara)**

One kind of evolutionarily recurrent social collectivity is the amplification coalition, whose function is the amplification by coordinated action of the power of its individual members, especially in conflicts with individuals from outgroups. Events in which one or more members of one group injure the welfare of members of another group ("outrages") are viewed as proposing an intergroup welfare trade-off ratio (WTR) precedent that reflects the relative power of the two groups and so sets expectations for future interactions between members of the two groups. If the disadvantaged group feels stronger than the proposed WTR implies, awareness of the outrage mobilizes coordinated aggressive action to reset the intergroup WTR. Because it is normally difficult to get individuals to set aside competing agendas within groups, yet group power increases with coordination, outrages (real or fabricated) become a resource ingroup individuals strategically deploy to mobilize joint action they (as individuals) benefit from.

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**Session A-2 Symposium: Literature and the Logic of Inclusive Fitness Hall of Flags**  
**Chair: Joseph Carroll**

**TH 10:30 a.m.**

***Toward a New Humanities***

**Gottschall, Jonathan, A. (Washington and Jefferson College, jgottschall@stlawu.edu)**

Contemporary literary study is suffering in the throes of a deep malaise. There is consensus that the field is floundering and that big changes are required; there is less agreement about the causes of the crisis and the best prescription for change. This report locates sources for the malaise in specific and flagrant theoretical, methodological, and attitudinal defects. It then goes on to describe a new paradigm, now under formation, where literary investigations are rooted in consilient theory, are disciplined by empirical data from adjacent fields, and where a large proportion of ideas can be addressed (in whole or part) in a methodologically scientific fashion. There is no epistemological brick wall dividing the humanities from the sciences. By moving closer to the sciences in theory, method, and governing empirical ethos literary scholars can again play an important role in studying the final subject of all the humanities: humans.

TH 10:50 a.m.

***Graphing Jane Austen***

Carroll, Joseph C. (University of Missouri, St. Louis, jcarroll@umsl.edu); Johnson, John A. (Pennsylvania State University); Kruger, Daniel J. (University of Michigan); Gottschall, Jonathan A. (Washington & Jefferson College)

\* *Postdoctoral Award Candidate*

We are presenting the results of a web-based questionnaire study on the construction of characters in Victorian novels. 2,000 characters from 202 novels were listed. 1702 protocols were completed. We have data on 583 characters from Victorian novels. We asked questions about motives, mate selection (long and short-term mating), personality, and the emotional responses of readers. Our categories of analysis are grounded in an adaptationist model of human nature, and our results provide a systematic linkage between that model and the construction of characters in the novels of the period. We find that on a number of basic traits involving sex and motivation the characters in the novels correspond to universal patterns of human behavior. We also find that the organization of characters reflects a highly polarized structure of values. That polarized structure constitutes the normative value structure of the novels.

TH 11:10 a.m.

***Adaptive Functions of Literature: Why the Author Won't Die***

Turpin, Jeff P. (jpturpin@gvtc.com)

In his book *Literary Darwinism* Joseph Carroll summarized "adaptive" hypotheses about the functions of literature: Professor Michelle Scalise-Sugiyama sees writing as "conveying adaptively important information." Evolutionary psychologist Steven Pinker classes art with cheesecake and pornography. Psychologist Geoffrey Miller claims we write to advertise our reproductive suitability. Archeologist Stephen Mithen thinks art stitches together mental domains. Biologist E. O. Wilson claims the arts bridge gaps between instinct and reason, and Carroll thinks art helps us practice life. Connecting these claims with actual books is the best test of the hypotheses. But comparing them with traditional criticism throws light on all three fields. By juxtaposing Scalise-Sugiyama with Wilde's "art for art's sake," Pinker's "cheesecake" with Plato's condemnation of the poet, Miller's "art as sexual advertisement" with Barthes' *Death of the Author*, or Carroll's claims with postmodern erasure of language, I can test and generate new ideas about why we write and read.

TH 11:30 a.m.

***The Historical Reception of Shirley Jackson's "The Lottery"***

Michelson, David M. (Binghamton University, dmichel1@binghamton.edu)

In 1948 the American writer Shirley Jackson published the short story, "The Lottery." The story represents a small, nameless town's annual ritual of collectively and unemotionally stoning a fellow townsman to death. Readers responded to the story with an unexpected degree of anger, outrage, disgust, and confusion. Based upon an examination of 127 letters written to the author after publication, I argue that the angry, outraged, and hostile responses result from incongruities between the author's representation of human social life, and aspects of human nature that are believed to aid in group survival -- cooperation, fairness, and in-group amity. I discuss how mid-century American cultural values, such as the rhetoric of American moral exceptionalism, may have made the story's representation of human social behavior even more disagreeable to readers. Finally, I suggest that the story persists because it functions as a cautionary tale, which instills adaptive social values.

TH 11:50 a.m.

***Genes vs. Resources: Mate Selection in Wharton's Glimpses of the Moon***

Saunders, Judith P. (Marist College, judith.saunders@marist.edu)

In Edith Wharton's 1922 novel *The Glimpses of the Moon*, both male and female characters struggle with mate selection criteria. The social environment Wharton portrays (twentieth-century, upper-class, American) has schooled individuals to overvalue material resources when seeking mates and, simultaneously, to pay scant attention to genetic quality. Affirming the values their community has inculcated, Wharton's protagonists find themselves drawn against their conscious intentions toward potential partners with superior personal qualities rather than toward those who are wealthy but less personally desirable. Gradually the protagonists manifest increased interest in the possibility of progeny, so that Wharton links their revised preference for genetically

superior mates to a heightened recognition of long-term partnerships as a vehicle for producing and nurturing offspring. The happy ending -- a rare exception in Wharton's oeuvre -- is achieved when evolved tendencies prove stronger than maladaptive socialization.

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**Session A-3 Symposium: Mating Intelligence: Toward an Evolutionarily Informed Construct**  
Chair: Glenn Gener

**Class of 1949 Auditorium**

**TH 10:30 a.m.**

***A Psychometric Validation of Mating Intelligence: Verbal Creativity, General Intelligence, Personality, Psychopathology, and Sexual History***

Tal, Ilanit R. (University of New Mexico, [ital@unm.edu](mailto:ital@unm.edu)); Miller, Geoffrey F.; Swegel, Paul J.

Fashionable new forms of intelligence (e.g., 'emotional,' 'social,' 'practical') are often poorly validated. Here, we try to do better with 'mating intelligence,' operationalized as creativity in courtship-like contexts. 229 University of New Mexico students completed 6 verbal creativity tasks and 13 pictorial creativity tasks, as if for a dating agency profile, expecting their output to be rated by opposite-sex individuals. They also completed measures of general intelligence (Raven's matrices), Big Five personality traits, schizotypy, mating effort, mate value, sociosexuality, sensational interests, and sexual, drug, and family histories. Ratings of verbal and pictorial creativity showed good inter-rater reliability; composite creativity ratings were positively associated in multiple regressions with general intelligence, openness, spontaneity (negative conscientiousness), family history of bipolar disorder, and male (but not female) short-term mating success. Thus, 'mating intelligence' operationalized as courtship creativity shows decent reliability, and convergent, discriminant, and predictive validity.

**TH 10:50 a.m.**

***Mating Intelligence and General Intelligence as Independent Constructs***

Kanazawa, Satoshi (London School of Economics and Political Science, [S.Kanazawa@lse.ac.uk](mailto:S.Kanazawa@lse.ac.uk))

A recent evolutionary psychological theory suggests that general intelligence evolved as a domain-specific adaptation to solve evolutionarily-novel problems, and that it was not general at all in the evolutionary environment; it became general and universally important only because the current environment is almost entirely evolutionarily-novel. One aspect of modern life which is not evolutionarily-novel is mating and parenting. This logic then suggests that mating intelligence is independent of general intelligence, and thus those who possess higher levels of one do not necessarily possess comparably high levels of the other. I support the implications derived from the theory, by empirically demonstrating that: 1) individuals who have high general intelligence do not achieve greater levels of mating and parenting success, 2) except when mating and parenting significantly involve evolutionarily-novel entities (such as modern contraception devices), when the more intelligent do perform better than the less intelligent.

**TH 11:10 a.m.**

***For the Love of the Muse***

Kaufman, Scott Barry (Yale University, [scott.kaufman@yale.edu](mailto:scott.kaufman@yale.edu)); Bromley, Melanie L. (California State University, San Bernardino); Kaufman, James C. (California State University, San Bernardino)

\* *New Investigator Award Candidate*

It has been argued that creativity evolved through sexual selection to attract mates. Recent research lends support to this view. Nettle & Clegg found that artistic creativity correlated with mating success. Furthermore, they found that mating success also correlated with two dimensions of schizotypy, and one dimension in particular was mediated by artistic creativity. Therefore, to the extent that the goal of mating intelligence is to increase reproductive success, creativity and mental illness are critical components of the mating intelligence construct. To delve deeper into this relationship, we conducted a study with a larger sampling of creative behaviours and a more expansive set of mental illness measures than previously studied. In addition, we assessed big five personality traits and administered a test of creative ability. Particular interactions that are most predictive of mating success will be discussed, along with the broader implications for the viability of the mating intelligence construct.

TH 11:30 a.m.

***Studying Mating Intelligence in the Speed Dating Context***

Todd, Peter M. (Indiana University, [pmtodd@indiana.edu](mailto:pmtodd@indiana.edu))

The evolved cognitive mechanisms underlying intelligent mate choices are difficult to observe in the real world, mostly because these choices happen at unpredictable points over a long span of time. Speed dating events, in which around 20 men and 20 women interact briefly with each other (in all possible pairs) and then anonymously indicate their interest in the other person, allow us to watch these choices being made regularly in five-minute increments. This kind of mate choice in a microcosm can tell us about the cue appraisal processes and sequential search processes people use in mate choice. We will also discuss how speed dating events can be made more amenable to some research questions by making structural changes to the events.

TH 11:50 a.m.

***Deception as a Strategy in Long-Term and Short-Term Mating***

O'Sullivan, Maureen (University of San Francisco, [osullivan@usfca.edu](mailto:osullivan@usfca.edu))

Results from survey data support the argument that women deceive themselves in order to better tell the many lies that are involved in maintaining short term and long term romantic relationships. While reporting that most women tell such lies, they claim they do not. On average, men are more likely to admit that they themselves tell a variety of lies to their romantic partner. Evolutionary psychology predicts many aspects of deception in short-term mating behavior. Deceiving one's partner about one's youth and health through cosmetics and good grooming are widely used stratagems in the initial phase of many short term dating/mating relationships. Maintaining a long-term relationship, however, involves a much more sophisticated manipulation of one's self and one's relationship. Being "in love" requires a view of the other, and one's feelings about the other, that requires stringent cognitive and emotional work, i.e., mating intelligence.

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**Session A-4 Signaling**

**Ben Franklin Room**

**Chair: Thomas Flamson**

TH 10:30 a.m.

***Indices of Quality? Multivariate Analyses of Motion-Captured Dance Movement***

Brown, William M. (Brunel University, [william.brown@brunel.ac.uk](mailto:william.brown@brunel.ac.uk)); Cronk, Lee; Grochow, Keith; Jacobson, Amy; Liu, C. Karen; Popovic, Zoran; de Aguiar, Rolando; Trivers, Robert

Dance ability may be a signal of underlying genotypic and/or phenotypic quality (Brown et al., 2005). Specifically fluctuating asymmetry (FA) - a measure of developmental instability - is negatively associated with dance ability. To investigate the movements associated with symmetry and dance quality we used motion-capture data from eight infrared cameras of forty Jamaicans pre-screened twice for FA (1996-2002). More symmetrical individuals displayed greater spine angle variability while dancing than less symmetrical individuals and these movements correlated positively with perceived energy expenditure and dance ability. Furthermore low-FA individuals showed greater left than right-side movement variability in thigh, knee, ankle, bicep and scapula compared to high-FA individuals. Future studies will include measures of actual energy expenditure to determine if these specific movements qualify as index signals of quality (e.g., are trunk flexions costly for low quality signallers?) and whether these associations are restricted to courtship contexts.

TH 10:50 a.m.

***I Don't Get It: Further Evidence for the Encryption Theory of Humor***

Flamson, Thomas J. (UCLA, [tflamson@ucla.edu](mailto:tflamson@ucla.edu))

The Encryption Theory of humor proposes that a necessary component of the structure of humorous production is the presence of multiple, divergent understandings of speaker meaning, some of which are dependent on shared access to implicit information on the parts of both speaker and audience. Only with access to this background knowledge can an audience member "decrypt" the implicit understandings, which also entails the inference that the speaker shares that access. This 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. This talk will focus on the hypothesized computational structure of encryption, discussing evidence from online surveys that suggest both the background knowledge of the audience and the degree of encryption impact ratings of humor in ways predicted by the Encryption Theory.

**TH 11:10 a.m.**

***Is Iban Hunting a Costly Signal? An Evaluation of the Scale and Context of Signal Production***

**Pomianek, Christina N. (University of Missouri, Columbia, cnp304@mizzou.edu)**

*\* New Investigator Award Candidate*

Costly Signaling Theory (CST) is often employed to explain seemingly "wasteful" behaviors including hunting and distributing game widely among non-kin. These behaviors are economically wasteful but may transmit valuable and reliable information to signal receivers. At present, however, CST assumes that individual signalers within a sample all produce the same signals. I explore the hypothesis that individuals may use hunting to produce different signals within different contexts, and these signals are aimed at specific individuals. The apparent signals of individual hunters are evaluated using Iban hunting, game distribution, and rice-farming data, as well as various measures of relative prestige. Analyses reveal that there are no differences in signal production among low-prestige hunters and high-prestige hunters. However, analyses of individual hunting, distribution, and rice-farming suggest that individuals may produce signals to communicate specific qualities such as diligence, skill, and altruism to targeted individuals.

**TH 11:30 a.m.**

***Risk-Taking and Competitive Status-Signaling in P2P File-Sharing Networks***

**Lyle, Henry F. III (California State University, Sacramento, lyle@csus.edu); Sullivan, Roger J.**

*\* New Investigator Award Candidate*

Asymmetrical exchange between non-kin has long puzzled evolutionary anthropologists. Peer-to-peer file-sharing networks are contemporary examples of sharing systems in which altruists (uploaders) share unconditionally with non-reciprocating free riders (downloaders). File-sharing is convenient and virtually risk-free for downloaders. In contrast, uploaders allow other file sharers direct access to their computers' hard drives, from which digital data such as music is downloaded. By uploading, a file sharer incurs unnecessary risks, such as increased vulnerability to computer viruses, hackers and prosecution. In an analysis of file-sharing behavior in university undergraduates, we found that significantly more males than females upload. Among uploaders, males are more likely to be identified as uploaders by friends, discuss uploading and upload in the presence of peers. Results indicate that uploading creates a costly signaling venue in which males incur avoidable risks as a means to signal status among peers.

**TH 11:50 a.m.**

***Peacocks, Picasso, and Parental Investment: The Effects of Romantic Motives on Creativity***

**Griskevicius, Vladas (Arizona State University, vladag@asu.edu); Cialdini, Robert B.; Kenrick, Douglas T.**

*\* New Investigator Award Candidate*

For many artists like Picasso, creativity appears to have been fueled by muses. But does romance really inspire creativity? And if so, why are muses predominantly female, and are there circumstances when male muses will inspire? From the foundation of sexual selection and parental investment theories, four experiments explored the effects of mating motivation on creativity. Even without other incentives to be creative, romantic motives enhanced creativity on both subjective and objective measures. For men, both short-term or long-term mating goals increased creative displays; however, women displayed more creativity only when primed to attract high-quality long-term mates. These creative boosts were unrelated to increased effort on creative tasks or to changes in mood or arousal, and were unaffected by the addition of monetary incentives for creativity. Findings align with the view that creative displays may be linked to sexual selection, qualified by the unique exigencies of human parental investment.

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## Thursday Afternoon Sessions

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**Session B-1 Symposium: The Ecology of Intelligence**  
**Chair: Paul Andrews**

**Bodek Lounge**

**TH 3:00 p.m.**

***How Fatal "Accidents" Select for Higher General Intelligence (g)***  
**Gottfredson, Linda S. (University of Delaware, gottfred@udel.edu)**

A century of research on human mental abilities shows there are many distinct mental abilities, but all correlate moderately highly at both the phenotypic and genotypic levels. The general mental ability factor (g) extracted from them is virtually identical in all human groups yet tested and, moreover, higher g enhances performance in school, work, health, and other life arenas. The question, then, is what in the Homo environment could have selected for such a highly general, highly practical learning and reasoning ability and even accelerated selection within the Homo line? I present evidence that human innovation created novel ecological hazards, managing hazards is cognitively demanding, and "accidental" injuries (burns, punctures, falls, animal bites, etc.) are the major killer of reproductive-age individuals in both modern and hunter-gatherer societies. Although innovations improved the general welfare and lowered mortality overall, they put lower-g members at ever-higher relative risk of death from preventable accidents.

**TH 3:20 p.m.**

***Little Boy Bright, Little Boy Blue: The Social Ecology of Intelligence and Depressed Affect in Adolescence***  
**Andrews, Paul W. (Virginia Commonwealth University, pandrews@vcu.edu); Keller, Matthew C.; Neale, Michael C.; Aggen, Steven H.; Silberg, Judy L.**

*\* Postdoctoral Award Candidate*

The social intelligence hypothesis predicts that conflicts of interest between close social partners should be intellectually challenging because it is difficult to outmaneuver or exploit them without breaking cooperative bonds. Based on research indicating that depressed affect is a measure of cognitive strain, we predicted that more intelligent people would find such conflicts less straining and less depressing. In a sample of male (n=490) and female (n=561) adolescent twins we found that, as predicted, more intelligent boys (but not girls) were less depressed in response to events indicating a conflict of interest with close social partners (entry of a new person in the household,  $\beta = -.29$ ,  $p = .07$ ; starting a new romantic relationship,  $\beta = -.32$ ,  $p = .003$ ; enhanced parent-adolescent conflict,  $\beta = -.40$ ,  $p = .01$ ). However, intelligence was associated with a lower probability of dissolving a cooperative relationship in girls ( $\beta = -.13$ ,  $p = .02$ ) but not in boys ( $\beta = +.01$ ,  $p = .88$ ). We discuss possible reasons for these sex differences.

**TH 3:40 p.m.**

***Surprisingly Low Additive Genetic Variance in Human Brain Size***  
**Miller, Geoffrey (University of New Mexico, gfmiller@unm.edu); Penke, Lars (Humboldt University of Berlin)**

A coefficient of additive genetic variance (CVA) is a trait's standard deviation divided by its mean, times the square root of its (narrow-sense) heritability. CVAs tend to be higher for complex, polygenic, fitness-related traits under recent directional selection. So, we expected that a review of 30 MRI studies (total n = 4,311) would yield a high CVA for human brain size. We found brain size is highly heritable (+.89) and moderately correlated with general intelligence (+.42). However, the CVA of live adult human brain volume is only 7.8%. This is lower than the volumetric CVA we could calculate for any other human organ. Although most theories agree that human intelligence was under recent directional selection, human brain size has apparently been under net stabilizing selection, perhaps reflecting sexually antagonistic coevolution. In any case, brain size seems a potentially misleading index for understanding the evolutionary genetics of human intelligence.

TH 4:00 p.m.

***Creativity and Mating Success: Two Empirical Studies***

**Nettle, Daniel (University of Newcastle, [daniel.nettle@ncl.ac.uk](mailto:daniel.nettle@ncl.ac.uk)); Clegg, Helen**

In "The Mating Mind", Geoffrey Miller hypothesised that artistic creativity functions to attract mates. Here, we present two empirical studies of the relationship of creativity to mating behaviour. In the first study, poets and visual artists were shown to have increased number of sexual partners compared to controls. In the second study, of 236 visual artists, indicators of success in the artistic domain were positively with numbers of sexual partners for males but not females. Artistic status was also correlated with frequency of intercourse. Implications for the "Mating Mind" hypothesis are discussed.

TH 4:20 p.m.

***Lessons About the Ecology of Intelligence from the Twin's Early Development Study (TEDS)***

**Arden, Rosalind (King's College London, [membrane@nm.net](mailto:membrane@nm.net))**

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**Session B-2 Cooperation in Groups: Models and Simulations Hall of Flags**

**Chair: Karthik Panchanathan**

TH 3:00 p.m.

***Why Indirect Reciprocity Isn't a Good Explanation of Large-Scale Cooperation***

**Panchanathan, Karthik (UCLA, [buddha@ucla.edu](mailto:buddha@ucla.edu))**

*\* New Investigator Award Candidate*

Explanations for the evolution of large-scale cooperation are myriad. Indirect reciprocity has been proposed as an explanation of the evolution of dyadic cooperation. Suzuki and Akiyama offer a model of indirect reciprocity in which social interaction occurs in groups of arbitrary size. Building on their result, I demonstrate why indirect reciprocity, in and of itself, does not offer an attractive solution to the problem of large-scale cooperation. This result is analogous to previous work on reciprocal altruism in large groups. When social interaction occurs in small groups (preferably dyads), reciprocity, indirect or otherwise, works by channeling altruism to those with a cooperative history and sanctioning free riders by denying them aid. As group size increases, however, reciprocity becomes an increasingly blunt instrument and the evolution of cooperation becomes increasingly unlikely. In large groups, the only way to sanction a free rider is to withhold cooperation from the whole group.

TH 3:20 p.m.

***Reciprocity and Contingent Movement in the Evolution of Cooperation in Groups***

**Aktipis, Athena (University of Pennsylvania, [aktipis@psych.upenn.edu](mailto:aktipis@psych.upenn.edu))**

Past simulations have shown that cooperative types can dominate when agents play public goods games in groups and agents use a "Walk Away" strategy to determine whether to stay in their current group or leave in search of new group. The current study builds on this work by exploring the role reciprocity in a group context. When agents are able to use both a "Walk Away" strategy and a "matching" strategy, cooperative outcomes ensue under a large range of parameter values. Additionally, when agents can mutate to invest slightly more or less than average, agents evolve to be very cooperative, even when parameters are less favorable to high-investing agents. These results are discussed in terms of multilevel selection dynamics, with attention to the ways in which the "Walk Away" strategy combined with a reciprocating strategy promote between group variance in both the heritable and environmentally influenced components of cooperation.

TH 3:40 p.m.

***Errors and Reciprocity in Sizable Groups***

**Boyd, Rob (UCLA, [rboyd@anthro.ucla.edu](mailto:rboyd@anthro.ucla.edu)); Panchanathan, Karthik**

The iterated n-person prisoner's dilemma provides one model of reciprocity in sizable groups. Several studies suggest that the stability of reciprocating strategies is exceptionally sensitive to presence of errors. However, these studies focus on trigger strategies that do not incorporate features that have been shown to aid the persistence of cooperation in the two person case. In this paper, we show that n-person generalizations of

Contribute-Tit-for-Tat and Pavlov substantially increase the stability of cooperation in the presence of implementation and perception errors, respectively.

**TH 4:00 p.m.**

***Evolutionary Dynamics of the Continuous Iterated Prisoner's Dilemma: Computer Simulation Results***

**Le, Stephen (UCLA, [stephen.le@ucla.edu](mailto:stephen.le@ucla.edu)); Boyd, Robert**

*\* New Investigator Award Candidate*

The iterated prisoner's dilemma (IPD) has been widely used in the biological and social sciences to model dyadic cooperation. We analyze a model of the continuous IPD with a limited strategy set, and show that a generous strategy achieves the maximum possible payoff against its own type. While this strategy is stable in a neighborhood of the equilibrium point, the equilibrium point itself is always vulnerable to invasion by uncooperative strategies, and hence subject to eventual destabilization. The presence of noise or errors has no effect on this result. Instead, generosity is favored because of its role in increasing contributions to the most efficient level, rather than in counteracting the corrosiveness of noise. Computer simulation using a single-locus infinite alleles Gaussian mutation model suggest that outcomes ranging from a stable cooperative polymorphism to complete collapse of cooperation are possible depending on the magnitude of the mutational variance.

**TH 4:20 p.m.**

***The Effect of Excludability in Stabilising Cooperation in a Public Goods Game***

**Mathew, Sarah (UCLA, [smathew@ucla.edu](mailto:smathew@ucla.edu)); Boyd, Robert**

Previous models of cooperation among groups of unrelated individuals have examined the role of reciprocity, punishment and reputation in the persistence of cooperative strategies. These models typically assume that everyone in the group necessarily consumes the benefits of the public good. However, in several realistic scenarios, public goods are excludable. In this model, we build on ideas developed by Brandt, Hauert and Sigmund on voluntary participation in the public goods game, where some individuals choose to neither bear the costs nor consume the benefits of the cooperative activity. We model a one-shot n-person prisoner's dilemma game with defectors, non-participants and cooperator-punishers, and examine the conditions under which the cooperator-punisher strategy can increase in frequency when rare. The analysis provides some insight into how asocial strategies may provide an environment for the evolution of cooperative social strategies.

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**Session B-3 *Emotions & Emotional Expressions* Class of 1949 Auditorium**

**Chair: Tim Ketelaar**

**TH 3:00 p.m.**

***They All Look the Same to Me (Unless They're Angry): From Out-Group Homogeneity to Out-Group Heterogeneity***

**Ackerman, Joshua M. (Arizona State University, [joshua.ackerman@asu.edu](mailto:joshua.ackerman@asu.edu)); Shapiro, Jenessa R.; Neuberg, Steven L.; Kenrick, Douglas T.; Becker, D. Vaughn; Griskevicius, Vladas; Maner, Jon K.; Schaller, Mark**

*\* New Investigator Award Candidate*

People often find it more difficult to distinguish ethnic out-group members as compared to in-group members. A functional approach to social cognition suggests this bias may be eliminated when out-group members display threatening facial expressions. In one study, White participants viewed Black and White faces displaying either neutral or angry expressions, and later attempted to identify previously-seen faces. Recognition accuracy for neutral faces replicated the out-group homogeneity bias; but this bias was entirely eliminated for angry Black faces. Indeed, when participants' cognitive processing capacity was constrained, recognition accuracy for angry Black faces was actually greater than for angry White faces, constituting an out-group heterogeneity bias. Additional studies demonstrated the emotion and group-specificity of these effects.

TH 3:20 p.m.

***Not All Social Exclusion is Created Equal: Different Types of Exclusion Lead to Qualitatively Distinct Responses***

**Robertson, Theresa E. (University of California, Santa Barbara, robertson@psych.ucsb.edu); Delton, Andrew W.; Klein, Stanley B.**

*\* New Investigator Award Candidate*

Exclusion from social relationships is universally practiced and is universally painful. Evidence and theory suggest humans have evolved distinct psychological motivations for excluding others (e.g. exclusion for non-reciprocation, exclusion for pathogen infection). We hypothesize that the costs of social isolation have led to the co-evolution of distinct exclusion response mechanisms designed to counter the different types of exclusion. To test this, two studies examined responses to exclusion from a coalition for one of five reasons: free-riding, temporary lack of ability, interfering with group coordination, parasite infection, or betraying the group. Participants were asked to rate to what extent they would feel several emotions when being excluded in these situations (both studies), to list tactics they would use to regain acceptance in the group (Study 1), and to rank how effective several tactics would be (Study 2). Different types of exclusion led to distinct patterns of emotions and behavioral tactics.

TH 3:40 p.m.

***Context Sensitivity of the Evolved Jealousy Mechanism***

**Schuetzwohl, Achim (University Bielefeld, achim.schuetzwohl@uni-bielefeld.de)**

Context sensitivity is a hallmark of evolved psychological mechanisms. Recently, evidence emerged indicating context sensitivity of men's and women's evolved jealousy mechanisms. Two studies are presented expanding this line of research with respect to two different cognitive processes: Forced-choice decisions under cognitive load and the disengagement of attentive resources from task-irrelevant cues to infidelity. In the forced-choice study, participants had to decide whether emotional or sexual infidelity would cause more jealousy while they either had to memorize a jealousy-irrelevant digit string or jealousy-relevant words. More men than women selected sexual infidelity only in the jealousy relevant cognitive load condition. In the attentive resources study, men and women with a romantic partner had greater difficulties in disengaging attentive resources from task-irrelevant cues to the adaptively primary infidelity type (i.e., female sexual and male emotional infidelity) than participants without a romantic partner.

TH 4:00 p.m.

***Why Hunter-Gatherers Don't Typically Smile When Complimented for Successful Foraging: How Emotional Displays Signal Strategy Types***

**Ketelaar, Timothy V. (New Mexico State University, ketelaar@nmsu.edu); Koenig, Bryan (New Mexico State University); Burkett, Brandy (University of California, Santa Barbara); Davis, Mark (University of West Alabama)**

Do emotional reactions to compliments for successful foraging predict subsequent resource distribution? In two studies, participants were complimented after successfully performing a task resembling a high-variance foraging expedition. In study one, participants were asked to imagine which emotion they would display if they had been complimented on their successful foraging efforts. Participants who reported that they would smile when complimented also reported that they would distribute the gathered resource more selfishly than participants who reported that they would not smile when complimented. In study two, participants were videotaped whilst being complimented for successful performance on a foraging task and were given \$11 as a reward to distribute with their partner (dictator game). Individuals who smiled (during the compliment) actually gave less money to their partner than individuals who rejected the compliment by not smiling. Results support the hypothesis that emotional displays signal strategy types (Ketelaar, 2004, 2006).

TH 4:20 p.m.

***Anger Expressions Dissected: What's With All the Yelling and Why Does His Face Look Like That?***

**Sell, Aaron N. (University of California, Santa Barbara, sell@psych.ucsb.edu); Tooby, John; Cosmides, Leda**

Anger can be conceptualized as an adaptation designed to negotiate mental representations of acceptable resource division points. To the extent that physical strength was used to determine resource division, as it is in

many non-human animals, one would expect exaggerations of strength during anger. The "anger face," and vocal changes that accompany violent anger (i.e., yelling), are hypothesized to be exaggerations of features that are predictive of physical strength in non-angry individuals. Four predictions were derived and tested: 1) strength can be detected from photographs of faces, 2) strength can be detected from recordings of normal speaking voices, 3) anger faces should result in an exaggeration of features that predict physical strength in neutral faces, and 4) an individual's violent yell will be rated as physically stronger than their speaking voice and non-violent yell.

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**Session B-4 Speech**
**Ben Franklin Room**
**Chair: Ian Penton-Voak**
**TH 3:00 p.m.**
***An Evolutionary Explanation for a Deep Voice in the Human Male***
**Evans, Sarah C. (Northumbria University, sarah.evans@unn.ac.uk); Neave, Nick; Wakelin, Delia; Hamilton, Colin**

The voice consists of two independent acoustic components -- fundamental frequency and formant frequencies. In males, changes in the larynx via the action of testosterone during puberty lower fundamental frequency and a secondary descent of the larynx produces lower formant frequencies. The acoustic effect of both changes contributes to a deeper, more imposing voice in an adult male. A deep voice is therefore a sexually dimorphic trait emerging at sexual maturation and is dependent in part on the sex hormones. It is thus a likely candidate for sexual selection. Previous studies have demonstrated that low fundamental frequency may signal hormonal quality and hereditary fitness to potential female mates. We now provide evidence that formant frequencies may play a complimentary role by reflecting the social dominance (including the body size) of the speaker to male rivals and present a model providing an evolutionary explanation for a deep voice in the human male.

**TH 3:20 p.m.**
***Maintenance of Vocal Sexual Dimorphism: Adaptive Selection Against Androgyny***
**Feinberg, David R. (Harvard University, dfeinberg@wjh.harvard.edu); Jones, Benedict C. (University of Aberdeen); Debruine, Lisa M. (University of Aberdeen); Law Smith, Miriam J. (University of St Andrews); Cornwell, R. Elisabeth (University of Colorado, Colorado Springs); Hillier, Stephen G. (University of Edinburgh); Urquhart, Martha (Edinburgh Royal Infirmary); Perrett, David I. (University of St Andrews)**

Most studies investigating possible evolutionary explanations for sexual dimorphism in human voices tend to focus on female attraction to and dominance ratings of testosterone mediated male vocal characteristics such as low fundamental frequency (pitch) and small formant dispersion (indicative of large supralaryngeal vocal-tracts, and large body size). We show that among young women, high voice pitch and formant dispersion positively and independently predict late-follicular urinary estrogen metabolite levels, independently of age. We also show that men of a wide age range prefer women's voices manipulated independently to have raised pitch and increased formant dispersion to the same voices with lowered pitch and decreased formant dispersion. These findings in addition to previous work demonstrating female preferences for low pitch and assortative preferences for apparent vocal-tract length in men's voices suggest that the degree of sexual dimorphism in voice pitch and formant dispersion are maintained via selection against androgyny in both sexes.

**TH 3:40 p.m.**
***Male Facial Attractiveness, Perceived Personality, and Child Directed Behaviour***
**Penton-Voak, Ian S. (University of Bristol, I.S.Penton-Voak@bristol.ac.uk); Cahill, S. (University of Bristol); Pound, N. (Brunel University); Morrison, E. (University of Bristol); Kempe, V. (Stirling University)**

This study investigated associations between men's facial attractiveness, perceived personality, and attitudes towards children. Sixty-three males were photographed, completed a brief questionnaire concerning family background/attitudes towards children, and performed a task in which they gave directions to an (imaginary) adult or child. Speech data were analysed to assess characteristics of Child Directed Speech (CDS) present in the child directed task. The men's faces were rated by 59 female participants, who assessed perceived prosociality, masculinity, health and short- and long-term attractiveness. Prosociality ratings (trustworthiness, attitudes towards children) were associated more closely with long- than short-term attractiveness. Although women's ratings of

attractiveness and prosociality were related to men's self-reported liking for children, they were negatively correlated to men's use of CDS (i.e. less attractive men used more features of CDS when addressing an imaginary child). These findings are discussed in the context of halo effects and strategic pluralism in male mating behaviours.

**TH 4:00 p.m.**

***Evidence for Universals in Infant-Directed Speech***

**Bryant, Greg (UCLA, gabryant@ucla.edu); Barrett, Clark**

*\* Postdoctoral Award Candidate*

In all languages studied to date, distinct prosodic contours characterize different categories of infant-directed (ID) speech. For example, prohibitive vocalizations to infants tend to have lowered pitch, narrowed pitch range, increased loudness, and abrupt onsets. This vocal behavior likely exists universally as a species-typical trait, but no empirical cross-cultural research has been done with indigenous populations, the most stringent test of the universal hypothesis. We recorded native English-speaking mothers producing four intentional categories of utterances (prohibitive, approval, comfort, and attention) as both ID and adult-directed (AD) speech, and we then presented the utterances to Shuar adults (South American hunter-horticulturalists). Shuar participants were able to reliably distinguish ID from AD speech, and were able to reliably recognize the intentional categories in both types, although performance was significantly better with ID speech. These data provide a new source of evidence for the existence of universal prosodic characteristics in ID and AD speech.

**TH 4:20 p.m.**

***Is Low Voice Pitch a Male Dominance Display?***

**Puts, David A. (Michigan State University, puts@msu.edu); Gaulin, Steven J.C. (University of California, Santa Barbara); Verdolini, Katherine (University of Pittsburgh); Hodges, Carolyn R. (University of California, Santa Barbara)**

Pubertal androgens foster longer, thicker vocal folds; longer supralaryngeal vocal tracts; and, consequently, sexual dimorphism in voice pitch. The evolutionary reasons for these sex differences are unknown. Female choice and male dominance competition are possible causes, and some evidence supports each. We tested the latter hypothesis by examining relationships between voice pitch and dominance in young adult males. Males were audio recorded while reading a passage (baseline recording), and while speaking to a male competitor in an unscripted dating-game scenario (competitive recording). Subjects' perceptions of their own dominance relative to a standard competitor were related to measured changes in pitch from baseline to competitive recordings. Competitive recordings were subsequently manipulated along two acoustic dimensions affecting voice pitch (fundamental frequency and formant dispersion) and then rated by groups of males for dominance. Pitch manipulations strongly affected dominance ratings. Implications for the evolution of sexual dimorphism in voice pitch will be discussed.

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## **Thursday Evening Sessions**

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**Session C-1 *Evolution and Psychopathology***

**Chair: Shani Robins**

**Bodek Lounge**

**TH 5:00 p.m.**

***Evolutionary Psychology Meets Clinical Psychology***

**Robins, Shani (Stanford University, shani\_robins@hotmail.com); Kurzban, Robert (University of Pennsylvania)**

*\* New Investigator Award Candidate*

The Diagnostic Statistical Manual in the field of Clinical Psychology and Psychiatry uses normative data to identify a host of categories that are considered to be dysfunctional psychological states. Among the common categories are Major Depression, Bipolar Disorder, Anxiety Disorders (Phobias), and Adjustment Disorders. This parsing of "healthy" vs. "pathological", though empirically obtained, is somewhat arbitrary theoretically. We posit that Evolutionary Psychology presents a model with organizing principles for both identifying important psychological states as well as developing criteria for what constitutes dysfunction. For example, phobias such as fear of heights or panic during social interactions may be reconceptualized as the hyperactivation of precaution and

coalitional mechanisms respectively. Such reconceptualization contextualizes so-called clinical dysfunctions relative to their adaptive value in the environment rather than in an ad-hoc way. Moreover, it generates hypotheses of causal connections between psychological constructs and the genetic predisposition-environment interactions from which they arise.

**TH 5:20 p.m.**

***Risk-Taking as a Potentially Adaptive Function of Psychopathy***

**Krishnan, Shilpa (John Jay College of Criminal Justice, shoopa@hotmail.com); Falkenbach, Diana**

*\* New Investigator Award Candidate*

Fifty-six male and 122 female undergraduates, aged 17-45 (mean = 19.75, sd = 3.26) from an urban college completed a series of questionnaires measuring psychopathy, risk-taking, and sexual behavior. The Levenson Psychopathy Scale (LPS; Levenson, Kiehl & Fitzpatrick, 1995) assessed the prevalence of total, primary and secondary psychopathic traits, the Sensation-Seeking-Scale (SSS-V; Zuckerman, 1979) examined risk-taking on the facets of Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition (DIS) and Boredom Susceptibility (BS). Sexual behavior was evaluated using the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991). Sex, overall risk-taking, and total psychopathy significantly predicted a permissive sexual behavior type as defined by the SOI. ES, DIS and TAS significantly predicted permissive sexual behavior while BS did not contribute significantly to the variance. These findings lend support to the theory of psychopathy as an adaptive "cheater" strategy, with certain psychopathic traits increasing sexual fitness.

**TH 5:40 p.m.**

***Adaptive Overconfidence and War***

**Johnson, Dominic (Princeton University, dominic@princeton.edu)**

Historians and political scientists have long argued that overconfidence is a common cause of war, but they lack a good explanation for its origin and sources of variation. I propose a solution based on error management theory and the psychology of "positive illusions" (a systematic human bias towards over-optimism, which varies among mental states, cultures, gender, and various contexts). I present supportive data from experimental war-games, and from simulations of international conflict. Like bluffing in poker, it can sometimes be advantageous to behave as if one is stronger than is true in reality. Simple models show that wherever the benefits of gaining a prize exceed the costs of trying and failing, then a systematic bias towards overestimating can outperform even rational (i.e. accurate) estimates of the probability of winning. While overconfidence may generate more war, it can still be an adaptive strategy.

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**Session C-2 Kinship**

**Hall of Flags**

**Chair: Robert Oum**

**TH 5:00 p.m.**

***Kinship as Another Primitive Used in Social Categorization***

**Oum, Robert E. (University of Hawaii, oum@hawaii.edu); Lieberman, Debra**

Social psychologists have traditionally acknowledged three primitive dimensions used for social categorization: sex, age, and coalitional membership. An evolutionary analysis of recurring social interactions over evolutionary history suggests kinship may also be used to parse the social world. Knowledge of kin groups would have enabled important inferences (e.g., who is likely to help whom? Who is likely to avoid another as a mating partner?) that would have been useful in guiding behavior. Experiments using the memory confusion protocol were conducted to test whether kinship is used in social categorization. Results indicate that kinship is indeed used as a dimension for categorization. When other cues for other dimensions used for categorization were also present, the effects of encoding of kinship did not diminish suggesting that the mind contains specialized programs for encoding kinship groups. Studies are currently being conducted to explore whether kinship is being encoded independently of coalition membership.

TH 5:20 p.m.

***Royal Heirs and Royal Bastards: Mini-Maxing Reproductive Success***

Heath, Kathleen M. (Indiana State University, [anheath@isugw.indstate.edu](mailto:anheath@isugw.indstate.edu)); Fields, Jessica D. (Indiana State University); McCullough, John (University of Utah); Lowe, Matthew E. (Indiana State University)

Where inheritance laws reduce the inheritance to an indivisible single prize, legitimate children should be limited to reduce intra-familial competition. Producing too many children is likely to create destructive intra-familial conflict, as illustrated by the scramble for the crown of England during the years 1399-1603. The successful monarch must consider how to minimize conflict among legitimate heirs but still have the reproductive success expected from his position. Our analyses were based on life history data collected on English royals and gentry from 1066-1901. We conclude that Salic Law favoring first born legitimate males as heirs led most monarchs to minimize the number of legitimate heirs and adopt a strategy of extramarital matings. With no laws provisioning or rights given to illegitimates, small legitimate families minimized intra-familial competition for scarce resources while illegitimates offered fitness maximization. However, such a strategy favored royal males but suppressed the reproductive success of their wives.

TH 5:40 p.m.

***Kin-Based Resource Allocation: Inclusive Fitness and Emotional Closeness***

Webster, Gregory D. (University of Colorado at Boulder, [Gregory.Webster@colorado.edu](mailto:Gregory.Webster@colorado.edu))

Evolutionary psychology has examined the distal causes of prosocial behavior (inclusive fitness), whereas social psychology has examined its proximal causes (emotional closeness). Few studies, however, have systematically manipulated both genetic relatedness and emotional closeness to examine whether each is related to prosocial behavior when controlling for the other. Thus, across 4 studies, over 800 undergraduates allocated fictional dollar amounts to either their own kin or an experimentally manipulated set of relatives. Genetic relatedness was positively related to kin-based resource allocation regardless of whether it was measured (Studies 1 & 2) or manipulated (Studies 3 & 4), and regardless of whether emotional closeness was measured (Studies 1 & 3) or manipulated (Studies 2 & 4). Supporting inclusive fitness theory, the present results demonstrated that genetic relatedness, whether manipulated or measured, had a robust effect on kin-based resource allocation even after accounting for proximal effects like emotional closeness, cohabitation, and social interaction.

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**Session C-3 *Personality and Individual Differences* Class of 1949 Auditorium**

**Chair: Nick Pound**

TH 5:00 p.m.

***Life History, Social Deviance, Personality, and Intelligence: A Psychometric Study***

Gladden, Paul R. (University of Arizona, [ajf@email.arizona.edu](mailto:ajf@email.arizona.edu)); Burger, Sarah B.; Figueredo, Aurelio J.; Jacobs, W. Jake

A sample of undergraduate students responded to a battery of questionnaires about their life history strategy, social deviance, and personality. In addition, they took an 18-item short form of the Ravens Advanced Progressive Matrices (RAPM-18) test of general intelligence. Life History Strategy was measured by using both the full K-Factor Battery and the 20-item Mini-K short form, which was administered twice to each respondent to assess test-retest reliability. Social Deviance was measured by a battery of convergent tests, including the Lilienfeld measure of Psychopathy. Personality was measured using the NEO-FFI. The Mini-K showed good test-retest reliability regardless of order of administration, and also correlated significantly to the full K-Factor. The K-Factor and Social Deviance were not significantly correlated with general intelligence or with each other. However, the K-Factor predicted higher Conscientiousness, Agreeableness, Extraversion, and Emotional Stability; Social Deviance predicted low Conscientiousness and Agreeableness; general intelligence predicted higher Openness to Experience.

TH 5:20 p.m.

***Facial Symmetry Predicts Personality***

**Pound, Nicholas (Brunel University, [nicholas.pound@brunel.ac.uk](mailto:nicholas.pound@brunel.ac.uk)); Penton-Voak, Ian S. (University of Bristol)**

Fink et al (2005) reported significant associations between facial symmetry and scores on some of the "big five" personality dimensions derived from self-report data. In particular, they identified a positive association between facial symmetry and extraversion, but negative associations between facial symmetry and both agreeableness and openness. In the present study we attempted to replicate these findings with a much larger sample (N = 300) and using a measure of facial symmetry that is arguably less susceptible to lighting effects and includes peripheral regions of the face. We found a small but significant positive association between self-reported extraversion and facial symmetry but were unable to replicate any of the other previously reported associations. Nevertheless, the positive association between symmetry and extraversion provides further support for the idea that facial structure might predict personality and suggests that there could be a "kernel of truth" in some stereotypical personality attributions.

TH 5:40 p.m.

***Intelligence, Conscientiousness, and Life History Strategy***

**MacDonald, Kevin B. (California State University, Long Beach, [kmacd@csulb.edu](mailto:kmacd@csulb.edu))**

The costly human brain and a prolonged developmental period suggest intercorrelation of life history traits related to intelligence, inhibitory control, and high-investment parenting. We sampled 213 undergraduate students to study associations of the Mini-K (a measure of variation in life history strategy) with general intelligence (Raven's Progressive Matrices Short Form RAPM-18) and a personality scale (the IASR-B5). Results indicated that general intelligence did not predict the Mini-K but the Mini-K was predicted by a suite of three personality traits: Conscientiousness, Nurturance/Love, and Emotional Stability. These personality traits represent a higher-order factor of the Big Five found also in other analyses. Results emphasize variation in Conscientiousness as central to variation in life history strategy. Data are reviewed indicating that Conscientiousness is independent of general intelligence. Conscientiousness is a late developing, domain-general system characterized by prefrontal inhibitory mechanisms that control sub-cortical modular mechanisms in the service of long term goals.

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**Session C-4 2D:4D**

**Ben Franklin Room**

**Chair: Bernhard Fink**

TH 5:00 p.m.

***Second to Fourth Digit Ratio (2D:4D) and Fluctuating Asymmetry as Predictors of Reproductive and Growth Parameters in Dutch Women***

**Dubas, Judith Semon (Utrecht University, [j.dubas@fss.uu.nl](mailto:j.dubas@fss.uu.nl)); van Noord, Paulus A.H.**

Both fluctuating asymmetry (an index of developmental stability) and the 2D:4D ratio (an index of prenatal hormone exposure) have been linked with female growth and reproductive success. However, findings concerning reproductive success have not been consistent perhaps reflecting the fact that most participants had not yet lived out their reproductive potential. This study investigated whether the 2d:4d ratio and fluctuating asymmetry relate to several female growth and reproductive parameters in a sample of 201 postmenopausal women. Measurements included 2d:4d ratios (derived from x-rays of the hands), fluctuating asymmetry (FA), body height, weight, BMI, marital status, reproductive success, age at menarche and age at menopause. Significant positive correlations were found between female's left and right hand 2D:4D and BMI and left hand 2D:4D and number of live born children. FA was negatively related to BMI. Women with children had higher 2d:4d ratios and lower levels of FA than women without children.

TH 5:20 p.m.

***The Impact of Prenatal Testosterone on Female Interest in Male-Male Romance***

**Salmon, Catherine A. (University of Redlands, [catherine\\_salmon@redlands.edu](mailto:catherine_salmon@redlands.edu))**

This study examines the possible connection between prenatal levels of testosterone and adult female interest in erotica, in particular, the genre known as slash fiction. Slash stories focus on the romantic and sexual relationships between (generally) heterosexual males, fictional characters from television and film, such as Star Trek's Kirk and Spock or Smallville's Lex Luthor and Clark Kent. Salmon and Symons (2001) suggested that higher than average levels of prenatal testosterone exposure might predispose women to prefer this type of fiction. This study attempts to use the sexually dimorphic finger ratio, 2D:4D, as an indicator of prenatal testosterone exposure, comparing the 2D:4D ratios of slash readers to those of non-readers. The results will be discussed.

TH 5:40 p.m.

***Finger-Length Ratios and Women's Perception of Men's Dance***

**Fink, Bernhard ([bernhard.fink@ieee.org](mailto:bernhard.fink@ieee.org)); Seydel, Hanna (University of Goettingen); Manning, John T. (University of Central Lancashire)**

Recent research has revealed that human dance ability is related to levels of fluctuating asymmetry and women rate symmetrical male dancers more positively. We present data showing that women rate dances by men with low finger-length ratios (2D:4D) more positively than dancers with high 2D:4D. Since there is evidence that finger-length ratios negatively correlate with testosterone exposure in utero, dancing abilities may be organized early during development.

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## Friday, June 9

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### Friday Morning Sessions

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**Session D-1**    ***Symposium: Household Networks, Family Composition and Reproductive Decisions***    **Bodek Lounge**

**Chairs: Rebecca Sear and Mhairi Gibson**

**FR 10:30 a.m.**

***The Rapid Pace of Human Reproduction: Furthering a Demand and Opportunity for Cooperative Breeding***  
**Kramer, Karen L. (Stony Brook University, Karen.Kramer@sunysb.edu)**

Humans take more or less twenty years to reach reproductive maturity -- almost twice as long as closely related primates of similar size. Not only is the duration of growth and development expanded, so is the period of dependency. Yet, human mothers maintain relatively short birth intervals, a high probability of child survival, and raise multiple dependents of different ages. Using cross-cultural data, this paper looks at this period of dependency from both the mother's and child's point of view. How do mothers resolve the allocation tradeoff of investing in childcare and economic activities to feed older children? From a child's perspective, certain resources are beyond their grasp in terms of procurement and processing. Although adult provisioning extends into juvenility, does a juvenile's potential for self-provisioning and helping necessarily decrease in step?

**FR 10:50 a.m.**

***Polygyny, Reproductive Success and Child Health in Rural Ethiopia: Why Marry a Married Man?***  
**Gibson, Mhairi A. (University of Bristol, mhairi.gibson@bris.ac.uk)**

The reproductive success of men and women in rural Ethiopia are examined as a function of their marital status. In line with evolutionary predictions, polygamy is beneficial to male reproductive success (i.e. larger number of surviving offspring). The success of married females depends on wife rank: the first wives of polygamous husbands do better than monogamously married women and much better than second or third wives. These effects are mirrored in child growth: the children of second and third wives have lower weight for height. First wives of polygamously married men marry at a younger age and attract a higher brideprice, suggesting that both the males and females in the marriage are of higher quality; unions that end up monogamous are likely to be between slightly lower quality individuals; and second and third wives, who marry latest, attracting the lowest brideprice, may be "making the best of a bad job".

**FR 11:10 a.m.**

***The Cost of Siblings: Competition for Parental Resources in Contemporary British Families***  
**Lawson, David W. (University College London, d.lawson@ucl.ac.uk); Mace, Ruth**

Life history theory predicts that, controlling for parental resources, increasing number of siblings will lead to negative consequences for individual offspring. This concept of a quality-quantity trade-off is central to evolutionary theories of reproductive decision making. Using data on over 11,000 British families (from the Avon Longitudinal Study of Parents and Children), we explore the evidence for sibling competition effects in a post industrial, modern society. A number of different currencies are considered, including child height, health and parenting activities. However, it is recognised that the costs of sibling competition are unlikely to be identical in all families. For example when high levels of kin support are available this may enable parents to buffer offspring from the costs of increased sibship size.

FR 11:30 a.m.

***Husbands and Grandmothers in Conflict: Effects on Reproductive Success Among the Khasi***  
Leonetti, Donna L. (University of Washington, leonetti@u.washington.edu)

The effects of grandmothers and husbands on the reproductive success of women have been much discussed. The present paper seeks to look at their combined effects along with their differing reproductive agendas. I present hypotheses toward developing a concept of "in-law" conflict to supplement ideas on sexual conflict as they apply to humans. Data presented are from the matrilineal Khasi of N.E. India where women own land and are economically very active. Maternal grandmother and husband effects are examined in terms of their relative roles in the reproductive performance and the survival of the children of 650 Khasi mothers ages <50 yrs. We find support for the concept that maternal grandmothers provide protective services to their daughters and their daughter's children, given exploitative reproductive agendas of husbands. The findings may explain why the effects of the maternal grandmother on the fertility of their daughters are often found to be mixed.

FR 11:50 a.m.

***A Review of the Impact of Kin on Child Survival: It Takes a Grandmother to Raise a Child?***

Sear, Rebecca (London School of Economics, r.sear@lse.ac.uk); Mace, Ruth (University College London)

Children pose a problem. The extended childhood dependency period and short inter-birth intervals of our species mean that mothers have to care for several dependent children simultaneously. It has been argued that this is too much of a burden for mothers to manage alone, and that they must enlist help from other relatives. We review the evidence (from 42 studies) for whether the presence of kin affects child survival, in order to infer whether mothers do receive help in raising offspring. We find that in almost all studies, at least one relative does improve the survival rates of children, but that relatives differ in whether they are consistently beneficial to children or not. Maternal grandmothers tend to improve child survival, whereas fathers and paternal grandmothers are sometimes beneficial to children and sometimes not, suggesting that investment from fathers and other paternal kin may be facultative and dependent on environmental conditions.

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## Session D-2 Cooperation in Groups

Chair: Rick O'Gorman

Hall of Flags

FR 10:30 a.m.

***Critique of So-Called "Strong-Reciprocity"***

Burnham, Terence C. (Acadian Asset Management, terry@post.harvard.edu); Johnson, Dominic D.P.

Human cooperation is held to be an evolutionary puzzle because people voluntarily engage in costly cooperation, and costly punishment of non-cooperators, even among anonymous strangers they will never meet again. The costs of such cooperation cannot be recovered through kin-selection, reciprocal altruism, indirect reciprocity, or costly signaling. A number of recent authors label this behavior "strong reciprocity", and argue that it is: (a) a newly documented aspect of human nature, (b) adaptive, and (c) evolved by group selection. We argue exactly the opposite; that the phenomenon is: (a) not new, (b) maladaptive, and (c) evolved by individual selection.

FR 10:50 a.m.

***The Effects of Limited Contribution Information in a Public Goods Game***

Chavez, Alex K. (University of Michigan, achavez@umich.edu)

In the study of cooperation in groups, two well-known findings are that individual contributions to a public good (PG) tend to increase with the mean, but decay across repeated interactions. Instead of the mean, we showed group members only the lowest, 2nd-lowest, median, 2nd-highest, or highest contribution in a series of repeated PG games played with randomly recomposed groups. Contributions were highest (sustained ~50%) when participants saw the highest contribution level within their group, and remained so despite controlling for the order of conditions, round number, and block repetition following a "restart" round. We did not expect this pattern for two reasons: when players see only the highest contribution, those who might otherwise be pressured into cooperating can defect with impunity; knowing this, conditional cooperators should contribute little. We speculate that the observed pattern may be due to the misfiring of a reputation-management system.

FR 11:10 a.m.

***Ingroup Love or Ingroup Scrounging?***

Yamagishi, Toshio (Hokkaido University, tyamagish@aol.com); Mifune, Nobuhiro

Results of two dictator-game experiments provide further support to Yamagishi's argument that group categories provides a cue of generalized social exchange, in which providing resources to others is a condition for receiving resources from other members of the group, and that expectations of nepotism rather than group-love is the driving force of ingroup-favoring behavior in minimal group experiments (MGEs). Participants were divided into two groups on a trivial ground. Dictators who freely allocated a fixed sum of money between themselves and a "recipient" gave more to an ingroup recipient than an outgroup recipient when and only when they were expected to do so by the recipient. The current results further suggest a possibility that generalized exchange is supported by the logic of tolerated scrounging. Ingroup-favoring behavior in MGEs is based on a "self-sustaining belief" (a summary representation of an equilibrium) that resisting to scrounging efforts by others is costly.

FR 11:30 a.m.

***Free Riders and Incompetents: Psychologically Distinct Categories***

Delton, Andrew W. (University of California, Santa Barbara, delton@psych.ucsb.edu); Robertson, Theresa E.; Cosmides, Leda; Tooby, John

\* *New Investigator Award Candidate*

There is an emerging consensus that the human mind contains psychological adaptations designed for coalitional cooperation. Theory suggests that these adaptations have been shaped by (among others) two distinct selection pressures. A selection pressure for cooperator designs to avoid being out-competed by free rider designs should select for a psychological primitive FREE RIDER. This primitive should index individuals who by design take the benefit of coalitional cooperation without contributing. A second selection pressure to maintain efficiency within a coalition should select for the primitive INCOMPETENT. This primitive should index individuals who under-contribute due to factors such as genetic noise or developmental perturbations, but not by design. Evidence from three experiments supports the hypothesis that the human mind does in fact contain these two primitives. Further, that these two categories are distinguished suggests that the human mind does not have a more general category that simply indexes long-term under-contribution.

FR 11:50 a.m.

***Functions of Leadership: An Evolutionary Approach***

O'Gorman, Rick (University of Kent, rogorman@alumni.binghamton.edu); van Vugt, Mark

Leadership is an unavoidable theme in human affairs (Van Vugt & Hogan, 2006), and it has been claimed that leadership is a human universal (Brown, 1991). The experimental social psychological literature shows that when individuals form groups to work on collective tasks, leader-follower patterns quickly emerge (Bales, 1951). In contrast to non-human animal social groups, the psychological literature shows little evidence of a link between dominance and leadership in humans (Van Vugt & Hogan, 2006). Instead, leadership may be a solution to the problem for humans groups of coordinated activity, with leaders motivated by alternative motives than dominance, such as risk-taking and sociality. We will discuss recent studies we have conducted that examine the relationship of these individual differences to leader behaviour, effectiveness of leaders coordinating activity in small-group settings, and to performances on the Leader Game (Rapoport, 1967), a variant of the Prisoner's Dilemma.

**Session D-3 *Effects of the Menstrual Cycle on Behavior and Preferences***

Chair: Diana S. Fleischman

**Class of 1949  
Auditorium**

FR 10:30 a.m.

***Luteal Phase and Progesterone Effects on OCD Measures, and Disgust Sensitivity***

Fleischman, Diana S. (University of Texas, Austin, dfleischman@mail.utexas.edu); Fessler, Daniel M.T. (University of California)

The human female menstrual cycle consists of three phases each with differing adaptive goals. During the luteal phase the female body prepares for conception and implantation. Luteal phase immunosuppression is an

adaptation that prevents the maternal immune system from attacking the half-foreign blastocyst thereby facilitating implantation and survival. Because immunosuppression is mediated by progesterone and since hormonal contraceptives mimic the effects of progesterone these contraceptives offer a further insight into progesterone effects on evolved psychology. We investigated adaptive mechanisms that could counteract luteal and progestin mediated immunosuppression using a time sensitive version of the Padua, an OCD measurement instrument that measures both contamination and non-contamination obsessions and behaviors. Additionally we used Curtis et al's (2004) photographic disgust stimuli to investigate disgust sensitivity. We predict that disgust sensitivity and contamination related thoughts and behaviors are directly associated with estimated progesterone level in hormonal contraception using and naturally cycling women.

**FR 10:50 a.m.**

***Estradiol and Progesterone Levels and Woman's Preference for Resourceful Partners***

**Pawlowski, Boguslaw (CINVESTAV - Merida (Mexico) and University of Wroclaw (Poland), pawlowski@mda.cinvestav.mx); Grazyna, Jasienska (Jagiellonian University and Harvard University)**

Women with high biological value usually are more demanding on the human mate market. We tested the hypothesis that hormonal biomarkers of woman's reproductive potential positively correlate with her preference for resources of a potential partner. Daily levels of 17- $\beta$ -estradiol and progesterone were measured across the menstrual cycles in healthy women aged 24 to 37. Questionnaires with personal advertisements were distributed randomly with respect to the phase of the cycle. Using the variable reflecting the value women attached to the resources, we found positive correlation between woman's preference for resources and her mid-cycle estradiol level. When controlling for age and BMI, it was however true only for women who had children, and when choosing a long-term partner. The results indicate that women with higher potential fertility are more demanding for resources and more concern about paternal investment.

**FR 11:10 a.m.**

***Beauty is in the Fertility of the Beholder***

**Hancock, Peter J.B. (University of Stirling, pjbh1@stir.ac.uk); Collet, Amy J. (University of Stirling); Smith, Katy L. (University of Newcastle); Tovee, Martin J. (University of Newcastle)**

Maryanne Fisher has shown that fertile women regard other women's faces as less attractive. We show that the same is true for ratings of women's bodies. 15 women rated a set of photographs of scantily-clad female bodies (with heads obscured) twice, once when fertile and once when not. There was a significant fall in ratings when fertile. Eye movements were recorded during the ratings and suggested a tendency to look more at the chest region when fertile. There was no change in ratings for male bodies, supporting Fisher's view that this is a reflection of female intrasexual competition.

**FR 11:30 a.m.**

***Male Facial Attractiveness: Shifting Female Cognitive Preference***

**Patel, Shilpa (Drexel University, sp69@drexel.edu); Thomson, Jaime W.; Platek, Steven M.**

Attractive faces can be considered a rewarding stimulus, and as such can engage brain systems thought to be involved in processing other kinds of natural rewards. These rewards have been shown to correlate with activity in regions of the prefrontal cortex (PFC). According to the "good genes hypothesis", female choice of mate leads to offspring of superior viability. This translates into female strategies for preferentially mating with symmetrical and masculine males during times of ovulation. Accordingly, we predicted females would show selective hemispheric activation of reward areas of the PFC when perceiving masculine and symmetrical faces during high-conception risk periods of their conception. Left prefrontal cortex activation was greater to non-masculine faces during non-ovulatory phases of the menstrual cycle and greater right prefrontal cortex activation during ovulation. These findings suggest that phenotypic honest signals of "good genes" activate neural systems involved in appetitive behavioral responses that could maximize fitness.

FR 11:50 a.m.

***Ovulatory Shifts in Human Female Ornamentation: Near Ovulation, Women Dress to Impress***

Haselton, Martie G. (UCLA, haselton@ucla.edu); Mortezaie, Mina (UCLA); Pillsworth, Elizabeth G. (UCLA); Bleske-Rechek, April (University of Wisconsin, Eau Claire); Frederick, David A. (UCLA)

Humans differ from many other primates in the apparent absence of advertisements of fertility within the ovulatory cycle. Using a sample of 30 partnered women photographed at high- and low-fertility cycle phases, we show that readily-observable behaviors -- self-grooming and ornamentation through attractive choice of dress -- increase during the fertile phase of the ovulatory cycle. At above-chance levels, judges (N=42) selected photographs of women in their fertile rather than luteal phase as "trying to look more attractive." Further, the closer women were to ovulation when photographed in the fertile window, the more frequently their fertile photograph was chosen. Previous research suggested that women's faces and body scents become subtly more attractive near ovulation. Thus, our findings may indicate that women are sensitive to these changes in themselves and feel inclined to display their physical attributes; it also is possible that women are advertising their attractiveness to attract a desirable extra-pair mate.

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**Session D-4 *Life History***

**Ben Franklin Room**

**Chair: Daniel J. Kruger**

FR 10:30 a.m.

***Time Perspective as a Psychological Mechanism for Functional Developmental Adaptation***

Kruger, Daniel J. (University of Michigan, djk2012@gmail.com); Reischl, Thomas; Zimmerman, Marc A.

Evolutionary life history theory (LHT) is a powerful framework for understanding behavioral strategies as functional adaptations to developmental environments. LHT predicts that individuals who develop in relatively more uncertain environments will develop riskier, present oriented, behavioral strategies (Chisholm, 1999; Roff, 1992; Stearns, 1992). Zimbardo and Boyd (1999) believe that time perspective is a pervasive, powerful, and largely unrecognized psychological influence on human behavior. We assessed the relationship between neighborhood and school conditions, time perspective, and risky behaviors in a sample of American inner-city middle school students (N = 366). A path model controlling for age, sex, race, and neighborhood SES indicated that future orientation and hedonistic orientation completely mediated the relationship of positive neighborhood experiences, adverse neighborhood experiences, and perceptions of higher neighborhood social capital to reports of violent behaviors and property theft or damage. Reports of school experiences did not uniquely predict other variables.

FR 10:50 a.m.

***Do Attitudes to Abortion Have a Biological Basis? An Investigation of the Evolved Psychology of Morality***

Curry, Oliver S. (London School of Economics, o.s.curry@lse.ac.uk); Dickins, Thomas E. (University of East London and London School of Economics); Potton, Anita I. (University of East London)

Life-history theory predicts that younger females, who have the opportunity to reproduce again in the future, will value offspring less than will older females, for whom each offspring may be their last. Lycett & Dunbar (1999) showed how this theory accurately predicts the incidence of abortion. The present study investigates whether the same theory also predicts moral attitudes to abortion: are attitudes to abortion a product, or by-product, of the psychology of reproductive decision-making? The specific prediction is that, other things being equal, women's approval of abortion will decline as a function of their age. To test this prediction we asked 100 female subjects to rank nineteen acts, including abortion, in terms of 'moral wrongness' (Lieberman et al, 2003). This paper presents the results of the study, and discusses the other factors -- such as marital status, reproductive history and socioeconomic status -- that may also influence moral attitudes to abortion.

FR 11:10 a.m.

***Adolescent Predictors of Young Adult Life History Strategy***

**Brumbach, Barbara H. (University of Arizona, bhagenah@u.arizona.edu); Figueredo, Aurelio Jose; King, James E.**

*\* New Investigator Award Candidate*

The National Longitudinal Study of Adolescent Health was used to test life history (LH) theory. We hypothesize that in young adulthood an emerging LH strategy will exist as a common factor underlying many LH traits (e.g., health, investment potential, and romantic/sexual relationships, and social deviance). The basic question addressed is whether young adult LH strategy is mainly affected by the environment in adolescence and/or by LH strategies already present in adolescence. Harshness and unpredictability of the environment were found to be the two primary environmental predictors of adolescent and young adult LH strategy. In addition, adolescent LH traits are predictive of young adult LH strategy. These findings suggest that the environmental parameters of harshness and unpredictability have an immediate affect in adolescence, as well as, lasting effects in young adulthood. In addition, LH traits appear to be stable across developmental time from adolescence into young adulthood.

FR 11:30 a.m.

***Life History Consequences of Density Dependence in the Evolution of Hunter-Gatherer Body Sizes***

**Walker, Robert S. (University of New Mexico, robwal@unm.edu)**

*\* Postdoctoral Award Candidate*

This study investigates the evolution of body size in response to population density in human foraging populations. High population density likely results in increased nutritional constraints and disease loads that make maintenance costs relatively more expensive. As an immediate plastic response and/or adaptation over evolutionary time, humans (and other organisms) likely slow down growth and development and demonstrate smaller adult body sizes in high population density contexts. In addition, there is evidence of mortality-based selection for relatively faster/earlier ontogeny in small-bodied hunter-gatherers living at high densities. Comparative results presented here support density-dependent effects on body size that act through two pathways -- that of nutritional constraints and that of juvenile mortality -- at varying intensities contributing to a nearly two-fold range of body size in hunter-gatherer societies.

FR 11:50 a.m.

***Early Environments, Developmental Plasticity and Human Life History***

**Kuzawa, Christopher (Northwestern University, kuzawa@northwestern.edu)**

Growth rate and offspring litter size scale tightly with adult body mass across mammals, suggesting deeply-conserved connections between body size and metabolism that constrain allocation to growth and reproduction. Models of mammalian life history assume that these relationships reflect a continuity in the quantity of excess metabolic capacity available to the body: during the growing years, a portion of this excess ("productivity") is devoted to producing new tissue (growth), and after the cessation of growth, to the production of offspring tissue (reproduction). This framework helps illuminate the now widely-described relationship between early life nutrition and adult function and disease ("fetal programming"). This paper will review evidence that early nutrition has effects on growth rate but also lingering effects on future adult reproductive effort, and in a fashion that conforms to models of male and female life history. A model linking fetal and infant nutrition with population sexual dimorphism is suggested.

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## Friday Afternoon Sessions

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### Session E-1 *Symposium: Tsimane Life History* Chair: Michael Gurven

Bodek Lounge

FR 3:00 p.m.

#### ***Household Compositional Effects on Tsimane' Children's Time Allocation: Implications for Helping at the Nest and Intrafamilial Conflict***

Stieglitz, Jonathan P. (University of New Mexico, j0nathan@unm.edu); Kaplan, Hillard (University of New Mexico); Gurven, Michael (University of California, Santa Barbara)

\* *New Investigator Award Candidate*

Parent-offspring conflict theory predicts that parents and progeny will disagree over the duration of parental investment (PI), the amount of PI offered, and the optimal level of altruistic helping displayed by offspring toward other kin. Intra-familial conflict among humans is likely to occur among a variety of kin and extend long beyond the age at weaning due to prolonged offspring dependence, extended family residency, and relatively high fertility leading to multiple offspring of different ages. Here we examine the effects of household composition on the amount of time 159 Tsimane' forager-horticulturalist children aged 4-18 spend in various activities. We show that the number and relative ages of one's siblings influences the amount of time budgeted toward activities yielding short-term benefits to the household and long-term benefits to the child. Implications for family conflict within the context of these findings are discussed.

FR 3:20 p.m.

#### ***Skills Development and Extended Childhood: An Instructive Case***

Gurven, Michael (University of California, Santa Barbara, gurven@anth.ucsb.edu); Kaplan, Hillard (University of New Mexico); Gutierrez, Maguin (Proyecto Tsimane de Salud y Antropologia)

Human hunting is one of the more difficult activities common to foragers. Children and teenagers have been described as incompetent hunters in ethnographies of hunter-gatherers. I explore the extent to which adult-level competence is limited by the constraints of physical capital (body size) and brain-based capital (learning). Different models offer competing hypotheses about the relative contributions of size and skill, with implications for the evolution of delayed growth and large brains. Tests based on observational, interview, and experimental data collected among Tsimane males suggest that size alone cannot explain the long delay until peak hunting productivity. I find that indirect encounters (e.g. smells, sounds, tracks), and shooting of stationary targets, are two components of hunting ability limited primarily by physical size alone. However, direct encounter and successful capture of important prey require substantial skill, and require an additional ten to twenty years to develop after achieving adult body size.

FR 3:40 p.m.

#### ***Infant Feeding Practices and Health Outcomes Among Tsimane of Bolivia***

Veile, Amanda J. (University of New Mexico, mambo@unm.edu); Kaplan, Hillard S. (University of New Mexico); Gurven, Michael D. (University of California, Santa Barbara); Juana Vani Cuatano

Feeding patterns in infancy have been demonstrated to greatly influence infant immune development and child health outcomes, particularly in highly pathogenic environments. Natural selection should favor mothers who are cognizant of the costs and benefits associated with the introduction of supplementary foods and maximize child survival by making adaptive decisions when feeding their infants, responding to ecological factors and infant condition. Infant feeding practices (breastfeeding, supplementation, and weaning) among Tsimane forager-horticulturalists are examined based on interviews with 55 women from four communities that vary in terms of market integration. Repeated rounds of systematic medical checkups suggest that the subsequent health of infants is improved with later introduction of supplementary foods. Determinants of maternal decision-making and proximate cues of infant health status are discussed.

FR 4:00 p.m.

***Measuring the Impacts of Fathers Among the Tsimane of Bolivia***

**Winking, Jeffrey W. (University of New Mexico, [jwinking@unm.edu](mailto:jwinking@unm.edu)); Gurven, Michael; Kaplan, Hillard**

A common method for exploring the value of paternal care is to examine the effect of father absence on children's well-being. Although this method provides valuable insight, results must be interpreted carefully for two reasons. First, fatherless children are a self-selected (or more accurately, parent-selected) group, and may not be representative of the larger population of children. Second, father absence likely impacts investment decisions of other caretakers, masking the true impact of a father's investment (or lack thereof). I explore the effects of father absence on several measures of children's well-being among the Tsimane of Bolivia, and compare these results to those relying on continuous measures of direct paternal investment, such as father proximity, time spent in care and resource transfers.

FR 4:20 p.m.

***Components of Male Status Amongst the Tsimane of Bolivia***

**von Rueden, Christopher R. (University of California, Santa Barbara, [vonrueden@umail.ucsb.edu](mailto:vonrueden@umail.ucsb.edu)); Gurven, Michael (University of California, Santa Barbara); Kaplan, Hillard (University of New Mexico)**

*\* New Investigator Award Candidate*

In order to tease apart determinants of male status and leadership in an autarkic society, Tsimane men were asked to photo-rank male community-members on five characteristics typically associated with social status: wins fights, gets his way, has many allies, influential, and respected. Higher status based on these components correlates with frequency of involvement in actual disputes and being named as having had many sexual partners. Regression analysis suggests that aspects of status more closely related to physical dominance are highly predicted by upper body strength and bicep size. Prestige-related status, on the other hand, seems attainable via multiple pathways. Having influence is predicted by literacy and giving good advice while garnering respect is predicted by hunting ability and keeping promises. The oldest men are not ranked as high status, which may be related to the increasing importance of novel, market-related skills amongst the Tsimane.

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**Session E-2 Sociosexuality**

**Chair: Meghan P. Provost**

**Hall of Flags**

FR 3:00 p.m.

***Measurement of Human Mating Strategies: Replication and Extension of the Three-Factor Model of Sociosexuality***

**Jackson, Jenee James (University of Arizona, [jeneej@email.arizona.edu](mailto:jeneej@email.arizona.edu)); Kruger, Daniel J. (University of Michigan)**

In contrast to previous research using the Sociosexual Orientation Inventory (SOI) as a unidimensional measure of long-term (restricted) versus short-term (unrestricted) mating, Jackson and Kirkpatrick (2006) have argued that individual differences in mating strategy are best conceptualized and measured as a multidimensional construct. With the use of principal components analysis, these researchers demonstrated the importance of distinguishing mating psychology from mating behaviors, and the need to measure long-term and short-term mating orientations as two distinct dimensions. In Study 1, we provide a replication of their three-factor model with the use of confirmatory factor analysis. The aim of Study 2 is to establish the construct validity of the long-term and short-term mating orientation measures developed by Jackson and Kirkpatrick. For this study, three-hundred participants at the University of Arizona will complete various measures of personality, sexuality, and pro-relationship behavior. Discussion will focus on the validity and usefulness of a multidimensional measure.

FR 3:20 p.m.

***Maidens or Matriarchs: Who Has More Casual Sex?***

**Andrews, Tessa M. (Montana State University, [ihandley@montana.edu](mailto:ihandley@montana.edu)); Handley, Ian M.**

Currently, two theories dominate sexual strategies literature in evolutionary psychology. Buss and Schmitt's (1991) Sexual Strategies Theory (SST) and Simpson and Gangestad's (2000) Sexual Pluralism Theory (SPT) provide disparate explanations about when it would be evolutionarily adaptive for a woman to adopt a short-term

strategy. This study examined how women who varied in their Sociosexual orientation, which measures individual differences in willingness to engage in uncommitted sexual intercourse, differentially chose short-term partners. We showed that women with a more unrestricted Sociosexual orientation contributed their decisions to have casual sex to different factors than women with a restricted Sociosexual orientation. We also showed that while women with a restricted orientation were equally unlikely to have casual sex with any man, women with an unrestricted orientation showed strong preferences for attractive and protective men. These results support aspects of SST and SPT, but call for a more comprehensive theory.

**FR 3:40 p.m.**

***Correlates with Unrestricted Sociosexuality Across Sex and Sexual Orientation***

**Sakaguchi, Kikue (University of Tokyo, kikue@darwin.c.u-tokyo.ac.jp); Sakai, Yoshiko (Rikkyo University); Ueda, Keisuke (Rikkyo University); Hasegawa, Toshikazu (University of Tokyo)**

We investigated which of variables (family stress experienced in childhood, self esteem, and 18-item self-monitoring) associate most strongly with sociosexuality variation across sex and sexual orientation. Participants consisted of 210 gay men (M = 28.3 yr), 108 lesbians (M = 27.5 yr), 131 heterosexual men (M = 21.8 yr), and 159 heterosexual women (M = 22.0 yr). The survey was conducted in Japan, on paper and web. Among whole participants, family stress (Spearman's rho = .15, n = 484) and self-monitoring (rho = .13, n = 562) significantly positively correlated with unrestricted sociosexuality. When divided into 4 groups, family stress was not a significant correlate any more, though the positive correlation between self-monitoring and sociosexuality remained significant. Participants' age did not associate with the self-monitoring score. The results suggest the existence of common factor which predispose individual's self-monitoring and sociosexual orientation across sex and sexual orientation.

**FR 4:00 p.m.**

***Dissecting the Pathway from Good Condition to Quantitative Mating Success in Men: Independent Roles for Fitness Indicators, Sociosexuality, Extraversion, and Current Relationship Involvement***

**Penke, Lars (Humboldt University of Berlin, lars.penke@staff.hu-berlin.de); Asendorpf, Jens B.**

The strategic pluralism model (Gangestad & Simpson, 2000) suggests that male quantitative mating success is a direct function of genetic quality, as inferable from good condition. While supporting evidence is accumulating, the intermediate pathway is not well understood. We studied videotaped get-acquainted interactions of 141 young men from the general population with an attractive female pseudo-participant. Male fitness indicators (physical and vocal attractiveness, general intelligence), sociosexual affective tendencies, extraversion, and current relationship status influenced, mediated by different behaviors and irrespective of explicit attitudes, self-perceptions, and intentions, independent aspects of observer-rated flirting, self-displays, and overall attractive appearance, which in turn predicted female interest, past sociosexual behaviors, and mating success in the year after the interaction. The pattern of results suggests that, while courting and self-display behaviors increase the visibility of men to potential mates, female choice for male condition is the prime determinant of male quantitative mating success.

**FR 4:20 p.m.**

***The Effect of Sociosexuality on Ratings of Physical Attractiveness of Male and Female Point Light Walkers***

**Provost, Meghan P. (Queen's University, 1mpb@qmlink.queensu.ca); Troje, Nikolaus, F.; Quinsey, Vernon L.**

Sociosexual orientation (openness to short term mating) is an individual difference that should influence aspects of mating strategy (e.g., intersexual physical attraction) differentially by sex. Men should find traits demonstrating youth, health, and fertility to be most attractive in women, despite their sociosexual orientation. In contrast, sociosexual orientation should heavily influence female mating strategy. Women with an unrestricted sociosexual orientation are more likely to engage in short term relationships, decreasing the need for potential non-genetic resources from their mates. Thus, they should place heavy emphasis on male masculinity as a sign of genetic benefits available from their mates. In this study, men and women rated male and female point light walkers, and indicated the walker most attractive to them on a constructed continuum of walkers. Female raters demonstrated

a strong positive relationship between sociosexuality and preference for male masculinity, with women high in SOI preferring more masculine male walkers.

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**Session E-3 *Trust and Cooperation***  
**Chair: Pat Barclay**

**Class of 1949 Auditorium**

**FR 3:00 p.m.**

***You Can Judge a Book By Its Cover: The Sequel. A Kernel of Truth in Predictive Cheating Detection***  
**Vanneste, Sven (Ghent University, sven.vanneste@ugent.be); Braeckman, Johan**

*\* New Investigator Award Candidate*

In accordance with evolutionary models of social exchange, we suggest the possible existence of a limited, predictive cheater detection module might exist. This module enables humans, to a certain extent, to predict how willing another might be to cooperate or not. We asked participants in two experiments to rate how cooperative unknown target subjects were who had played a one-shot PDG. From these target subjects, pictures were taken at three different moments: a neutral-expression picture prior to the game, and an event-related picture taken at the decision-making moments of both a practice round and a proper round. We found that participants in both experiments could accurately discriminate non-cooperative pictures from cooperative ones, but only in response to those taken during the proper round. In both neutral-expression pictures and practice round pictures, identification rates did not exceed chance level. These findings substantiate the existence of a predictive cheater detection module.

**FR 3:20 p.m.**

***Recordkeeping and Exchange: Experimental Evidence***

**Waymire, Gregory B. (Emory University, Gregory\_Waymire@bus.emory.edu); Basu, Sudipta (Emory University); Dickhaut, John W. (University of Minnesota); Hecht, Gary (Emory University); Tafkov, Ivo (Emory University); Towry, Kristy (Emory University)**

We conduct an experiment to examine the economic role of recordkeeping in enabling gains from more complex exchange. We contrast single-dyad and multiple-dyad repeated versions of the Berg et al. (1995) trust game to manipulate exchange complexity. Participants in half of our experimental sessions have access to a basic recordkeeping technology. Evidence suggests: (1) participants are more likely to keep records in complex exchange conditions, and (2) recordkeepers capture greater gains from complex exchange than non-recordkeepers. Supplemental analyses suggest that memory constraints impair non-recordkeepers' ability to accurately track their trading partners' past performance, impeding the development of bidirectional trust. We document economically significant contagion effects associated with memory failure regarding past exchange when a recordkeeping technology is unavailable. This suggests that records of past exchange such as those at the core of modern accounting play an economically meaningful role in exchange.

**FR 3:40 p.m.**

***Enhanced Recognition of Defectors Depends on Their Rarity***

**Barclay, Pat (Cornell University, pjb46@cornell.edu)**

*\* Postdoctoral Award Candidate*

Evolutionary psychology has perhaps focused overmuch on "cheating" in social exchange, because avoiding exploitation in reciprocal exchange could be accomplished either by avoidance of defectors or by attraction to cooperators. Past studies that have claimed to find enhanced memory for the faces of "cheaters" have mostly relied on verbal descriptions, and these are prone to bias if the degree of cheating is unintentionally more severe than the degree of cooperation. Given that populations differ in the prevalence of defectors, it is most effective to remember whatever type is rare rather than always focus on cheaters. In the present experiment, participants played a computerized trust game and saw faces of cooperators and defectors in 20%/80%, 50%/50%, or 80%/20% ratios. Consistent with predictions, defectors were remembered best when rare but worst when common, supporting the existence of general reputation-tracking mechanisms expected from signal-detection theory rather than specific cheater-recognition mechanisms.

FR 4:00 p.m.

***Health Appearance Influences Trust Judgments***

**Stirrat, Michael R. (University of St Andrews, michael@perceptionlab.com); Zubko, Olga; Lawson, Jamie F.; Law Smith, Miriam J.; Perrett, David I.; Jones, Ben; DeBruine, Lisa**

*\* New Investigator Award Candidate*

Choices about entering affiliative relationships are influenced by trustworthiness. Our aim here was to determine facial cues influencing trust. Participants (aged 18-24) playing a "Trust" game decided whether or not to trust faces of peers presented in neutral pose. We tested for associations between the average level of trust of faces and attributions of health, attractiveness, masculinity and age. Trust correlated positively with perceived health and attractiveness for all faces, youth and femininity for female faces only. Perceived health explained the largest proportion of the variance in trust for both sexes. Apparent health of skin patches also predicted trust for entire facial images. Moreover, self-reported skin health by the individuals whose faces were presented predicted other's trust of their faces. We conclude that perceived health is a major factor in driving trust. This may be because association with healthy individuals increases the likelihood of durable future support and reciprocity.

FR 4:20 p.m.

***Machiavellianism in Strangers Affects Cooperation***

**Lyons, Minna (Liverpool Hope University and University of Liverpool, lyonsm2@hope.ac.uk); Aitken, Susan (Liverpool Hope University)**

*\* New Investigator Award Candidate*

People form impressions of others in relation to how trustworthy they are, and let these judgments affect their subsequent behaviour. There is some evidence that people can accurately predict who cooperates in an experimental setting. However, it is unclear what kind of cues lead to correct predictions. This study reports findings of a Prisoner's Dilemma game between pairs of strangers (N=40) and pairs of friends (N=40). It was found that the personality construct of Machiavellianism in the partner predicted cooperative decisions in pairs of strangers. High-Machs were rated as unlikely cooperators and likely defectors in the Prisoner's Dilemma. However, Machiavellianism was not related to non-verbal communication. It is possible that we have evolved the capacity to detect how Machiavellian a stranger is, but the exact mechanism is still unknown.

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**Session E-4 *Hormones and Physiology***

**Ben Franklin Room**

**Chair: Elizabeth R. Blum**

FR 3:00 p.m.

***Performance of Women with Androgenic Disorders on Male and Female Advantage Cognitive Tasks***

**Blum, Elizabeth (Karolinska Institutet; Birmingham Southern College, elizabeth.blum@cns.ki.se); Månsson, Mattias (Karolinska Institutet); Jägerfeld, Tsahai (Karolinska Institutet); Cars, Izabella (Karolinska Institutet); Landén, Mikael (Karolinska Institutet); Pound, Nicholas (Brunel University)**

In humans, sex differences in performance have been documented in various cognitive domains. Evidence suggests that some of these sexual dimorphisms may depend on the organizational and activational effects of steroid hormones. To further elucidate hormonal mechanisms underlying cognitive sexual dimorphisms, we measured performance on male- and female-advantage cognitive tasks in patients with polycystic ovary syndrome (PCOS) and age-matched controls. PCOS is characterized by elevated levels of circulating testosterone in post-pubertal females and is associated with masculinization in several traits, menstrual abnormalities, infertility, insulin resistance, and obesity. While PCOS is a common reproductive disorder, research on its cognitive effects is nonexistent. However, the late onset of PCOS, in comparison to early-onset hormonal disturbances, means that research into its cognitive correlates can help discriminate between organizational and activational effects of testosterone on cognition. We present data comparing performance by PCOS patients and controls on male- and female-advantage cognitive tasks.

FR 3:20 p.m.

***Dominance and Olfactory Sensitivity in Humans***

Lawson, Jamie F. (University of St Andrews, [jfl4@st-and.ac.uk](mailto:jfl4@st-and.ac.uk)); Cornwell, R. Elizabeth (University of Colorado, Colorado Springs); Law Smith, Miriam J. (University of St Andrews); Stirrat, Michael R. (University of St Andrews); Perrett, David I. (University of St Andrews)

In many animal species, dominance rank affects responses to odorous and pheromonal cues associated with sexual behaviour. Here we show that reported detection of putative female pheromone, 1,3,5(10),16-estratetraen-3-ol (estratetraen) in humans is associated with self-reported dominance in both sexes. Across two experiments we found that high dominance human males were less sensitive to the odour of estratetraen than low dominance males, while high dominance females were more sensitive to the odour than low dominance females. In a 3rd experiment, high dominance females were also more sensitive to the male pheromone androstadien. These results suggest that human dominance rank influences the detection of pheromones in humans. Since pheromones are associated with mating behaviour in a number of other animal species, these differences may be related to variation in mating strategy.

FR 3:40 p.m.

***Reproductive Hormones, Apparent Health and Human Face Color***

Law Smith, Miriam J. (University of St Andrews, [mjls@st-and.ac.uk](mailto:mjls@st-and.ac.uk)); Perrett, David I.; Stirrat, Michael R.; Coetzee, Vinet; Jones, Benedict C.; Cornwell, R. Elisabeth; Feinberg, David R.; Hillier, S.G.; Rankin, Amanda; Greeff, J.; Henzi, S.P.; Sharp, Martin A.; Dujaili, Emad A.S.

\* *New Investigator Award Candidate*

Coloration is sexually selected in many animal species. Redness of primate sexual skin relates to estrogen in females and testosterone in males and signals sexual status and rank. We investigated if human skin color along red-green and blue-yellow axes (reflecting haemoglobin and melanin, respectively) relates to health attributions and hormonal status. For young Caucasian men and women, red and yellow face color correlated with apparent health. Testosterone in men and estrogen metabolite in women correlated with redness of facial skin. Color was a sufficient cue to apparent health when participants manipulated face images along red-green axes; using more red to enhance faces originally low in red. These associations were present for Caucasian and non-Caucasian faces (including black African males), and generalized to black African (RSA) and white observers (UK/Australia). Face color provides cues to reproductive health in humans, and the attribution of health to color variation can surpass cultural differences.

FR 4:00 p.m.

***Can Social Support Influence Oxytocin Release in Bonded Couples? An Attachment Perspective***

Chen, Jennie Y. (Texas A&M University, College Station, [jychen@neo.tamu.edu](mailto:jychen@neo.tamu.edu)); Simpson, Jeffrey A. (University of Minnesota, Twin Cities); Rholes, W. Steve (Texas A&M University, College Station)

\* *New Investigator Award Candidate*

Oxytocin, a neuropeptide, has been linked to maternal behavior, tending, and bonding in relationships. This is crucial to the survival of young. Past research has also shown that oxytocin release can be stimulated by physical touch with a romantic partner. Thus, we measured oxytocin release in bonded couples engaging in a social support task. In addition, research in attachment styles and close relationships suggest that oxytocin release might be mediated by the attachment styles of the individuals in the relationships. Women in dating relationships were asked to think about a personal issue that she would like to change about herself. Then each woman discussed the issue with her male partner. During the videotaped discussion, blood samples are taken from the woman and assayed for oxytocin. Then each woman views the video, and documents at which times she felt supported. We hypothesized that social support may stimulate oxytocin release.

FR 4:20 p.m.

***Testing a New Theory of Biological Altruism***

Brown, Stephanie, L. (University of Michigan, [stebrown@umich.edu](mailto:stebrown@umich.edu)); Brown, R. Michael (Pacific Lutheran University)

According to a recently proposed theory of biological altruism ((Selective Investment Theory (SIT), Brown & Brown, in press)), human social bonds evolved as overarching, emotion-regulating mechanisms designed to promote reliable, high-cost investment in fitness-interdependent others' genetic relatives, and unrelated

individuals with linked reproductive needs (e.g., mating partners, coalition partners). Strong implications of SIT are that (a) cues for another's dependence on oneself contribute to bond-formation; (b) the hormonal basis of social bonds is associated with the suppression of self-interest motivation; and (c) altruism directed toward a bonded, relationship partner will be accompanied by fitness (health) benefits. In our talk, we present data from several empirical studies that are consistent with each of these possibilities. Implications of these findings for biological approaches to close relationships are considered.

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## Friday Evening Sessions

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### Session F-1 *Mating Motives*

Bodek Lounge

Chair: Norman Li

FR 5:00 p.m.

#### *Why Women Want Sex: The Functions of Sexual Motivation*

Buss, David M. (University of Texas, Austin, [dbuss@psy.utexas.edu](mailto:dbuss@psy.utexas.edu)); Meston, Cindy

The evolved function of sexual motivation seems obvious -- to impel intercourse and consequently successful conception. Sex, however, is a fungible resource that can be deployed for solving qualitatively distinct adaptive problems. Participants (N = 1,549) evaluated which of 237 incentives motivated them to have sexual intercourse. Findings point to a panoply of adaptive problems solved by sex, including: (1) fulfilling a social contract, (2) attracting a mate, (3) increasing social status, (4) exploiting low-cost sexual opportunities, (5) "trapping" a new partner, (6) deepening emotional commitment (7) evoking jealousy, (8) retaining a mate, (9) keeping mate poachers at bay, (10) initiating a breakup, (11) breaking up a rival's relationship, (12) avoiding injury, and (13) extracting revenge. Discussion focuses on sexual selection, sexual conflict, and sexually antagonistic co-evolution in forging multiple motives for sex.

FR 5:20 p.m.

#### *Deception in Young Adult Opposite-Sex Friendship*

Bleske-Rechek, April (University of Wisconsin, Eau Claire, [bleskeal@uwec.edu](mailto:bleskeal@uwec.edu)); Matteson, Lindsay K.; Gragg, Brittany I.; Stocco, Corey S.

Research suggests that young adults commonly experience sexual attraction toward their opposite-sex friends. Frequently, however, friends deceive each other about their feelings, despite that they rate "having someone to confide in" as a primary benefit of opposite-sex friendship. The current studies test the hypothesis that deception about mating is the most frequently experienced form of deception in young adult opposite-sex friendship, and also the most upsetting. In Study 1, 130 men and women reported an instance in which they had deceived an opposite-sex friend and an instance in which they had been deceived by an opposite-sex friend. A majority of nominations involved romance and mating. In Study 2, 89 pairs of opposite-sex friends completed a questionnaire exploring upset in response to hypothetical deceptions in their friendship. Deception about the other's current relationship status induced substantial upset; and upset co-varied with one's own relationship involvement and sexual attraction to friend.

FR 5:40 p.m.

#### *Sex Similarities and Differences in Preferences for Short-Term Mates*

Li, Norman (University of Texas, Austin, [normli@mail.utexas.edu](mailto:normli@mail.utexas.edu))

\* Postdoctoral Award Candidate

Are there sex differences in criteria for sexual relationships? The answer depends on what question a researcher asks. Data suggest that whereas the sexes differ in whether or not they will enter short-term sexual relationships, they are more similar in what they prioritize in partners for such relationships. Empirical findings from budget allocation and mate-screening methodologies indicate that whereas women prioritize status in long-term mates, they instead (like men) prioritize physical attractiveness much like an economic necessity in short-term mates. Both sexes also show evidence of favoring well-rounded long- and short-term mates when given the chance. Participants also reported reasons for having casual sex, and what they find physically attractive. For women, results generally support a good genes account of short-term mating, as per Strategic Pluralism Theory

(Gangestad & Simpson, 2000), though for some women and some men, other motives including a desire for a long-term relationship may be operating.

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**Session F-2 Theoretical Modeling of Social Behavior****Hall of Flags****Chair: Peter J. DeScioli****FR 5:00 p.m.*****A Unified Sequential Mate Selection Model*****Saad, Gad (Concordia University, gadsaad@jmsb.concordia.ca); Sejean, Richard**

The evaluative processes underlying mate choice have traditionally been portrayed in two distinct manners. In trait-based sequential-sampling, individuals iteratively acquire attribute information on two competing suitors until a desired threshold of cumulative discrimination is reached (Saad & Eba, 2005). In alternative-based sequential-sampling (Todd & Miller, 1999), individuals holistically evaluate one prospective mate at a time until a fitting candidate is found. Despite the insight provided by each of these approaches independently, the act of choosing a mate is perhaps best described by a combination of the two. By unifying alternative-based and attribute-based sequential-sampling frameworks (Todd, 2001; Lippman & McCardle, 1991), this presentation will (1) empirically establish a more ecologically valid model for studying the cognitive processes that underlie choosing a mate, and (2) introduce a computerized process-tracing tool (Saad and Sejean, 2006) particularly well suited to studying fast and frugal heuristics used when solving decision-problems that involve sequential-sampling.

**FR 5:20 p.m.*****Evolution of Alternative Mating Systems in Human and Non-Human Primates*****White, Frances J. (University of Oregon, fwhite@uoregon.edu); Orbell, John; Malone, Nicholas**

Alternative mating systems evolve when different strategies return equivalent reproductive success within a population and are not traits that "make the best of a bad job" by minimizing the loss of reproductive success due to poor competitive status. Alternative mating systems in non-human primates include intrasexual selection of male-male competition and intersexual selection of female choice and are more common when paternal investment in offspring is minimal. In humans and other primates with high paternal investment, it is less clear why females choose males displaying an alternative, non-investing strategy. We use game theoretic modeling of female choice to examine the evolutionary thresholds under which a female in a pair-bond would choose an extra-pair copulation with a non-investing male. Our model shows when females with a typical mating system of long-term mate choice for investing males should make a short-term choice of a non-investing male.

**FR 5:40 p.m.*****The Four Basic Games*****DeScioli, Peter J. (University of Pennsylvania, descicoli@psych.upenn.edu)**

An important step in using game theory more effectively in psychology is to develop a taxonomy of games suited to that purpose. A recurrent game theoretic structure can, broadly, select for two kinds of adaptations: 1) adaptations designed to execute equilibrium strategies, and 2) adaptations designed to alter the structure of the game to shift the equilibrium. The fact that adaptations can alter the game itself suggests that it is a mistake to examine games such as the Prisoner's Dilemma (PD) in isolation from neighboring games. Here I take a first step towards developing a game taxonomy that will elucidate relations among games. I present an analysis of 2x2 games which reduces all such interactions into four basic types. The evolutionary significance of each of the four basic games and several subtypes is considered.

**Session F-3 Aggression and Crime**  
**Chair: Arjan A.J. Blokland**

**Class of 1949 Auditorium**

**FR 5:00 p.m.**

***The "Cinderella Effect": A Sample from Brazil***

**Tokumar, Rosana S. (Universidade Federal do Espírito Santo, tokumar@usp.br); Bergamin, Margareth P.**

Cohabitation with step-parents has been identified as a major factor in child abuse and infanticide and as resulting in less investment in the child. We investigated both effects in the population of Grande Vitória, ES, Brazil. We compared the number of parents and step-parents accused of crimes, in the police records involving children, with family composition in the population at large. The proportions obtained were: accused parents/children that live with parents: 0.11; accused step-fathers/children that live with a step-father: 0.21; accused step-mothers/children that live with a step-mother: 0.28. We also assessed the frequency of some kinds of care displayed by parents and step-parents. Children living with one biological and one non-biological parent received more care from the biological parent but less total care from both parents than those living with biological parents. These results give support to Daly and Wilson's hypotheses that discriminative parental solicitude is a selected human characteristic.

**FR 5:20 p.m.**

***Sexual Coercion in Intimate Relationships Is Better Predicted by Women's Infidelity than by Men's Dominance and Violence***

**Goetz, Aaron T. (Florida Atlantic University, tshackel@fau.edu); Shackelford, Todd K.**

*\* New Investigator Award Candidate*

Researchers studying sexual coercion from a standard social science perspective have proposed that the rape of a woman by her intimate partner -- what we refer to as forced in-pair copulation (FIPC) -- is the result of his dominant personality and his general coercive and violent behavior towards her. Researchers studying sexual coercion from an evolutionary perspective, in contrast, have proposed that FIPC may function as an anti-cuckoldry tactic, with its occurrence related to a man's suspicions of his partner's sexual infidelity. In two studies, we collected data relevant to both perspectives to determine which variables accounted for greater variance in men's FIPC. Regression analyses from Study 1 (self-reports from 256 men) and Study 2 (partner-reports from 290 women) indicated that women's infidelities better predicted men's FIPC than did their men's personality and general coercive and violent behavior.

**FR 5:40 p.m.**

***Can Evolutionary Psychology Account for Life Course Variations in Crime?***

**Blokland, Arjan A.J. (NSCR -- Netherlands Institute for the Study of Crime and Law Enforcement, ablokland@nscr.nl); Nieuwbeerta, Paul**

*\* Postdoctoral Award Candidate*

Evolutionary arguments have been offered to explain age/crime distribution. The age/crime curve is said to result from the expansion of reproductive benefit to be gained from competitive behavior during adolescence, followed by an increase in the costs of competition during the later adult years. This study analyses the effect the growing costs of competitive behavior, brought about by age-related changes in life circumstances, have on crime. Official data on the entire criminal careers of a nationally representative sample (N=4,615) of all offenders whose criminal case was tried in a Dutch court in 1977 alongside official data on their marital and fertility history are used to estimate the extent to which these life circumstances influence an individual's chance of offending. Results indicate that, while life circumstances substantially influence the chances of individual criminal behavior, age-graded changes in life circumstances explain the aggregated age crime distribution only to a modest extent.

**Session F-4 Food & Eating****Ben Franklin Room****Chair: Siegfried Dewitte****FR 5:00 p.m.*****Shedding Light on Food Choices: Neonatal Exposure to Sunlight Reduces Variety Seeking Tendencies***  
**Goukens, Caroline (K.U.Leuven, caroline.goukens@econ.kuleuven.be); Bruyneel, Sabrina; Dewitte, Siegfried**

We propose that variety seeking tendencies in the food domain reflect a trade-off between food processing efficiency pressures and food accessibility pressures. Early childhood conditions may influence the optimal position on this trade-off and contribute to individual differences in variety seeking tendencies. Consistent with this theory, we found that neonatal exposure to sunlight influences people's food variety seeking at later age. In two studies ( $n = 127$ ;  $n = 109$ ) we found that participants who were exposed to a lot of sunlight during the second week after birth opted less for novel types of frozen meals (study 1) and cakes (study 2) when making food choices compared to people who were exposed to less sunlight. In study 2, we also showed that more imminent cues of abundance (food scent) suppressed the relationship between neonatal sunlight exposure and preference for novel food items.

**FR 5:20 p.m.*****Hungry for Money: The Desire for Caloric Resources Increases the Desire for Financial Resources and Vice Versa*****Briers, Barbara (K.U.Leuven, barbara.briers@econ.kuleuven.be); Pandelaere, Mario; Dewitte, Siegfried; Warlop, Luk***\* New Investigator Award Candidate*

This paper attempts to provide an evolutionary explanation for humans' motivation to strive for money in present-day societies. We propose that people's desire for money is a modern derivative of their evolved desire for food. In three studies we show the reciprocity between the incentive value of food and money. In Study 1, hungry participants were less likely to donate to charity than satiated participants. In Study 2, an olfactory food cue, known to increase the desire to eat, made participants offer less money in an economic game compared to participants in a room free of scent. In Study 3, the respondents' desire for money affected the amount of candy eaten in a subsequent taste test, but only for dietary-unrestrained participants. We discuss our findings in the light of primary and secondary reinforcers and recent neurological insights that suggest a common pathway to the processing of food and monetary rewards.

**FR 5:40 p.m.*****Is There Evidence for the Antimicrobial Hypothesis in Japanese Local Cuisines?*****Ohtsubo, Yohsuke (Nara University, ohtsubo@daibutsu.nara-u.ac.jp)**

Recently, Sherman and colleagues have proposed the antimicrobial hypothesis for spice use (e.g., Sherman, 2002). The antimicrobial hypothesis presupposes that many spices have antimicrobial properties and thus use of spices protects us from foodborne illnesses. This study attempts to test the antimicrobial hypothesis with the Japanese local recipes. To test the following corollaries, 831 recipes were retrieved from four volumes of books summarizing recipes provided by Japanese housewives around 1920s. Corollary 1: Meat/fish-based recipes are spicier than vegetable-based recipes. Corollary 2: Recipes from hotter regions are spicier. Corollary 3: Recipes associated with hotter seasons are spicier. Corollary 4: Unheated meals are spicier than well-heated meals. The data supported none of the four corollaries. However, if the word, "spicy" in the corollaries is replaced with the word "vinegary," the all corollaries were supported. The results are discussed in terms of cultural variations in means of cultural adaptation.

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## Saturday, June 10

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### Saturday Morning Sessions

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**Session G-1**    ***Symposium: Family Experience, Pubertal Development, and Life History Models: New Evidence***    **Bodek Lounge**  
Chair: Bruce Ellis

**SA 10:30 a.m.**

***Family and Child Care Antecedents of Pubertal Timing***

**Belsky, Jay** (Birkbeck University of London, [j.belsky@bbk.ac.uk](mailto:j.belsky@bbk.ac.uk)); **Steinberg, Laurence D.** (Temple University); **Houts, Renate** (RTI International); **Friedman, Sarah L.** (NICHD); **de Hart, Ganie** (SUNY Genesco); **Caufmann, Beth** (UC Irvine); **Roisman, Glenn** (University of Illinois, Urbana-Champaign); **Halpern-Felsher, Bonnie** (UC, San Francisco); **Susman, Elisabeth** (Pennsylvania State University)

Longitudinal data on 819 white children were examined to test two general evolutionary hypotheses: (a) that experiences in the family would predict pubertal timing and (b) that children would be differentially susceptible to rearing influences. Results indicated (1) that the pubertal timing of girls, not boys, is susceptible to rearing influences; (2) that it is girls who, as infants, were high in negative emotionality who are almost exclusively susceptible; (3) that it is negative experiences rather than positive ones that seem most influential; (4) that this is so in the case of mothering and fathering; (5) that experiences before and after school entry appear influential; and (6) that the time children spend in child care merits consideration when seeking to understand experiential influences on girls' pubertal timing. The small effects detected are discussed in the context of theory testing, genetic and nutritional influences, and sample restrictions.

**SA 10:50 a.m.**

***Family Environments, Adrenarche, and Pubertal Timing: A Longitudinal Test of a Life History Model***  
**Ellis, Bruce J.** (University of Arizona, [bjellis@email.arizona.edu](mailto:bjellis@email.arizona.edu)); **Essex, Marilyn J.**

Guided by life history theory, Belsky et al. (1991) theorized that humans have evolved to be sensitive to specific features of early childhood environments, and that exposure to different environments biases children toward development of different reproductive strategies, including pubertal timing. The current research provides a longitudinal test of this theory. Family environments, based on interviews with mothers and fathers and direct behavioral observations of mother-child interactions, were assessed in preschool. Children were then followed prospectively, and adrenal hormone data was collected in the 1st grade and development of sexual characteristics was assessed in the 5th grade. We found that more Parent-Child Warmth forecast later pubertal development in daughters and more observed Mother-Child Positivity predicted later adrenarche in both daughters and sons. In conclusion, this research provides measured support for Belsky et al.'s life history model of pubertal timing and extends past research by assessing adrenal hormones and including boys.

**SA 11:10 a.m.**

***Family Composition and Menarcheal Age: Anti-Inbreeding Strategies***

**Matchock, Robert L.** (Pennsylvania State University, Altoona, [rlm191@psu.edu](mailto:rlm191@psu.edu)); **Susman, Elizabeth J.** (Pennsylvania State University, University Park)

Family composition is associated with pubertal timing in women, although the socioendocrinology of the human primate is poorly understood. To better understand social influences on sexual maturation retrospective data were collected on menarcheal age and family composition from a sample of 1,938 participants from a college population. Absence of a biological father, the presence of half- and step-brothers, and living in an urban environment were associated with earlier menarche. The presence of sisters in the household while growing up, especially older sisters, was associated with a delayed menarche. Menarcheal age was affected neither by the number of brothers in the household, nor was there an effect of birth order. Body weight and race were also associated with menarche. The present findings advance the literature as they are suggestive of putative human

pheromones that modulate sexual maturation to promote gene survival and prevent inbreeding, as occurs in rodents and nonhuman primates.

**SA 11:30 a.m.**

***Why Are Father Absent Girls at Special Risk for Early Pubertal and Sexual Development? Preliminary Answers from a Genetically Controlled Sibling Study***

**Tither, Jacqueline M. (University of Canterbury, jmt68@student.canterbury.ac.nz); Ellis, Bruce J. (University of Arizona)**

Life history models suggest that father absence resulting from divorce places daughters at special risk for early pubertal and sexual development. Longitudinal research in New Zealand and the United States has demonstrated that father absence is a significant risk factor for early sexual outcomes in daughters. There are two possible explanations for this finding. First, the relation may be a non-causal artifact of high genetic loading for early sexual development in girls from father-absent families. Second, father absence may actually cause early sexual development. Most previous empirical tests of the father absence effect have been unable to distinguish between these two explanations, because they have confounded genetic and environmental effects. To address this issue, a genetically controlled study of full biological sisters from father-absent families was conducted in New Zealand. Results indicate that, within families, coresidence with fathers with serious psychopathology delays pubertal development but accelerates sexual and reproductive debut.

**SA 11:50 a.m.**

***Age of Menarche in Children-of-Twins: A Re-Evaluation of the Belsky-Draper Hypothesis***

**Mendle, Jane E. (University of Virginia, jm4ky@virginia.edu); Turkheimer, Eric (University of Virginia); Emery, Robert E. (University of Virginia); D'Onofrio, Brian M. (University of Virginia); Slutske, Wendy S. (University of Missouri); Martin, Nicholas G. (Queensland Institute of Medical Research)**

*\* New Investigator Award Candidate*

Girls who grow up in households with an unrelated adult male reach menarche earlier than peers, a finding hypothesized to be an evolutionary strategy for families under stress. Our research tests the alternative hypothesis that nonrandom selection into stepfathering due to shared environmental and/or genetic predispositions creates a spurious relation between stepfathering and early menarche. Using a children-of-twins statistical design, we found that cousins discordant for stepfathering did not differ in age of menarche. Moreover, controlling for mother's age of menarche eliminated differences in menarcheal age associated with stepfathering in unrelated girls. These findings strongly suggest selection, and not causation, accounts for the relationship between stepfathering and early menarche. Since early menarche is associated with early sexual intercourse and consequent single motherhood, it may be that mothers predisposed to raise children with an unrelated male in the home transmit an early maturation to their daughters.

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**Session G-2 Religion**

**Hall of Flags**

**Chair: Paul J. Watson**

**SA 10:30 a.m.**

***Religiosity and Reproductive Strategies***

**Weeden, Jason (University of Pennsylvania, jasonweeden@yahoo.com)**

I use national data to show that religiosity in the U.S. is solidly related to differing sexual, marital, and reproductive behaviors and especially to moral views about those behaviors. I also investigate the common assumption that religious commitments are causes (and not effects) of these correlates. In fact, the data suggest that we have as much reason to believe that prior decisions regarding reproductive strategies determine later decisions about levels of religious attendance as we do to believe that prior religiosity determines later reproductive strategies -- these are likely mutually reinforcing variables without a simple causal story.

SA 10:50 a.m.

***Coalitional Religiosity, Devotional Religiosity and Religious Violence***

**Hansen, Ian G. (University of British Columbia, [ihansen@psych.ubc.ca](mailto:ihansen@psych.ubc.ca)); Norenzayan, Ara; Gingesllan, Jeremy; Dar-Nimrod**

*\* New Investigator Award Candidate*

Psychologists have been trying since the 1950s to identify a kind of religiosity that predicts tolerance to rival a host of religiosity constructs that consistently predict prejudice and support for violence (e.g. dogmatism, religious fundamentalism, authoritarianism). This "tolerant religiosity" project has met with very mixed success, and many have concluded that there is no empirically coherent measure of religiosity that is consistently predictive of tolerance and rejection of violence. However, in studies from several religious groups in several countries (including Canada, Malaysia, India, Indonesia, Israel, West Bank and Gaza, U.K., Mexico, Russia, South Korea), my colleagues and I have consistently found that the kind of religiosity that predicts prejudice and support for violence--which we call coalitional religiosity--is related to religiosity that potentially predicts tolerance and rejection of violence--devotional religiosity. When coalitional religiosity is statistically held constant, however, greater religious devotion predicts greater rejection of intolerance and violence.

SA 11:10 a.m.

***The Moral Consequence of Religion***

**Shariff, Azim F. (University of British Columbia, [azim@psych.ubc.ca](mailto:azim@psych.ubc.ca)); Norenzayan, Ara (University of British Columbia)**

*\* New Investigator Award Candidate*

Many have speculated that the cultural development of religion allowed the social cohesion necessary for humans to live together in groups larger than close-knit kin based tribes. The moral transcriptions shared by a common faith and the policing effects of supernatural watchers freed humans from the population restrictions of kin and reciprocal altruism, making large, permanent and relatively peaceful settlements possible. Today, as globalization has vastly expanded interactions between groups harboring different faiths, these purported socially cohesive effects may be unraveling. Our studies are directed at empirically exploring these claims. Using social psychological methodologies, we have examined how priming religious concepts affects moral and prosocial behavior. Our results indicate that even subtle unconscious exposure to religious ideas can dramatically encourage prosocial over selfish behavior. These effects hold for both theists and atheists. Current research is examining the relative effectiveness of secular moral concepts such as civil responsibility and social contractarianism.

SA 11:30 a.m.

***Religious Behaviors with Social Costs as Signals of Commitment: Supernatural Unpredictability Inhibits Defections of Valuable Social Partners***

**Watson, Paul J. (University of New Mexico, [pwatson@unm.edu](mailto:pwatson@unm.edu))**

Social behaviors with strategic production costs of time, energy or resources can honestly communicate commitments. It may be difficult, however, to guard against defections of valuable partners via signal-induced debts alone. "Out-group" individuals may collaborate to recruit select individuals, sheltering them from punishments and losses if they agree to defect to their group. Group boundaries may be strengthened via signals having consequential costs entailing self-stigmatization and the preemptive narrowing of one's social alternatives, thus allaying one's current partners' concerns about defection. Behaviors that imply to out-group individuals that they would have extraordinary difficulty predicting the substantive socioeconomic behavior of the actor should discourage them from wanting that person in their group. Religious behaviors may be best for producing an impression of systematic unpredictability of people across group boundaries. The notion that unfamiliar supernatural forces influence a person's decision-making processes transforms that individual from a psychological puzzle to a metaphysical mystery.

SA 11:50 a.m.

***Islam: A Religion of Sex?***

**Cvorovic, Jelena (Institute of Ethnography, SASA, Belgrade/Arizona State University, cvorovic@eunet.yu); Steadman, Lyle**

We investigate Gypsies in Serbia on marital and reproductive histories as well as culturally prescribed behaviors. The analysis is based on data taken from demographic assessments and fieldwork performed in three Gypsy settlements. We find that Gypsy tribes employ different reproductive strategies, ranging from a low-investment style of reproduction, to a more typical parental strategy, their respective strategies depending largely on a religious affiliation of a particular Gypsy group. The Orthodox Christian Gypsies appear more K when compared to the Muslim Gypsies, regardless of their location, type of settlement and socio-economic condition. The reasons bringing about these differences appear to come from the Gypsies' past choice in adjusting their behavior and reproduction to a strategy appropriate to a given environment. The consequences of having chosen Islam, in contrast Orthodox Christianity, appear to include higher fertility, polygyny, and earlier marriage, which resulted in higher child mortality and lower parental investment.

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**Session G-3 Preferences for Faces**

**Class of 1949 Auditorium**

**Chair: Anthony C. Little**

SA 10:30 a.m.

***Women Track Facial Cues of Men's Testosterone and Interest in Infants***

**Roney, James R. (University of California, Santa Barbara, roney@psych.ucsb.edu)**

This research investigated whether women track possible cues of paternal and genetic quality in men's faces. Men's testosterone concentrations served as a proxy for heritable fitness given evidence that androgens signal immunocompetence, and men's scores on an interest in infants test served as prima facie markers of paternal quality. Women's ratings of facial photographs of these men were sensitive to these variables: men's scores on the interest in infants test predicted women's ratings of men's affinity for children and long-term mate attractiveness, and men's testosterone concentrations predicted women's ratings of men's masculinity and short-term mate attractiveness. A second study with an independent sample of raters and faces further demonstrated that women's conception risk predicted their preferences for testosterone in men's faces. The results are generally consistent with the existence of adaptations that track facial cues relevant to mate value.

SA 10:50 a.m.

***Sexual Dimorphism in Facial Movement***

**Morrison, Edward R. (University of Bristol, Ed.Morrison@bris.ac.uk); Gralewski, Lisa; Campbell, Neil; Penton-Voak, Ian**

*\* New Investigator Award Candidate*

Most studies of human facial attractiveness have used photographs, which lack the potentially important dynamic information present in social interaction. We used computer-generated stimuli to investigate whether facial movement can be used to judge sex and attractiveness. An androgynous head was animated with movement from 5 men and 5 women, thus keeping structural cues constant. People were able to identify the sex of the faces more accurately than chance although some faces were more identifiable than others. The faces were then rated for attractiveness on a 7-point Likert scale. Preliminary analyses indicate a significant correlation between sex identification rates and attractiveness for female but not male faces. These data suggest that men and women differ in their facial movement, and that sexually dimorphic movement is associated with attractiveness in women.

SA 11:10 a.m.

***Women's Attention-Memory Disjunction for Attractive Male Faces***

**Perea, Elaine F. (Arizona State University, elaineperea@gmail.com); Anderson, Uriah S.; Kenrick, Douglas T.; Neuberg, Steven L.**

Attractiveness is valued, and may be an indicator of health and genetic quality. Women pay visual attention to attractive men more than average-looking men, yet despite enhanced attention, women do not remember attractive men particularly well (Maner, 2003). Why do women pay extra attention to, yet forget to a greater

extent, attractive men? This research explores this attention-memory disjunction by examining women's fertility as a moderator. Cues heuristically related to male genetic fitness -- including physical attractiveness -- may be especially relevant during ovulation. Female participants viewed attractive and average-looking faces, and we measured their eye gaze and recognition memory for these faces. Findings replicated Maner's disjunction. Women gazed more at attractive than average-looking men, yet failed to remember them with better accuracy. In comparison to low fertility women, however, high fertility women looked more at attractive men and remembered all men well. Discussion focuses on the logic underlying the attention-memory disjunction.

**SA 11:30 a.m.**

***Unconscious Preferences for Familiar Faces in Females While Males Prefer More Novel Female Faces: Evidence for the Coolidge Effect in Humans***

**Little, Anthony C. (University of Liverpool, a.c.little@liverpool.ac.uk); Jones, Benedict C. (University of Aberdeen); DeBruine, Lisa M. (University of St Andrews)**

*\* Postdoctoral Award Candidate*

Preferences for "average" faces have been explained by suggesting that judges like familiar stimuli and that average faces resemble an internal template of a face, and hence are more familiar. In this talk I discuss recent evidence for this notion showing that judges prefer familiar celebrity face shapes over mathematically opposite unfamiliar face shapes, even though none of the faces are recognisable as the individuals they represent. As both types of face presented were equally distant from a mathematical face norm, this suggests faces we have experience with guide our preferences. Interestingly, while familiarity was preferred by males and females in male faces, when judging female faces, male judges preferred less familiar face shapes than did women. We suggest this is evidence for the Coolidge effect in humans, whereby males have been selected to have a greater preference for novelty in their sexual partners than have women.

**SA 11:50 a.m.**

***Integrating Physical and Social Signals when Forming Face Preferences***

**Jones, Benedict C. (University of Aberdeen, ben.jones@abdn.ac.uk); Bestelmeyer, P.E.G. (University of Aberdeen); DeBruine, L.M. (Universities of St Andrews and Aberdeen); Little, A.C. (University of Liverpool); Conway, C.A. (University of Aberdeen); Welling, L.M. (University of Aberdeen); Feinberg, D.R. (Harvard University); Schneider, A. (University of Aberdeen)**

*\* Postdoctoral Award Candidate*

Integrating information regarding others' physical attractiveness, the direction of their attention, and cues to their emotional state would allow you to direct social effort, a limited resource, to the most attractive individuals who will reciprocate this effort. Although most prominent models of face processing propose that physical aspects of faces and social signals (e.g. gaze direction and expression) are analyzed by independent systems, we show the strength of attractiveness preferences is sensitive to the combination of gaze direction and expression: preferences for physically attractive faces are strongest when they are directing positive social interest at the viewer (Experiments 1 and 2). Using visual adaptation paradigms, we also show that social signals and physical aspects of faces are processed by interdependent neural systems (Experiments 3-5), revealing mechanisms that may have evolved to maximize the potential benefits of our own choices about whom we attempt to engage in social interaction.

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**Session G-4 Cooperation in Cultural Context**  
**Chair: John Ziker**

**Ben Franklin Room**

**SA 10:30 a.m.**

***Food Distribution in Northern Siberia and the Evolution of Cooperation***

**Ziker, John (Boise State University, jziker@boisestate.edu)**

This paper describes observations of new (non-meal) food distributions documented in Northern Siberia in 2001 and 2003 among hunter-fisher-wage laborers known ethnically as Dolgan and Nganasan. Using independent data on social relationships, household composition, location, hunter status, health, contingency, and self-report explanations, tests of prominent evolutionary models for food sharing and cooperation among hunter-gatherers are described. These results are compared with earlier results on sharing at meals in same population.

SA 10:50 a.m.

***Friends Won't Let You Down? The Effect of Common History on Commitment to "Old Interaction Partners"***

Back, Istvan (University of Groningen, The Netherlands, R.C.Smaniotto@rug.nl); Smaniotto, Rita C.

According to rational choice theory, individuals in a bargaining situation will switch interaction partners if this leads to higher long term benefits. Thus, they will only forgo material gains by staying with an old interaction partner (1) if they have a common future, or (2) if the probability of being cheated is high (high uncertainty). In this study, we addressed the question whether individuals forgo material gains by staying with an old interaction partner even in the absence of a common future or uncertainty. Experimental data were collected in two different countries: the Netherlands and China. In line with expectations, the results showed that individuals are more likely to give up material rewards in the absence of a common future if the number of previous interactions is larger. The effect of uncertainty was moderated by common history.

SA 11:10 a.m.

***Locally Salient Rhetorical Framing Changes How People Play the Trust Game***

Cronk, Lee (Rutgers University, lcronk@anthropology.rutgers.edu)

The Trust Game was used to explore the impact of locally salient rhetorical framing on how people play experimental economic games. The study population was the Maa-speaking peoples of the Mukogodo area of Kenya. The rhetorical framing was derived from the Maa word osotua. Literally meaning "umbilical cord," osotua is used by Maa-speakers to describe their traditional gift-giving system. Individuals establish osotua relationships through gifts, often though not always of livestock, and often maintain them for long periods. The Trust Game was played fifty times, half with no rhetorical framing and half prefaced by an explanation that included the statement "this is an osotua game." The framing had a strong effect on how the game was played, turning players' attention from a quest for gains to a consideration of the seriousness, moral weight, and responsibility associated with osotua transactions. The rhetoric was further explored through qualitative interviews with key informants.

SA 11:30 a.m.

***The Racial Double Standard in Welfare State Attitudes: Unpackaging Parochial Social Exchange***

Navarrete, Carlos David (Harvard University, cdn@wjh.harvard.edu); Sidanius, James; Takemura, Kosuke; Yuki, Masaki

\* Postdoctoral Award Candidate

Racial double standards often affect people's support for public policies directed at ameliorating social problems (e.g. whites may support affirmative action for women but not for blacks). Here we describe the results of two studies that examine the extent to which racial double standards in support for social welfare are affected by taste-based or information-based discrimination. Study 1 reveals that among whites, support for anti-poverty programs is higher when the targets of the support are white. Analyses of participants' responses on post-manipulation attitudinal measures suggest that information biases about welfare recipients or blacks do not mediate the effect, but that a preference for the white poor may explain the double-standard. Study 2 explores the notions that (a) information-based discrimination could be erased by perceptions that welfare state abuses can be effectively monitored and sanctioned, or that (b) taste-based discrimination might be attenuated if racial groups are perceived to have shared, homogenous values.

SA 11:50 a.m.

***On the Default Assumption of Monitoring and Sanctioning Behind Japanese Collectivism: A View from the Social Institutional Analysis and Error Management Theory***

Takemura, Kosuke (Hokkaido University, takemura@lynx.let.hokudai.ac.jp); Yuki, Masaki (Hokkaido University); Rumble, Ann C. (Ohio University, Chillicothe); Horikawa, Hiroki (Hokkaido University)

From the perspective of error management theory (Haselton & Buss, 2000), we proposed that Japanese, who live in a society where group-level systems of sanctioning are prevalent, possess a default behavioral tendency to cooperate with the group when the existence of sanctions is ambiguous because cooperation is safer than defection in a society where sanctions are typically present. Seventy-six Japanese and 57 Americans twice

played a public goods game in 3-person groups. Their contributions to the group from endowments were doubled and then divided equally among the members. In the "sanction-absence-emphasized" condition, participants were reminded before the second trial that sanctions were non-existent. No such emphasis was made in the control condition. As predicted, Japanese with high ingroup-identity decreased cooperation after the first trial significantly more in the sanction-absence-emphasized condition than in the control condition. Japanese low-identifiers and Americans did not change their cooperation regardless of the manipulation.

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## Saturday Afternoon Sessions

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### Session H-1 *Symposium: Discrimination and the Psychology of Coalitions* Bodek Lounge

Chair: Carlos David Navarrete

SA 3:00 p.m.

#### *A Sociofunctional Perspective on the Complexity of Intergroup Interactions*

Cottrell, Catherine A. (University of Florida, [cacott@ufl.edu](mailto:cacott@ufl.edu)); Neuberg, Steven L. (Arizona State University)

\* Postdoctoral Award Candidate

According to a sociofunctional approach (Cottrell & Neuberg, 2005; Neuberg, Smith, & Asher, 2000), individuals can maximize their investment in their group by effectively identifying and responding to threats to their group's valued resources and social structures. Once detected, each qualitatively distinct threat elicits a qualitatively distinct emotion and action tendency toward the outgroup. These functionally specific threat-emotion-behavior packages lead to intergroup interactions with remarkable richness. Here, we summarize data illustrating this richness. Specifically, we describe the beliefs, emotions, and actions of both European Americans and non-European Americans toward various groups, highlighting (a) the connections from perceived threat to elicited emotion to behavioral inclination, and (b) the diversity of belief, emotion, and action associated with different configurations of perceivers and targets. In all, these data underscore the complexity of intergroup interactions, and illustrate the ability of our framework to account for such diversity.

SA 3:20 p.m.

#### *Social Group Essentialism: Inferential Reasoning about Ethnic, Coalitional, and Occupational Categories*

Moya, Cristina M. (UCLA, [cmoya@ucla.edu](mailto:cmoya@ucla.edu)); Gil-White, Francisco (University of Pennsylvania); Boyd, Robert T. (UCLA); Fessler, Daniel M.T. (UCLA)

Essentialist reasoning has been posited to provide a mechanism for quick learning about categories that have rich inductive potential. A number of investigators have argued that such reasoning may have great utility in social relations. Within the social domain, ethnic categories may afford greater inductive potential than coalitional categories due to the clustered distribution of cultural phenotypes along ethnic lines. In Study 1, we tested whether subjects drew more inductive inferences about members of ethnic, as opposed to coalitional and occupational groups. Results reveal that inductive inferences are significantly more likely when reasoning about ethnic groups than when reasoning about coalitions. Study 2 explores the possibility that different kinds of phenotypes elicit differing degrees of essentialist reasoning. Finally, we will discuss sex differences in coalitional computation based on results from these experiments, and other empirical findings.

SA 3:40 p.m.

#### *'Erasing Race' with Cooperation: Tracking Down the Dynamics of Social Alliance Representations*

Pietraszewski, D. (University of California, Santa Barbara, [pietrasz@psych.ucsb.edu](mailto:pietrasz@psych.ucsb.edu)); Cosmides, L.; Tooby, J.

Recent evidence has demonstrated: (1) the human mind contains alliance tracking machinery and (2) the folk category 'race' appears to be an output of this alliance machinery and not of a dedicated 'race' mechanism. Herein, we report further, more rigorous empirical tests of both hypotheses. Findings include: (1) the first demonstration of decreased race encoding without a competing coalitional marker, (2) the selectivity of the effect

(i.e. race bears alliance characteristics, but sex does not), (3) an empirical test determining if the effects are being driven by encoding or recall.

**SA 4:00 p.m.**

***Up and Down, In and Out: Social Grammars of Dominance and Exclusion***

**Thomsen, Lotte (Harvard University, lthomsen@fas.harvard.edu); Sidanius, Jim (Harvard University); Fiske, Alan Page (UCLA)**

*\* New Investigator Award Candidate*

We argue that core evolved mechanisms of dominance/subordination and group exclusion/inclusion co-opt the spatio-relational, conceptual primitives of UP-DOWN/number and IN-OUT/overlap. Employing the CIRCA (Thomsen, Fiske, & Sidanius, 2005), a measure which captures three social grammars of relational models theory non-verbally with abstract icons, we demonstrate that preferences for CIRCA icons predict a vast range of Intergroup and interpersonal including SDO, racism, xenophobia, self-enhancement, and attachment and that non-normative interpretation of CIRCA icons strongly predicts clinical stress and anxiety. We also find that CIRCA icons are interpreted similarly among Inuit hunters of North East Greenland and UCLA students, and that the distribution and effects of CIRCA preferences for core social domains, such as the family, is similar in the two samples. Lastly, we find that hierarchical preferences predict favoring maximizing differences between ingroup and outgroup in a Tajfel matrix, even when the allocator receives less in absolute terms.

**SA 4:20**

***North American Intergroup Orientation: Coalition Formation Among Self-Interested Individualists?***

**Yuki, Masaki (Hokkaido University, myuki@let.hokudai.ac.jp); Maddux, William W. (Northwestern University); Takemura, Kosuke (Hokkaido University)**

Recent findings suggest that people from Western cultures such as the U.S. have a stronger tendency to emphasize categorical distinctions and comparisons between ingroups and outgroups than East Asians, who tend to place a stronger focus on the structure of relationships within groups. Given that Americans are generally thought to be strongly individualistic, it seems counterintuitive that they would emphasize intergroup comparisons to a greater extent than Japanese. We hypothesize that American's intergroup orientation can be explained as the inclination of self-interested individuals to form coalitions for group-level competition. In line with previous research, the results revealed that Americans were more concerned with intergroup comparison than were Japanese. However, the effect was mediated partially by interest in interpersonal-level comparison, or how one is better or worse than others. The results support our hypothesis that for self-interested individuals, comparison on an individual level is extended to comparison at the group level.

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**Session H-2 *Symposium: Religion and the Honest Signaling of Social Commitments***

**Hall of Flags**

**Chair: James Boster**

**SA 3:00 p.m.**

***Varieties of Religious Experience in Everyday American Life***

**Wilson, David Sloan (Binghamton University, dwilson@binghamton.edu); Storm, Ingrid**

The experience sampling method (ESM) involves signaling people at random times during the day, prompting them to record their external (where they are, who they are with, and what they are doing) and internal (what they are thinking and how they are feeling) experience. It is equivalent to the point sampling method in animal behavior research and ideal for asking questions about human behavior, psychology, and culture from an evolutionary perspective. We use a large ESM database to ask questions about the religious affiliation of American high school students. Not only does religion have an important impact on psychology and behavior, but varieties of religion have substantially different effects, especially liberal vs. conservative protestant denominations. Cultural diversity among religions needs to be considered along with the distinction between religion vs. non-religious cultural systems.

SA 3:20 p.m.

***Youth Religious Participation and Socio-Emotional Learning: An Evolutionary Model***

**Alcorta, Candace Storey (University of Connecticut, [candace.alcorta@uconn.edu](mailto:candace.alcorta@uconn.edu))**

Adolescent rites of passage occur in approximately 70% of cultures worldwide, yet from an evolutionary perspective there is currently little understanding of the adaptive benefits of these costly religious rituals. Anthropologists have viewed these rites as psychological and social mechanisms for transitioning individuals from child to adult status. Skills central to this transition include the development of cooperative social networks and culturally appropriate problem solving skills. This study examined the relationship between adolescent religious participation and the development of these skills. Fieldwork conducted in five different churches and one school indicated that youth religious participation is associated with enhanced problem solving strategies, expanded social networks of trust, and development of socio-symbolic value systems important to mental health. These findings suggest an evolutionary view of religion as a human adaptation for socio-emotional learning that is of particular relevance to the delayed developmental pattern of the human brain.

SA 3:40 p.m.

***How Religions Regulate Sexuality and Negotiate Marriage Contracts***

**Schindler, Dianne M. (University of Connecticut, [dianne.schindler@uconn.edu](mailto:dianne.schindler@uconn.edu)); Srinivasan-Shipman, Asha C.; Maltseva, Kateryna; Boster, James S.**

This paper examines how religion structures sexual and marital relationships and recruits the emotions necessary for people to enter into trustworthy marriage contracts. Employing the theoretical framework developed by Boster (this session), we review a number of culturally different marriage systems. The cases examined include South India and Tlaxcala Mexico, where religion scaffolds marriage by imbedding the marital bond in a broader kin and social network; and Egypt and Italy, where religion serves to promote the code of honor that tightly controls sexuality and gender roles. Other cases in which religion does not play a significant role in regulating marriage will also be examined to provide a contrast. These include a variety of South American societies that recognize multiple fathers for children.

SA 4:00 p.m.

***Yomut Religious Practices***

**Irons, William G. (Northwestern University, [w-irons@northwestern.edu](mailto:w-irons@northwestern.edu))**

This presentation will describe a number of Islamic religious practices followed by the Yomut Turkmen of northern Iran and explore the possibility that these practices serve as honest signals of willing to cooperate and to obey the moral norms of Yomut society. The elaborateness and easily monitored nature of these practices suggests that they are well structured to serve as such signals. The fact that these practices are followed more extensively by men than women fits with the fact that wider networks of cooperation among the Yomut are almost exclusively male. Yomut society is heavily organized by kinship – both real and putative – and their religious practices are integrated with general patterns of nepotism and with the enforcement of Yomut family organization which is not universal in the Muslim world.

SA 4:20 p.m.

***Design Features of Patriarchy: Paternity Certainty and Jewish Law***

**Boster, James S. (University of Connecticut, [james.boster@uconn.edu](mailto:james.boster@uconn.edu))**

Religion plays an important role in the social control of human sexuality, reproduction, and marriage by complementing the role played by emotions (Frank 1988). Both religion and emotions allow humans to enter into trustworthy social contracts with each other by enabling them to honestly signal their social commitments to each other. If marriage is modeled as a prisoner's dilemma, cuckoldry and abandonment are instances in which one partner cooperates and the other defects. Religion works to recruit the motivations and emotions that deter defection and ensure greater cooperation between marriage partners. This approach is applied to those features of Jewish law and custom that appear part of the means of reducing the likelihood of cuckoldry. It appears that Jewish law reinforces high fidelity of wives to husbands and high investment of husbands in wives and offspring through the use of the design elements of benefits, sanctions, concealment, structure, and monitoring.

**Session H-3 Modularity: Theory and Applications**  
**Chair: Clark Barrett****Class of 1949 Auditorium****SA 3:00 p.m.*****Massive Modularity and Brain Evolution*****Machery, Edouard (University of Pittsburgh, machery@pitt.edu)***\* Postdoctoral Award Candidate*

Quartz (2002) argues that some recent findings about the evolution of the brain (Finlay and Darlington 1995) are inconsistent with evolutionary psychologists' massive modularity hypothesis. In substance, Quartz contends that since the volume of the neocortex evolved in a concerted manner, natural selection did not act on neocortical systems independently of each other, which is a necessary condition for the massive modularity of our cognition to be true. I argue however that Quartz' argument fails to undermine the massive modularity hypothesis.

**SA 3:20 p.m.*****Prepared Learning About Danger in Humans*****Barrett, Clark (UCLA, barrett@anthro.ucla.edu)**

Environmental hazards, including dangerous animals, foods, and objects, are likely to have been important in shaping the evolution of human learning mechanisms. Studies in rhesus macaques have provided evidence for prepared learning of danger using social cues: individuals can learn that an object is dangerous in a single trial, when shown conspecifics reacting fearfully to the object. In addition, the effect is domain specific: it depends on the kind of object in question. In humans, similar domain specific effects have been shown in individual learning about dangerous items, using, for example, conditioning experiments. However, effects analogous to those seen in rhesus, i.e., single-trial learning without feedback using a social cue, have not been shown in humans. Here I provide evidence for domain specific prepared learning of this kind in human children. In a series of experiments, I explore the domain-specific nature of the learning mechanism.

**SA 3:40 p.m.*****Fractionating the Visual Architecture for Natural Category Recognition Using the "Attentional Blink" Paradigm*****New, Joshua J. (University of California, Santa Barbara and Yale University, joshua.new@yale.edu);****Cosmides, Leda; Tooby, John***\* Postdoctoral Award Candidate*

We examined whether the recognition of natural categories (e.g. people, plants, artifacts) is performed entirely by a single content-general mechanism or also via multiple category-specific mechanisms. Given the persisting evolutionary importance of perceiving animate objects (people, animals), we hypothesized that the visual system possesses a distinct and more efficient mechanism dedicated to their processing and consolidation into visual memory than that available for inanimate objects. We tested this prediction with the attentional blink (AB) paradigm wherein detecting a target in a stream of images causes a brief "attentional blink" when a second target frequently goes undetected. As predicted, when targets were both people or animals, they were detected much more frequently than when targets were both flowers or vehicles. Further, when each target was a different category (e.g. a vehicle then a person), animate targets following inanimate targets were frequently detected whereas inanimate targets following animate targets often went unseen.

**SA 4:00 p.m.*****What You See Is Not What You Get: Novel Illusions Discovered Under Evolved Navigation Theory*****Jackson, Russell E. (University of Texas, russelljackson@mail.utexas.edu); Cormack, Lawrence K.***\* New Investigator Award Candidate*

Researchers often assume that perceptual processes in biotic systems should function most accurately when they are most critical to fitness. We instead predicted from Evolved Navigation Theory that everyday perception should include several illusions that increase in magnitude as fitness costs increase. Human observers in ecologically valid settings estimated common environmental distances via distance matching. As predicted under Evolved Navigation Theory, participants unknowingly and drastically overestimated surfaces that pose falling

risks, but failed to overestimate equivalent images that pose no falling risks. Additionally, illusion magnitude approximated falling costs from navigating the estimated surfaces. Many studies have demonstrated higher-order cognitive biases in areas such as attribution, group membership, and decision-making. Evolved Navigation Theory suggests that our very perceptual processes may systematically misinform us in ways reflecting our evolutionary history.

**SA 4:20 p.m.**

***Mapping the Design of "Theory of Mind": Do Actions Speak Louder than Words?***

**Wertz, Annie E. (University of California, Santa Barbara, wertz@psych.ucsb.edu); German, Tim P.**

*\* New Investigator Award Candidate*

"Theory of mind" is the capacity to reason about agents in terms of underlying mental states (e.g., beliefs, desires). This ability is the result of cognitive mechanisms designed to track information about agents. We hypothesize that a class of inputs to this system include agents' observed actions. Specifically, we predict that when an agent approaches an object mental state representations are generated based on that action. This hypothesis was investigated in a series of studies. Adult participants were required to endorse or reject possible explanations for search actions described in short stories. Results indicate that when an agent approaches an object belief-desire representations are generated for that object even when it is not the explicitly stated target of the agent's search. This novel phenomenon in belief-desire reasoning, capturing the folk notion that "actions speak louder than words," can be used to illuminate the computational structure of "theory of mind" adaptations.

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**Session H-4 *Mate Choice - U.S. & Cross-Cultural Studies***

**Ben Franklin Room**

**Chair: Lee Kirkpatrick**

**SA 3:00 p.m.**

***What are Deal Breakers in a Mate: Characteristics that are Intolerable in a Potential Mate***

**Burkett, Brandy N. (University of California, Santa Barbara, burkett@psych.ucsb.edu); Kirkpatrick, Lee A. (College of William & Mary)**

Much research has examined sex differences and similarities in preferred characteristics of potential mates, but has overlooked the importance of avoiding mates with negative characteristics that could pose large fitness costs. Participants in two studies rated and ranked how intolerable various negative characteristics would be in a potential mate. Consistent with previous research on positive traits, women reported such characteristics as "chronically unemployed" and "poor" to be more intolerable than did men, whereas men reported "below average attractiveness" as significantly more intolerable than did women. Among findings not previously observed in research on positive traits, women were particularly concerned with avoiding potentially abusive mates whereas men found numerous characteristics more intolerable than characteristics related to physical unattractiveness. This research suggests that "deal-breakers" are not necessarily the opposite of preferences in mate choice.

**SA 3:20 p.m.**

***Long-Term Mate Preferences Among the Shuar of Ecuador***

**Pillsworth, Elizabeth G. (UCLA, pillse@ucla.edu)**

Evolutionary hypotheses of long-term mate choice were tested in a small-scale, indigenous community in Amazonian Ecuador. Sexual strategies theory predicts that preferences in long-term mates will differ between the sexes, such that women will emphasize likely resource acquisition more than will men, while men will place more emphasis than women on physical attractiveness. Previous research has shown these sex differences to be robust cross-culturally (Buss, 1989), but data are still sparse for small-scale, subsistence-level communities, in which the mating environment may be substantially different from that of previously studied populations, and more reflective of the ancestral environment. The Shuar live in small, semi-isolated communities (average population approximately 40 adults), subsisting primarily through men's hunting and women's horticulture. Living far from modern cities, the cooperation between husbands and wives is critical for survival. Findings from a preliminary study of long-term mate preferences and plans for future research will be discussed.

SA 3:40 p.m.

***Socioeconomic Development and Shifts in Mate Preferences***

**Stone, Emily A. (Florida Atlantic University, [emily.stone@att.net](mailto:emily.stone@att.net)); Shackelford, Todd K. (Florida Atlantic University); Buss, David M. (University of Texas, Austin)**

Mate preferences shift according to contexts such as temporal duration of mateship sought and ecological prevalence of parasites. One important cross-cultural context that has not been explored is a country's socioeconomic development. Because individuals in less developed countries are generally less healthy and possess fewer resources than those in more developed countries, displays of health and resources in a prospective long-term partner were hypothesized to be valued more in populations in which they are rare than in populations in which they are more common. We also predicted negative correlations between development and preferences for similar religious background and a desire for children. We found strong support for the health hypothesis and modest support for the resource acquisition potential hypothesis. We also found an unpredicted positive correlation between development and importance ratings for love. Discussion addresses limitations of the current research and highlights directions for future cross-cultural research on mating psychology.

SA 4:00 p.m.

***Waist-to-Hip Ratio: A Profile View***

**Apicella, Coren L. (Harvard University, [apicella@fas.harvard.edu](mailto:apicella@fas.harvard.edu)); Marlowe, Frank W.**

It has been argued that selection favored a universal male preference for a low female WHR. However, in previous studies using frontal pictures, American men preferred a low WHR of 0.7, but men among Hadza hunter-gatherers and a few other small-scale societies preferred higher ratios. Unlike the actual WHR of women, measured with a tape around the waist and the hips and buttocks, the WHR in frontal pictures excludes the buttocks. Because frontal WHR gives only a partial picture, we used profile views of women to measure men's preferences for the profile WHR. Hadza men preferred a lower profile WHR (more protruding buttocks) than American men implying there is less disparity between American and Hadza preferences for the actual WHR of real women. Men's preferences may vary with the geographic variation in the shape of women who have wider hips in some populations and more protruding buttocks in others.

SA 4:20 p.m.

***The Relative Importance of the Face and Body in Judgements of Physical Attractiveness***

**Currie, Thomas E. (University College London, [t.currie@ucl.ac.uk](mailto:t.currie@ucl.ac.uk))**

Darwin's theory of sexual selection has gained popularity in recent years in explaining many aspects of human behaviour and morphology. A large literature has developed which has attempted to explain which characteristics humans use to choose a mate. Many characteristics have been posited but less attention has been paid to which characteristics are most important and to how the information provided by these characteristics is integrated. The purpose of this investigation was to examine whether the face or the body is more important in determining physical attractiveness in humans. Participants rated separate and combined face and body images of ten members of the opposite sex. Ratings of face images were found to be a better predictor of overall attractiveness than were body images. The study highlights the importance of understanding human mate choice within a framework of multiple cues and preferences.

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## Saturday Evening Sessions

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### Session I-1 *Foraging*

Bodek Lounge

Chair: Andreas Wilke

SA 5:00 p.m.

#### ***Sex Differences in Spatial Cognition Among Hadza Foragers***

Cashdan, Elizabeth (University of Utah, [fmarlowe@fas.harvard.edu](mailto:fmarlowe@fas.harvard.edu)); Marlowe, Frank (Harvard University)

Men and women differ in spatial abilities and navigational styles. One popular explanation holds that superior male spatial ability evolved in response to the navigational challenges of hunting mobile prey, whereas a female advantage in object location memory evolved in response to the needs of gathering stationary plants ("gathering hypothesis"). Among the Hadza, a female advantage in object-location memory appeared only among young adults, while older women did poorly at the task. Yet these older women appear to excel at finding bush foods, which casts doubt on the gathering hypothesis. Age did not diminish performance at more geometric spatial tasks, at which males typically excel, suggesting that these abilities may be especially important to older female foragers.

SA 5:20 p.m.

#### ***The Adaptive Problem of Exploiting Resources: Human Foraging Behavior in Patchy Environments***

Wilke, Andreas (Max Planck Institute for Human Development, [wilke@mpib-berlin.mpg.de](mailto:wilke@mpib-berlin.mpg.de)); Hutchinson, John M.C.; Todd, Peter M.

\* *Postdoctoral Award Candidate*

When resources are distributed in patches animals must decide when to switch from a depleted patch. The optimal policy is given by the Marginal Value Theorem, which has successfully predicted animal behaviors, but as a mechanism it becomes problematic when each patch contains few discrete prey items. Biologists have proposed simple alternative decision mechanisms and calculated in which environments each works well. Here we test whether these mechanisms underlie human decision making. Subjects saw a virtual landscape in which they foraged for fish in a pond (patch) and decided when to switch pond. Ponds appeared equal, but the initial number of fish per pond varied according to three different resource distributions. Subjects tended to stay too long in a patch, and the decision rules depended little on the resource distributions; but on average the rule's form was appropriate to the type of resource distribution most commonly found in nature.

SA 5:40 p.m.

#### ***Shopping is Foraging: Data and Theory***

Hantula, Donald A. (Temple University, [csmith@Biovid.com](mailto:csmith@Biovid.com)); Smith, Carter; BioVid, Inc.

Shopping is the modern version of foraging. A series of experiments designed to test the applicability of foraging theory to human behavior are described. Each experiment uses stores in an online mall as patches, music CDs as prey, CD cost as capture cost, download and service response time as travel time equivalents. Manipulations of prey density (in-stock probability), handling time (delay to service), and capture cost (CD prices) yield data with fits of  $VAC > .75$  to the quantitative models of foraging theory. Further experiments replicate these basic findings and show that the results are not due to subject or experimental parameter artifacts, but are robust across a number of conditions. These results extend foraging theory to naturalistic human decision making in a modern context and provide a basis for expanding the foraging model to account for a wide range of temporal and probabilistic decisions.

**Session I-2 Sex Differences: Investigations**  
**Chair: Gary L. Brase****Hall of Flags****SA 5:00 p.m.*****Social Comparison and Decision Making with Respect to Income***  
**Falcon, Rachael G. (University of New Mexico, rfalcon@unm.edu)**

Research has shown that people make decisions about income in relation to the income of others around them. Indeed, some people may sacrifice absolute gains in order to do well relative to others (McClintock & McNeel, 1966; Frank, 1985). From an evolutionary perspective, this strategy makes sense in many contexts because selection operates on relative outcomes (Korfskesen, Ok & Sethi, 2000). Prior research has not established the precise circumstances in which people prefer to do better than others versus avoid doing worse than others. In this study, participants could take a sure outcome (a set amount of \$5, \$6, or \$7) or risk an uncertain outcome by rolling a die (with outcomes averaging \$5.50). Half learned that another participant was receiving an amount equal to the sure outcome; no social context was provided to the other half. The results show that males in a social comparison situation are less risk-taking than control males when the odds are slightly against them (\$6 condition), suggesting that males are averse to doing worse than a comparison individual. Females also become less risk-taking, but not until their odds of doing worse than the comparison individual are large (\$7 condition).

**SA 5:20 p.m.*****Individual Differences in Reactions to Relationship Infidelities: Gender, Personality, and Measurement Options***  
**Brase, Gary L. (University of Missouri, Columbia, braseg@missouri.edu)**

To the extent that sex differences are generated by proximate mechanisms (e.g., sex-roles, beliefs, and attitudes), rather than more ultimate level mechanisms (e.g., evolutionary canalization), individual differences in proximate traits should account for significant portions of relevant sex differences. Differences between women and men in reactions to sexual and emotional infidelity were assessed as a fundamental sex difference and as a consequence of many potential proximate mediators (relationship experience, infidelity experience, infidelity implications beliefs, gender-role beliefs, interpersonal trust, attachment style, sociosexuality, culture of honor beliefs, and dimensions of self-esteem). Results (n=96) found a consistent sex difference that was not mediated by any other variables, although a handful of other variables were related to female (but not male) individual differences. These findings suggest particularly promising directions for future research on integrating evolutionarily based sex differences and more proximate individual differences.

**SA 5:40 p.m.*****Sex Differences in Abstract Spatial Cognition*****Cox, Anthony M. (Dalhousie University, amcox@cs.dal.ca); Zhao, Lin (Dalhousie University); Fisher, Maryanne L. (Saint Mary's University)**

Computer programmers view the source code of a software system as an abstract space in which they work when programming. This "codespace" contains objects, routes, and landmarks and is likely to use the same cognitive skills as real-world spatial cognition. To verify this hypothesis, we examined the mental rotation and object memory/location skills of 30 programmers (15 of each sex) and compared these skills to their results on a program comprehension and recall survey. Evidence exists that spatial cognition skills are used in abstract spaces and that males and females differ in their application of these skills. The findings can be interpreted to support the tendency of women to use route-based and men to use (survey) map-based navigation. These navigation strategies can also be seen to correspond to known sex differences in programming style.

**Session I-3 Comparative Analysis**  
**Chair: Stephen V. Shepherd**

**Class of 1949 Auditorium**

**SA 5:00 p.m.**

***Ecology, Sociality, and the Understanding of Referential Cues: A Case Study in Wolves and Dogs***  
**Naficy, Siamak T. (UCLA, [siamaknaficy@yahoo.com](mailto:siamaknaficy@yahoo.com))**

*\* New Investigator Award Candidate*

Recent studies demonstrate that the domestic dog (*Canis familiaris*) can use human-give gestures to find hidden food, while chimpanzees (*Pan troglodytes*) cannot. Because wolves (*Canis lupus*), which are highly social and frequently cooperate to acquire food, also fail at these tasks, it's been argued that the ability to use reference cues cannot predate domestication and is thus dependent on animal husbandry. But do wolves lack the ability to use referential cues altogether? Or is it simply that they cannot use intentional cues given by humans? In this study, I test the ability of wolves to use cues to find hidden food given by members of their own species, in a naturalistic context. The results shed light on the nature of referential understanding in wolves and dogs, in particular, whether this understanding depends on the category of the signaler (conspecific versus heterospecific), and whether it's necessarily restricted to intentional communicative cues.

**SA 5:20 p.m.**

***Fluctuating Dental Asymmetry in Great Apes, Fossil Hominids, and Modern Humans***  
**Frederick, Michael J. (University at Albany, [mf7147@albany.edu](mailto:mf7147@albany.edu)); Gallup, Gordon G.**

Fluctuating asymmetry (FA) indicates the inability to buffer against developmental disturbances. One method of measuring FA involves comparing tooth sizes on opposing sides of the mouth, while controlling for average tooth size and directional asymmetry. While various subpopulations of humans have been measured for dental asymmetry, variation in dental FA across fossil hominids and in nonhuman primates has not previously been examined in detail. Tooth measurements were compiled for 296 individuals from 10 species, including chimpanzees, orangutans, gorillas, modern humans, and a number of fossil hominids. The orangutan sample had significantly lower levels of dental FA than the gorilla, chimpanzee, homo erectus, Neanderthal, or human samples. In contrast, the human and Neanderthal samples had significantly higher dental FA levels than any of the great ape samples. This might be due to a decrease in selective pressures acting on humans and late hominids because of advances in technology and tool use.

**SA 5:40 p.m.**

***Social Orienting by Prosimian Primates in Naturalistic Conditions***  
**Shepherd, Stephen V. (Duke University Medical Center, [svs@duke.edu](mailto:svs@duke.edu)); Platt, Michael L.**

*\* New Investigator Award Candidate*

Both social complexity and visual cognition have been proposed as evolutionary features driving brain expansion across primates. We used telemetric infrared video gaze-tracking technology to quantify gaze in freely-moving primitive primates (*Lemur catta*). Eye and scene video data broadcast via mobile transmitter were analyzed at 0.22 x 33.3 ms resolution in a custom-designed Matlab environment. We habituated 2 socially-housed adult males to the gear; measured pupil position and size during hand restraint and free-movement; and recorded visual orienting during interaction and locomotion. Despite lacking a distinct fovea, lemurs robustly oriented toward conspecifics, food rewards, human handlers, and potential locomotor substrates. We found social stimuli not only attracted but also directed gaze: lemurs co-oriented, suggesting they use the head axis of conspecifics as an attentional cue. These experiments provide the first precise measurements of visual orienting in freely-moving nonhuman animals and the first quantitative measurement of eye movements in prosimian primates.

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**Session I-4    *Symposium: The Evolution of Social Representation:  
Behavioral and Neurological Evidence*    Ben Franklin  
Chair: Julian Keenan    Room**

**SA 5:00 p.m.**

***I Know What You Will Do! Shared Task Representation in the Service of Action Anticipation***

**Atmaca, Silke (Rutgers University, [atmaca@psychology.rutgers.edu](mailto:atmaca@psychology.rutgers.edu)); Sebanz, Natalie; Knoblich, Guenther**

In many situations people act in a social context. Does knowledge of others' tasks and potential actions have an impact on individual performance? That is, do individuals form shared representations of each others' specific task rules? We distributed a task between two persons. Each individual did not need to take into account the co-actor's task rules for her own performance. RT patterns of individuals acting on their own or with a co-actor differed significantly from each other. The results indicate that individuals in the group condition co-represented each others' task rules, even though coordination was not required. We suggest that the development of such an ability to form shared representations of tasks is a cornerstone of human social cognition: It allows individuals to extend the temporal limits of their action planning in order to act in anticipation of others' actions rather than just to respond.

**SA 5:20 p.m.**

***Theory of Mind and Deception: The Evolution of the Hemispheres***

**Keenan, Julian Paul (Montclair State University, [selfawareness@prodigy.net](mailto:selfawareness@prodigy.net))**

Modeling the minds of others provides significant benefits for the individual that has such a capacity. Elucidating both the neurological and evolutionary origins provides us with a greater understanding of our current cognitive abilities. It has been argued that intentional deception may be related to both self-awareness and theory of mind (TOM). Here we present evidence that there is a common neural substrate, though such a substrate may be diffuse throughout the brain. Data will be discussed obtained via neuroimaging (fMRI and TMS) as well as through patients. The implications for cooperation will also be presented.

**SA 5:40 p.m.**

***The Social Neuroscience of False Memories***

**Stevens, Sean T. (New York University, [selfawareness@prodigy.net](mailto:selfawareness@prodigy.net)); Keenan, Julian Paul**

*\* New Investigator Award Candidate*

Human memory does not encode and store all details of an experience but rather the essence of the experience and a small subset of details specifically attended to. This can be seen as a flaw in the system however some have argued that it is evolutionarily adaptive (Schacter, 2001). A potential benefit is that it may facilitate the processes of self-deception and biased self-enhancement. It is believed that self-deception enables more effective deception in the sense that detection becomes increasingly difficult the more faithfully the deceiver believes their own lies. Biased self-enhancement allows for increased self-esteem and confidence in one's self. We propose that natural selection favored the evolution of brains capable of these processes by selection of individuals having specific characteristics of memory and other higher order processes that give rise to self-deception. In addition, theories postulating that self-deception is requisite for effective deception will here be reviewed.

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## Sunday, June 11

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### Sunday Early Morning Sessions

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Session J-1 *Learning and Cultural Transmission*

Bodek Lounge

Chair: Alex Mesoudi

SU 9:00 a.m.

***Skinner's Ghost is Stalking Chomsky: The Pleistocene EEA Selected for General Purpose Rather than Domain Specific Psychological Mechanisms***

Richerson, Peter J. (University of California, Davis, [pjricherson@ucdavis.edu](mailto:pjricherson@ucdavis.edu))

Some psychological mechanisms are clearly quite domain specific, such as those dealing directly with sensory and motor functions, and those that evolved deep in our ancestry, like the core elements of mate choice. On the other hand, much evidence suggests that the psychological mechanisms that have evolved most recently in the human lineage are rather domain general. (1) The environment of the Pleistocene varied chaotically with large amplitude, which favors abilities to meet unexpected challenges. (2) The parts of the brain that expanded most dramatically are least encapsulated in terms of their wiring and most flexible developmentally. (3) Human individual learning and imitative propensities that sub-serve culture are used to maintain diverse, complex traditional adaptations across the whole domain of human behavior. (4) Many mammalian and avian lineages evolved enlarged forebrains in the Pleistocene and appear to use them for quite domain general adaptations based on individual and social learning.

SU 9:20 a.m.

***The Evolution of Vertical Transmission: Reasons to and not to Learn from Parents***

McElreath, Richard (University of California, Davis, [mcelreath@ucdavis.edu](mailto:mcelreath@ucdavis.edu)); Strimling, Pontus

It is commonly assumed that parents are important sources of socially learned behavior and ideas. However, recent debates over the strength of the empirical evidence of vertical transmission have shown that it is not entirely clear that parents are important models. In this talk, we do not address the empirical data directly. Instead, we construct evolutionary models of psychological tendencies to imitate in general and to imitate parents. We explain that there are some forces at work which make vertical learning highly adaptive, as compared to imitating random adults. However, there are also important forces at work that favor the evolution of attention to non-parents. Our hope is that models of this kind will help empirical research by providing predictions of the kinds of situations in which vertical transmission would be expected, on the basis of adaptationist inferences.

SU 9:40 a.m.

***Experimental Simulations of Human Cultural Transmission Can Help to Explain Patterns in the Archaeological Record***

Mesoudi, Alex (University of Missouri, Columbia, [mesoudia@missouri.edu](mailto:mesoudia@missouri.edu)); O'Brien, Michael J.

\* *Postdoctoral Award Candidate*

Experimental laboratory studies (e.g. McElreath et al. 2005) can reveal important insights into how and when people engage in social learning, and how different cultural transmission biases generate different group-level behavioural patterns. Evolutionary archaeologists, meanwhile, are increasingly interpreting the archaeological record in terms of cultural transmission (O'Brien & Lyman, 2003). I will present the results of an experimental simulation of the effects of different transmission mechanisms on projectile point designs. Groups of participants designed arrowheads and tested them in "virtual environments" via a simple computer simulation. Participants were allowed to (1) copy previous groups' designs (oblique cultural transmission), then (2) engage in isolated individual learning, and finally (3) copy current group members' designs (horizontal cultural transmission). The resulting patterns of variation were used to test Bettinger & Eerkens' (1999) proposal that artifacts that spread predominantly through social learning exhibit less variation than artifacts that are more subject to individual learning.

**SU 10:00 a.m.**

***A Preliminary Test of the Nonparental Transmission Hypothesis***

**Alvard, Michael (Texas A&M University, [alvard@tamu.edu](mailto:alvard@tamu.edu)); Poston, Dudley; Cherry, Chris**

A preliminary test of the nonparental transmission hypothesis (NpTH) was completed using existing data from the National Survey of Family Growth (NSFG). Developed by Boyd and Richerson, the NpTH states that to the extent that cultural information is derived from nonparents, individuals will exhibit more nonparental and individually maladaptive behaviors. The NSFG is a survey of 12,571 persons in the U.S. conducted by the U.S. Department of Health and Human Services in 2002. Fitness was estimated using number of children ever born, and age at first birth. The extent of parent-offspring cultural transmission was estimated by examining religious conversion, assuming that subjects who report a religious identify different than that in which they were raised received more nonparental cultural information. Using Poisson regression and hazard models, and controlling for educational attainment, age, and sex, consistent significant effects were found that support the NpTH.

**SU 10:20 a.m.**

***The Transmission of Ceramic Style in the Ecuadorian Amazon: Design Similarity and Variation Within and Across Group Boundaries***

**Patton, John Q. (California State University, Fullerton, [johnpatton@exchange.fullerton.edu](mailto:johnpatton@exchange.fullerton.edu)); Bowser, Brenda J.**

This paper examines the transmission of stylistic behavior in the community of Conambo. The people of Conambo are self-sufficient horticultural foragers who are strongly divided into two competing coalitions with flexible membership and defections across the coalitional boundary. The women of Conambo maintain a domestic polychrome ceramic tradition absent from external market influences. Previous studies show that pottery design in Conambo is understood and used strategically as a marker of group membership. In this paper we report age and status differences in perception and transmission of stylistic behavior, indicating that women's pottery style and strategies of signification track life-history changes in their political relationships with in-group and out-group allies. We argue that in Conambo the transmission of ceramic design is influenced by the political strategies of women throughout their lives.

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**Session J-2 *Mating and Life History Variables***

**Hall of Flags**

**Chair: M. Emilia Yamamoto**

**SU 9:00 a.m.**

***Height and Body Mass as Predictors of Lifetime Partner Number***

**Frederick, David A. (UCLA, [enderflies1@aol.com](mailto:enderflies1@aol.com)); Haselton, Martie G.; Laird, Kelsey**

Females select males as mates, in part, on the basis of physical traits that are attractive because they are cues to good condition, dominance, and access to resources. Across most of the world, large body size is a one such cue, leading us to predict that men with larger bodies have more mating opportunities. These predictions were tested through secondary analyses from an online study of over 50,000 participants. Controlling for education and age, greater height was associated with increased partner number for men and women (asymptotic function). This differs from research finding parabolic associations of height to offspring number. Based on CDC classifications of BMI scores, men categorized as underweight or obese reported fewer partners than healthy weight and overweight men. Younger "overweight" men reported more lifetime partners, perhaps because these men tended to display increased muscularity, a hypothesized cue to good condition and dominance (Frederick & Haselton, 2003).

**SU 9:20 a.m.**

***Status and Reproduction in Humans: Recent Data Supporting Evolutionary Assumptions***

**Fieder, Martin (University of Vienna, [martin.fieder@univie.ac.at](mailto:martin.fieder@univie.ac.at)); Huber, Susanne**

*\* New Investigator Award Candidate*

A positive relationship between male status and offspring count has been predicted by evolutionary theory and has been found in "traditional" human societies. In modern societies, most of the studies found no or even a

negative relationship between status and reproductive success. On the contrary, we were able to demonstrate a strong positive relationship between male status (formal position in an institutional hierarchy) and reproductive success in a contemporary University sample (n = 2693): male academics in leading positions have more children than other male employees. In female university employees (n = 2073), a negative relationship between status and reproductive success was found. We suggest i) that status may be a more important dimension for particular sub-samples of modern society than entire societies and ii) that, possibly, samples chosen in demographic studies may have not been adequate for proving evolutionary assumptions.

**SU 9:40 a.m.**

***Discounting Behavior and Fertility in Large Sample of Young Adults***

**Davis, Jeff (California State University, Long Beach, [jdavis@csulb.edu](mailto:jdavis@csulb.edu))**

Life history theory predicts that exposure to environmental stressors, particularly family-related stressors, is associated with early sexual maturation and higher fertility. Daly and Wilson argue that the primary cognitive mechanism in this process is discounting. In this study, we examine the effect of life stress on fertility and the mediating role of discounting behavior using data from a large longitudinal survey of young adults in the United States. Preliminary results suggest exposure to stressors in early adolescence is associated with higher fertility in young adulthood. Discounting behavior plays a statistically significant but moderate role.

**SU 10:00 a.m.**

***Father's Absence During Childhood and Female Reproductive Strategy: Evidence, in a Brazilian Sample, for the Belsky, Steinberg and Draper Hypotheses***

**Yamamoto, M. Emilia (Universidade Federal do Rio Grande do Norte, Brazil, [emiliayamamoto@gmail.com](mailto:emiliayamamoto@gmail.com)); Spinelli, Luísa H.; Sousa, M. Bernardete**

Belsky, Steinberg and Draper (1991) suggested that the perception of the environment as stressful during childhood, including the father's absence, was related to an anticipation of puberty and sexual activity in human females. We tested the Belsky et al.'s hypothesis in 100 low-class, pregnant Brazilian women, 50 of which considered that their father was absent during childhood.. The results suggest that the perception by these women of the father's absence influences the mean duration of the relationship prior to pregnancy, age of first sexual intercourse, age of first pregnancy, occurrence of pregnancy during adolescence and age difference between partners, in accordance with Belsky et al.'s hypothesis. The results also suggest that this pattern repeats itself, as many of these women will not have the father of their child present after birth, which emphasizes the importance of these results in dealing with questions such as sexual activity and pregnancy during adolescence.

**SU 10:20 a.m.**

***Ethnocentrism and Life History Strategy***

**Figueredo, Aurelio J. (University of Arizona, [ajf@u.arizona.edu](mailto:ajf@u.arizona.edu)); Jones, Daniel N. (University of Arizona); Smith, Vanessa (University of Costa Rica)**

*\* Postdoctoral Award Candidate*

Theory and evidence predict that in-group altruism should correlate with out-group intolerance. A higher-K life history strategy emphasizes both kin-selected and reciprocal altruism as a means of investing heavily in offspring, relatives, and cooperative social relationships. We therefore predicted that it should also predict out-group hostility. However, higher-K strategy correlated positively with both tolerance towards other social groups in general and tolerance towards Arabs in particular. In contrast, higher levels of mating effort correlated negatively with both. We also replicated these findings using a version of the modern racism scale adapted for Arabs. High mating effort was also positively correlated with high external motivation to appear non-prejudiced, and was negatively correlated with internal motivation, suggesting high mating effort individuals appear non-prejudiced primarily for self-presentational purposes. Consistently with much social psychological research as well as some recent evolutionary hypotheses, low self-esteem also predicted both general and specific intolerance.

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**Session J-3 Symposium: Evolutionary Analysis in Law**      **Class of 1949 Auditorium**  
**Chair: Owen Jones**

**SU 9:00 a.m.**

***Where Law & Economics Meets Law & Biology***

**Jones, Owen D. (Vanderbilt University, owen.jones@vanderbilt.edu)**

This talk will examine how the promise, limitations, and history of the law and economics movement compares with the promise, limitations, and probable future of approaches that would link law and behavioral biology. Because natural selection is the most relentlessly economizing force in the history of life, there are a number of thematic similarities between economics and behavioral biology. Yet the long-term reception of the two fields among legal thinkers will likely be dissimilar in important respects. This may trace to, among other reasons, substantive differences between the fields, differences in the educations and interests of those practicing in the fields, and differences in accessibility of the two fields to legal thinkers and to the public.

**SU 9:20 a.m.**

***Intuitions of Justice***

**Robinson, Paul H. (University of Pennsylvania Law School, phrobins@law.upenn.edu); Kurzban, Robert**

Many criminal law theorists and policy makers believe the notion of desert is vague and subject to wide disagreement. Yet the empirical evidence suggests that people's intuitions of justice are specific, nuanced, and widely shared across not only demographics but cultures. What could explain this striking result -- the existence of a nearly universal intuition that serious wrongdoing should be punished and of the relative blameworthiness among different wrongdoings? The authors describe the evolutionary advantage of shared intuitions of justice in providing stability and predictability, the cornerstones to cooperative action and its accompanying survival benefits. They speculate that over the 250,000 generations of homo sapiens it should be no surprise that those who shared these intuitions would be more likely to survive, to reproduce, and to pass on the capacity and predisposition to form such intuitions. The authors argue that this new perspective on intuitions of justice has implications for criminal law and criminal justice policy.

**SU 9:40 a.m.**

***Westermarck Rulings: The Influence of Evolved Mechanisms for Inbreeding Avoidance on Jury and Judicial Decisions Involving Incest***

**Lanou, John (Covington & Burling, johlanou@hotmail.com); Lieberman, Debra (University of Hawaii)**

In cases involving incest, does the severity of punishment imposed by a judge or juror depend on whether that judge/juror grew up with opposite-sex siblings? Recent empirical investigations have shown that moral judgments of 3rd party incest are a function of the same systems regulating the development of a sexual aversion toward one's own close genetic relatives. Specifically, the cues (e.g., childhood co-residence duration) found to mediate sibling detection and, consequently, the development of a sexual aversion toward a sibling, have also been found to predict the strength of one's moral opposition to the idea of sibling incest in general. If exposure to the cues signaling siblingship influences moral sentiments regarding sibling incest, then an interesting question arises as to whether judges/jurors that grew up with opposite-sex siblings allocate greater punishments than do judges/jurors that did not grow up with opposite-sex siblings when ruling on cases involving sibling incest.

**SU 10:00 a.m.**

***Bio-Legal History and Gene-Culture Co-Evolutionary Theory***

**Du Laing, Bart W. (Katholieke Universiteit Brussel, bart.dulaing@kubruessel.ac.be)**

It has been suggested that the legal features of any legal system will reflect specific features of evolved, species-typical, human brain design, thus offering the possibility of developing a broad and systematic bio-legal history (Jones 2001). I will argue that in order to construct such a bio-legal history of, in my case, contract law, one has to be able to give a plausible evolutionary account for both the behavior that is supposed to be regulated and the regulating behavior itself. Rather than focusing exclusively on the indeed likely universal aspects of the regulated behavior, this universality has to be connected more explicitly with the cultural diversity encountered in the world's legal systems. Approaching regulating behavior in general as an evolutionary puzzling form of human large-scale cooperation, gene-culture co-evolutionary theory and the related concept of cultural group selection promise to go a long way in providing this necessary connection.

**SU 10:20 a.m.**

***Evolutionary Psychology, Child Abuse, and Family Law: Some Implications for Forensic Social Workers***

**Kaufman, Mark (Washburn University, mark.kaufman@washburn.edu)**

Forensic social workers play vital roles in the legal system's response to child abuse. Their contributions fall into four major categories: they help state agencies draft detailed policies (rules and regulations) that implement broader legislative mandates; assist in the investigation of alleged abuse; frequently provide expert testimony in court; and often provide counseling and other mental health services. At every stage in this process, the practice of social work would benefit by increased utilization of knowledge generated by evolutionary psychology. This presentation examines those potential contributions. It also seeks to explain the reluctance of many social work academicians to incorporate an evolutionary perspective into the profession's social science knowledge base.

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**Session J-4 Parental Investment**

**Ben Franklin Room**

**Chair: Robert J. Quinlan**

**SU 9:00 a.m.**

***Fitness Differences Between Siblings: Does Birth Order Matter?***

**Faurie, Charlotte (University of Sheffield, c.faurie@sheffield.ac.uk); Lummaa, Virpi**

*\* Postdoctoral Award Candidate*

Parental care represents a limited resource, for which individuals compete, as is directly linked to survival and reproductive success of the offspring. Parents adjust their investment according to the balance between costs and benefits. Investment is predicted to change with parental age, resource access, body condition and residual reproductive value. The literature reports a diversity of birth order effects on parental investment, mortality rates in childhood, as well as personality traits. The aim of this study is to investigate the consequences of birth order on lifetime reproductive success and key life history traits in humans. We used data collected on a range of life-history and socio-economic variables (births, deaths, marriages, dispersal, social class), for more than 2000 families from five different areas in Finland during the pre-industrial era (1720-1900). The results are discussed in the context of current evolutionary models of parental investment, cooperative breeding and family living.

**SU 9:20 a.m.**

***Human Parental Effort and Environmental Risk***

**Quinlan, Robert J. (Washington State University, rquinlan@wsu.edu)**

Parental investment decisions depend on multiple factors, including the extent to which parental care benefits offspring. People should reduce parental effort in environments where parenting does not improve offspring fitness. Data from the Standard Cross-Cultural Sample are used to test this prediction. Results show that parental effort was inversely associated with risk of famine and warfare, but it was positively associated with pathogen stress. Age at weaning was inversely associated with famine risk. Paternal involvement and weaning length were inversely related to pathogen stress and warfare. Associations between pathogen stress and

paternal involvement were partially mediated by polygyny. In sum, maternal and paternal care appear to have different relations with environmental hazards, presumably due to sex specific tradeoffs in reproductive effort.

**SU 9:40 a.m.**

***Subsistence and Long-Term Reproductive Strategies***

**Josephson, Steven C. (University of Utah, josephso@anthro.utah.edu)**

Female preference for long-term paternal investment may explain some aspects of subsistence choice. Links between reproductive and subsistence strategies usually focus on producing or provisioning offspring, problematic as men often could invest more than they do. The key may lie in the influence men can have on the mating success of their children. Men who shunt resources into social capital may be able to help their children more in the long run than if they had preferentially provisioned them. Men also use this to help attract extra mates, women seeking to improve the reproductive prospects of their children. Such long-term strategies are unlikely to be captured by patterns of short-term resource exchange, and men signaling their future ability to invest may be mistaken for displays of underlying quality. Preliminary support comes from the Tjimba of northwestern Namibia, currently in the midst of a transition from foraging to domesticates.

**SU 10:00 a.m.**

***Paternity Uncertainty, Paternal Investment, and Paternal Identity Cues: Do Children Look Like Their Fathers? A Quantitative Genetic Approach***

**Alvergne, Alexandra (University of Montpellier II , alvergne@isem.univ-montp2.fr); Caillaud, Damien; Raymond, Michel**

Males face the problem of paternity uncertainty when making parental investment decisions, and they are expected to use cues of (e.g.) genetic relatedness to assess paternity and to behave accordingly. Thus, a gene revealing paternity in children through a biased phenotype towards genetic fathers would confer more paternity certainty and could have consequences on patterns of paternal care. A genetic model was constructed, with the aim of understanding and predicting the conditions of a potential coevolution between paternal investment and paternal cues. As identification and recognition are inherently quantitative concepts based on an overall phenotypic evaluation, a quantitative genetic approach is used. A possible proximal mechanism of biased phenotypic resemblance, genomic imprinting, is incorporated in the model. Results show how variation of cost and benefit of paternal investment for both children and fathers, as well as rate of extra pair paternity, influence the evolution of father-child resemblance.

**SU 10:20 a.m.**

***Family Relationships and Kin Investment Biases: A Two Generational Questionnaire Study***

**McBurney, Donald H. (University of Pittsburgh); Pashos, Alexander (Free University of Berlin, Germany, pashos@zedat.fu-berlin.de); Gaulin, Steven J.C. (University of California, Santa Barbara)**

Several evolutionary theories explain asymmetric caregiving of grandparents and aunts and uncles (matrilateral bias, higher female caregiving), however, the proximate mechanisms underlying biased kin investment remain unclear. In a bgenerational questionnaire study we asked 188 subjects to estimate the intensity of their relationship to parents, grandparents, aunt and uncles (emotional closeness, received investment in childhood). In addition, the subjects' parents rated their emotional closeness to their parents (the subjects' grandparents) and to their siblings (the subjects' aunts and uncles). For grandparents, the expected asymmetries in kin caregiving were confirmed. The parent-grandparent relationship had a very strong influence on grandchild care, but could not explain completely the caregiving asymmetries. For aunts and uncles, a somewhat different result was found. Maternal aunts played a special role as caregivers. Especially the mother's younger and lastborn sisters cared intensively for nieces and nephews, regardless of their closeness to the subjects' mother.

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## Sunday Late Morning Sessions

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### Session K-1 *Symposium: Resemblance and Kinship Mechanisms* Bodek Lounge Chair: Anthony A. Volk

SU 11:00 a.m.

#### *Preferences for Self-Resembling Faces*

DeBruine, Lisa M. (Universities of St Andrews and Aberdeen, [lisa@debruine.info](mailto:lisa@debruine.info)); Jones, Benedict C. (University of Aberdeen); Perrett, David I. (University of St Andrews); Welling, Lisa L.M. (University of Aberdeen); Conway, Claire C. (University of Aberdeen); Little, Anthony C. (University of Liverpool)

\* *Postdoctoral Award Candidate*

Facial self-resemblance is a putative cue of genetic relatedness. People respond to facial resemblance in a way that is consistent with it being used as a cue of kinship and inconsistent with preferences for facial resemblance being simple effects of familiarity or visual exposure to one's own face. Specifically, self-resemblance has different effects on attributions of attractiveness and trustworthiness, as well as different effects on preferences for same-sex and other-sex faces. Hormonal state also affects women's preferences for self-resembling faces in such a way as to suggest adaptations for motivating contact with family during pregnancy rather than preventing inbreeding during fertile times. Taken together, this evidence suggests that humans respond to facial self-resemblance in context-specific, potentially adaptive ways.

SU 11:20 a.m.

#### *Influence of Cues of Resemblance on Hypothetical Adoption Preference*

Volk, Anthony A. (Brock University, [tvolk@brocku.ca](mailto:tvolk@brocku.ca))

\* *Postdoctoral Award Candidate*

Several studies have investigated the effects of resemblance on adults' willingness to hypothetically adopt infant and child faces. Evolutionary theory predicts that due to paternal uncertainty, these cues of resemblance should be more important for men than for women. The findings to date offer mixed support for this prediction. To address this issue, we replicated our initial findings of a small, but significant, male-bias towards cues of resemblance in three separate studies. We found that the correlation between adoption preference and resemblance was significantly higher for males in all three studies. Data from the three studies was also used to examine the longitudinal effects of age on adult-child resemblance (mixed results), reliability of individual raters (good), and the similarity of resemblance scores for genetically-related individuals (low).

SU 11:40 a.m.

#### *Information Confidence and Facial Resemblance in Situations of Infidelity*

Platek, Steven M. (Drexel University, [smp43@drexel.edu](mailto:smp43@drexel.edu)); Thomson, Jaime W.

Facial resemblance cues kin relationships and affects behavior as predicted by Hamiltonian inclusive fitness theory. Here we tested whether facial resemblance impacted confidence in and reactions to information provided about in-pair mate infidelity. Subjects were instructed to imagine their mate engaged in either an instance of sexual infidelity or emotional infidelity. Scenarios were provided to subjects by computerized faces, half of which were morphed to resemble subjects. Following priming with imagining their mate engaging in infidelity, subjects were asked to complete a modified version of the Stroop test designed to assess attention to infidelity-based words along a sexually dimorphic continuum (sexual=male v. emotional=female). We found that attention to infidelity words was greater when the scenarios were provided by a face that resembled the subject. These findings suggest that the source of information about mate (in)fideliy impacts subsequent reactions to and confidence in that information.

SU 12:00 p.m.

***Kinship, Friendship, and Helping: Effects of Relatedness, Cost of Helping, and Reciprocal Exchange History***

**Stewart-Williams, Steve (McMaster University, [steve.stewart-williams@mcmaster.ca](mailto:steve.stewart-williams@mcmaster.ca))**

In many species, individuals help kin more than non-kin. Although various studies have confirmed this pattern among humans, the category of non-kin has often only been represented by acquaintances. This study investigated helping among siblings, cousins, acquaintances, and friends. For the first three categories, greater relatedness was associated with greater helping. Friends, however, were an exception to this rule, receiving as much or more help than kin. How can this finding be reconciled with kin selection theory? First, relative rates of helping were dependent on the costs of helping. For low-cost help, people helped friends more than kin. In contrast, for medium-cost help, they helped siblings and friends equally, and for high-cost help they helped siblings more than friends (despite being closer to friends). Second, helping among friends and acquaintances was characterized by a high degree of reciprocity.

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**Session K-2 Symposium: A New Dawn on the Horizon: Bringing a Better Understanding to Clinical Disorders**

**Hall of Flags**

**Chair: Judith Easton**

SU 11:00 a.m.

***Sex Differences in Rival Characteristics and Use of Violence in the Morbidly Jealous***

**Schipper, Lucas D. (Florida Atlantic University, [Ischippe@fau.edu](mailto:Ischippe@fau.edu)); Easton, Judith A.; Shackelford, Todd K.**

Men and women differ in the jealousy elicited by several characteristics of potential rivals. The sexes also differ in the use of violence as a result of jealousy. Because morbid jealousy might be considered hypersensitive jealousy, we hypothesize that these sex differences also will be identified in morbidly jealous individuals. Using a database of 397 case histories (296 men, 101 women) published between 1949 and 2004, we tested several hypotheses on this novel population. We hypothesized, for example, that a greater percentage of morbidly jealous men than women will focus on a rival's status and that a greater percentage of morbidly jealous women than men will focus on a rival's attractiveness. We also hypothesized that a greater percentage of morbidly jealous men than women will use violence against their partner. We review results of this project, and highlight the value of case history review for investigating evolved psychological design.

SU 11:20 a.m.

***Rethinking Morbid Jealousy: Adaptation or Clinical Disorder?***

**Easton, Judith A. (Florida Atlantic University, [jeaston1@fau.edu](mailto:jeaston1@fau.edu)); Schipper, Lucas D.; Shackelford, Todd K.**

Morbid jealousy is classified as a disorder in the DSM-IV-TR. Jealousy may function to prevent partner infidelity and thereby increase the reproductive success of the jealous person. Many clinical disorders are associated with decreased reproductive success. Evidence that morbid jealousy does not decrease reproductive success might therefore suggest that it is not properly labeled a disorder. Furthermore, morbid jealousy is diagnosed only when there is no partner infidelity, no comorbid disorders, no history of alcohol or drug abuse, and no physical illness. Excluding these factors leaves a vanishingly small number of morbid jealousy cases, further suggesting that it not properly labeled a disorder. We identified 397 published case histories of morbid jealousy to investigate whether morbid jealousy should continue to be labeled a clinical disorder. Results indicate that morbid jealousy may be better conceptualized as an endpoint on a continuum of jealousy rather than as a diagnosable disorder.

SU 11:40 a.m.

***The Evolutionary Significance of Depressive Symptoms: Different Adverse Situations Lead to Different Depressive Symptoms Patterns***

**Keller, Matthew C. (Virginia Institute for Psychiatric and Behavioral Genetics, matthew.c.keller@gmail.com); Nesse, Randolph M. (University of Michigan)**

*\* Postdoctoral Award Candidate*

While much depression may be dysfunctional, the capacity to experience normal depressive symptoms in response to certain adverse situations appears to have been shaped by natural selection. If this is true, then different kinds of situations may evoke different patterns of depressive symptoms that are well-suited to solving the adaptive challenges specific to each situation. We call this the situation-symptom congruence hypothesis. To test this, 445 participants identified depressive symptoms that followed a recent adverse situation. Guilt, rumination, fatigue, and pessimism were prominent following failed efforts; crying, sadness, and desire for social support were prominent following social losses. These significant differences were replicated in an experiment in which 113 students were randomly assigned to visualize a major failure or the death of a loved one.

SU 12:00 p.m.

***Self-Face Recognition and Theory of Mind in Schizophrenia***

**Irani, Farzin (Drexel University, fi24@drexel.edu)**

Objective: The hypothesized relationship between theory of mind (ToM) and self-face recognition as well as its potential genetic associations has not been explored in schizophrenia. Method: Total of 30 patients with schizophrenia, first degree relatives, and controls were given self-face recognition (SFR) and ToM tasks. Schizotypal characteristics in relatives and controls were assessed using the Schizotypal Personality Questionnaire. Results: Patients took longer and were less accurate on the SFR than relatives who in turn performed worse than healthy controls. Specific ToM deficits in schizophrenia were replicated. There was a relationship between accuracy rates on MET and SFR tasks. High levels of schizotypal traits such as social anxiety, constricted affect and no close friends were important for both tasks. Conclusions: A subgroup of patients has self-face recognition impairments along with ToM deficits. Support for the hypothesized link between ToM and self-face recognition is provided and its putative endophenotypic status is discussed.

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**Session K-3 *Physiology/Sexual Orientation***  
**Chair: Matthew H. McIntyre**

**Class of 1949 Auditorium**

SU 11:00 a.m.

***Testosterone and Non-Physical Competition in Human Females***

**Sharp, Martin A. (University of Wolverhampton, m.sharp@wlv.ac.uk); Xinari, Charis (University of Edinburgh); Al-Dujaili, Emad (Queen Margaret University College)**

Women's biology has been used as a justification for social inequality. However, evolutionary arguments suggesting females are unlikely to be equipped biologically for competition remain unresolved. Although providing an important contribution towards the understanding of biology in social dominance, there are few female hormone-competition studies. Incorporating methodological refinements in testosterone (T) measurement and sampling protocol, an experimental study sought to examine the dynamic relationship between T and a non-physical dyadic competition. Twenty-two females competed in a knockout tournament. They collected salivary samples for baseline, pre- and post-competition phases; additionally reporting mood states. Compared against baseline levels, pre-comp T appeared un-responsive in anticipation of competition. However, at 3 hrs post-competition, T levels had risen 35% in winners and fallen 4% in losers. These results support the hypothesis that, similar to males, the female endocrine system is responsive to competition involving status. The role of T in female dominance is discussed further.

SU 11:20 a.m.

***Romantic Involvement Often Reduces Men's Testosterone: The Moderating Role of Extra-Pair Sexual Interest***

McIntyre, Matthew H. (Harvard University, [mmcintyr@hsph.harvard.edu](mailto:mmcintyr@hsph.harvard.edu)); Gangestad, Steven W. (University of New Mexico); Gray, Peter B. (University of Nevada Las Vegas); Flynn Chapman, Judith (Harvard University); Burnham, Terence C. (Harvard Business School); O'Rourke, Mary T. (Harvard University); Thornhill, Randy (University of New Mexico)

Testosterone (T) appears to facilitate what biologists refer to as "mating effort" -- the investment of time and energy into same-sex competition and mate-seeking behavior. Multiple studies show that men who are romantically involved (i.e., are paired) have lower T than single men, which may be due to a facultative adjustment by men of T levels in response to lower demands for mating effort. Based on the idea that men who retain interests in sexual opportunities with women other than a primary partner continue to dedicate more time and energy to mating effort when romantically paired, we predicted that the association between relationship status and T depends on men's extra-pair sexual interests. Study 1 used the Sociosexual Orientation Inventory to measure extra-pair sexual interests, whereas Study 2 used a broader measure to examine this interaction. Both studies found support for it. These results have implications for an understanding of the biosocial regulation of men's behavior in romantic relationships.

SU 11:40 a.m.

***Sexual Orientation Influences the Importance of Olfaction During Mate Choice***

Sergeant, Mark J.T. (Nottingham Trent University, UK, [mark.sergeant@ntu.ac.uk](mailto:mark.sergeant@ntu.ac.uk)); Davies, Mark N.O. (Nottingham Trent University, UK); Dickins, Thomas E. (University of East London, UK & London School of Economics, UK); Griffiths, Mark D. (Nottingham Trent University, UK)

Sexual orientation has recently been documented to influence human olfaction, both in terms of how social odorants are processed (Savic et al., 2005) and how body odor is produced (Sergeant et al., 2003; Martins et al., 2005). The current research investigated how sexual orientation may influence the perception of olfactory cues during human mate choice. A total of 400 heterosexual and homosexual males and females (n = 100 in each orientation group) completed an internet-mediated version of the Romantic Interests Survey (RIS) (Herz & Inzlicht, 2002). The RIS is a scale designed to assess the importance of consciously evaluated olfactory characteristics during partner selection. Results indicate that sexual orientation influences both the perceived importance of olfactory cues during mate choice, and the type of odor (natural vs. artificial) that is attended to. These findings are consistent with the extant literature demonstrating sex atypical characteristics among homosexual individuals.

SU 12:00 p.m.

***Explaining Sex-Related Traits in Structured Human Societies: An Illustration with Male Homosexuality***  
Raymond, Michel (CNRS, France, [raymond@isem.univ-montp2.fr](mailto:raymond@isem.univ-montp2.fr))

The presence of some traits is difficult to explain within only one population (e.g. traits designed to favour migration), and requires a wider context (e.g. metapopulation). Many human societies are class-structured, with a trend for an up-migration for females, and a down-migration for males. This asymmetric migration could potentially favour the existence of sex-related traits difficult to explain when considering only a single and non-structured population. An example of such traits could be male homosexuality which remains an evolutionary puzzle. Homosexual males have been sometimes genetically feminized in utero, and they have also above average feminine sisters. As femininity helps females up-migrating in classes of higher fitness output, male homosexuality genes could be maintained. A simulation model has been constructed to explore more rigorously this situation, and is confronted to empirical data. Further applications of this class-structured model to understand other human sex-related or sex-dimorphic traits are discussed.

**Session K-4 Initiating Reproduction****Ben Franklin Room****Chair: Anne V. Grossestreuer****SU 11:00 a.m.*****Menstruation Starts Earlier for Girls Raised in Extended Families, Father Present or Not: Findings from a Quantitative Measure of Family Extent*****Bear, Gordon (Ramapo College, [gbear@ramapo.edu](mailto:gbear@ramapo.edu)); Staley, Judith M. (National Health Service Trust, England)**

In both college women and an older batch of graduate students (median ages 18.0, 26.5 yr; n = 25, 36), age at menarche correlated negatively with a new index of family structure: The more the total person-years during which adult relatives lived in the woman's household or near-by during her first decade, the earlier her menstrual periods began ( $r = -.32, -.44$ ). Conventional analyses, bootstrapping, randomization tests, checks for outliers, and stability assessments document the trustworthiness of the correlation, and it holds when controlled for age at data collection and SES. It occurred both in women whose father was present all 10 years and in women whose father was not ( $r = -.41, -.61$ ). The finding is new and challenges theories of puberty.

**SU 11:20 a.m.*****Intergenerational Patterns in Father Absence and Age of Menarche*****Boothroyd, Lynda G. (University of Durham, [l.g.boothroyd@dur.ac.uk](mailto:l.g.boothroyd@dur.ac.uk))****\* Postdoctoral Award Candidate**

A large number of studies have previously shown that "father absence" (i.e., lack of co-resident biological father) in childhood is associated with earlier menarche (first menstruation) in girls. However, while several theories have posited possible developmental pathways for this phenomenon, it is still unknown what role genetic inheritance may play in creating this association. This study investigated the genetic versus environmental causation of the father absence/menarche link by examining whether mother-daughter concordance in family background (i.e. father absent or not) was predictive of mother-daughter concordance in age of menarche. Additionally, the role of the father's family background was examined.

**SU 11:40 a.m.*****Environmental Uncertainty and Reproductive Patterns in Contemporary US Populations*****Grossestreuer, Anne V. (University of Pennsylvania, [agrosses@sas.upenn.edu](mailto:agrosses@sas.upenn.edu)); Vallengia, Claudia R.****\* New Investigator Award Candidate**

Life history theory provides a robust theoretical framework for developing and testing hypotheses on the evolution of human reproductive traits. Using this theory, it has been hypothesized that women who develop in risky or uncertain environments have early menarche and early age at first birth as an evolutionary strategy to maximize their fitness. We tested the predictions derived from this hypothesis using data from the National Survey of Family Growth (NCHS, USA). A total of 7,643 female cases (ages 15 to 44) were analyzed to find associations between indexes of environmental uncertainty and social stress (e.g. parent's education and job history) and reproductive patterns (e.g., age at menarche, at first sexual intercourse, at first birth). Women experiencing some measures of social stress tend to have earlier ages at menarche and ages at first intercourse. However, other factors, such as differences in childhood nutrition, could explain these results.

**SU 12:00 p.m.*****Menarche Depends on Fat Distribution*****Lassek, William D. (University of California, Santa Barbara, [will.lassek@gmail.com](mailto:will.lassek@gmail.com)); Gaulin, Steven J.C.**

Because of the increased energy needs of reproduction, the idea that a critical level of fat is required for menarche is appealing; but some studies indicate skeletal maturity (e.g. bi-ischial breadth) is the main determinant. Differences in metabolism and essential fatty acid content for different fat depots suggest that fat distribution may be more important than total fat. Using cross-sectional data from the Third National Health and Nutrition Examination Survey, we find that more lower-body fat increases the odds of menarche while more upper-body fat decreases the odds and that skeletal maturity is less important. Those with menses despite low levels of total body fat have relatively more fat stored in lower-body depots. Lower-body fat stores may be signaled by higher leptin production by their adipocytes.

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## Sunday Special Session

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Special Session on Literature    *Literature and Evolution:  
Narrative Old and New*    Class of 1949 Auditorium  
Chair: Brian Boyd

**SU 12:20 p.m.**

***The Evolution of Cooperation: The Odyssey***

**Boyd, Brian (University of Auckland, b.boyd@auckland.ac.nz)**

An evolutionary approach to literature can illuminate the content of literary works by considering local conditions in terms not just of culture but also of recurrent evolutionary problems. In analyzing *The Odyssey* I look at the origins of cooperation, mutualism, inclusive fitness, reciprocal altruism, friendship, and the cultural elaboration of cooperation to explain the relationships between Odysseus and his supporters. The Greek institution of *xenia* or reciprocal hospitality encourages the extension of the circle of cooperation among strangers, yet because it is entirely compatible with raiding strangers wherever retaliation seems unlikely, it therefore demonstrates vividly the problem of expanding cooperation. The suitors are the ultimate free-riders, and the intensity of the *Odyssey's* support for Odysseus as punisher of the suitors demonstrates the urgent necessity of the personal punishment of free-riders, and the advantages of religious sanctions, if cooperation is to be maintained in a pre-state society.

**SU 12:40 p.m.**

***Reclaiming Virginity: Chaucer's Wife of Bath***

**Martin, Louis (Elizabethtown College, martinlf@etown.edu)**

Both social science and literary theory have privileged nurture over nature in modern times. Recently, however, citing evolutionary psychology, literary critics have begun to assert that universal and innate human behavioral patterns exist and are represented in literature. An evolutionary analysis reintroduces the claim that the popularity of Chaucer's *Wife of Bath* is at least in part due to his ability to represent human nature accurately. As satire, Chaucer's portrayal of the *Wife of Bath* exposes potential flaws in the natures of women and men. It explores evolutionary strategies that depend on reciprocity and altruism and posits the failure of more egocentric evolutionary strategies. Furthermore, evolutionary structures represented in Chaucer's narrative reveal a universal desire for a stable and reciprocal relationship with a mate, something the *Wife's* culture and life circumstances have thwarted. As he portrays the *Wife's* internalized desires in the metaphors of her fictional narratives, Chaucer suggests both ways of overcoming flaws in human nature and the difficulty of doing so.

**SU 1:00 p.m.**

***Natural Psychology in the Evolution of Russian Literature***

**Cooke, Brett (Texas A&M University, brett-cooke@tamu.edu)**

The social intelligence hypothesis, combined with improved communication and economic development in recent centuries, seems to predict a general but progressive ratcheting up of insight into the psychology of our conspecifics. Over time classics of Russian prose fiction exhibited more prolix, detailed, complicated, and, arguably, accurate representations of the psyche. Psychological verisimilitude thus appears to drive stylistic innovation. New forms of fiction were received by critics as revealing here-to-fore unnoticed aspects of consciousness. Literature may be seen not only as disseminating and preserving knowledge, but also developing it, sometimes in advance of clinical science. Quite possibly it expands the actual usage of internal experience as well. Comparative examples from the works of Pushkin, Gogol, Dostoevsky, Tolstoy, Zamyatin, and Nabokov suggest this process was accelerating prior to the imposition of artistic controls in the USSR. Preliminary findings support a view of art as an active agent in bio-cultural co-evolution.

SU 1:20 p.m.

***“The Glint off the Lion’s Molars”*: Narrative and Experience from an Evolutionary Standpoint**

Horvath, Tim (University of New Hampshire, [Horvathon@aol.com](mailto:Horvathon@aol.com))

Michelle Sugiyama makes a compelling case that narrative evolved as "an information storage and transmission system... enabl[ing] people to acquire information, rehearse strategies, or refine skills...instrumental in surmounting real-life difficulties and dangers" (187). In her view, the "holistic simulation of human experience" (190) benefits listeners, who accrue valuable information without concomitant danger, and tellers, whose expertise signals their fitness. Sugiyama's notions can be usefully applied to 20th century fiction and narrative nonfiction. Best-selling works such as *Into Thin Air* and the *Perfect Storm* plunge readers vicariously into high-risk scenarios, while writers from Hemingway to Vollmann have self-consciously cultivated images of themselves as teeming with costly first-hand knowledge. Her framework can also elucidate the intensity of readers' anger at being duped when, for instance, a work billed as memoir turns out to be fiction. Finally, by recognizing the "holistic" nature of storytelling, we can better appreciate the role of experience itself in an evolutionary account of knowledge.

## Poster Abstracts

(By date, room, then alphabetical by presenting author)

### Thursday – Reading Room:

#### ***Sex Differences in Attention to, and Memory for, Emotionally Threatening Words: An Evolutionary Perspective***

**Deady, Denis K. (University of Stirling, d.k.deady@stir.ac.uk); O'Carroll, Ronan E.**

Evolutionary theory proposes sex differences in intrasexual competition; males compete for status and resources, while females compete in terms of physical attractiveness. The prediction follows that males will be more emotionally aroused by, and have greater memory for, verbal cues suggesting they are of low social status, whereas females should be more affected by cues suggesting they are physically unattractive. To test this, the dot probe task was used to present "threatening" verbal cues relating to social status, physical appearance, sexual reputation, to 40 males and 40 female undergraduate students. Dot Probe response times indicated how much attention was given to each threatening verbal cue. A free recall memory test of all the words that appeared in the task was given after a delay of 30 minutes. The results are discussed in relation to evolutionary conceptualisations of the importance the sexes attach to social status, physical appearance and sexual reputation.

#### ***Sex Drive, Infidelity Type and Intrasexual Competition: A Subliminal Priming Experiment***

**Massar, Karlijn (University of Groningen, The Netherlands, k.massar@rug.nl); Buunk, Abraham P.**

How do sex drive and infidelity type influence men's evaluations of romantic rivals? In this experiment, male participants were subliminally primed with words relating either to sex or to intimacy. Next, they were told to imagine their partner telling them: 'I found someone else', and then indicate their feelings of upset over several rival characteristics. Results show that for men who had been primed with intimacy (emotional infidelity), sex drive did not influence their feelings of upset over a rival's characteristics. However, when they had been primed with sex (sexual infidelity), men with a high sex drive reported feeling more upset over a rival's characteristics than men with a low sex drive. These results suggest that men with a high sex drive are more prone to engage in intrasexual competition than men with a low sex drive, especially when they are confronted with the sexual infidelity of their partner.

#### ***Getting Both Sides of the Story: Sexual Attraction and Sexual Events Between Opposite-Sex Friends***

**Matteson, Lindsay K. (University of Wisconsin-Eau Claire, matteslk@uwec.edu); Gragg, Brittany I.; Stocco, Corey S.; Bleske-Rechek, April**

Debate exists on whether opposite-sex friends experience sexual attraction to one another and, if so, whether that attraction adds spice or strife to the friendship. Little systematic research, however, has evaluated these questions; and existing studies have not asked for both friends' perspectives. In the current study, 89 pairs of young adult opposite-sex friends (mean friendship duration = 2 years) reported on their friendship. Men reported more sexual attraction to their friends than did women, and this sex difference endured after controlling for men's greater sexual unrestrictedness. Approximately 25% of friendship pairs had romantically kissed, and over 10% had "fooled around." Attraction to friend was not related to friendship duration, and sexual events occurred at various time points in the friendship, suggesting that attraction to friends isn't something that is "overcome" with time. We discuss our findings in the context of mainstream literature suggesting that opposite-sex friendships are inherently platonic.

#### ***Personality Characteristics and the Swinging Behavior***

**Mize, Krystal D. (Florida Atlantic University, kmize1@fau.edu); Beasley, Shanna L.; Periss, Virginia A.; Alleva, Paul D.; Shackelford, Todd K.; Goindoo, Anthony; Paff, Jessie**

According to Buss and Schmitt's (1993) sexual strategies theory (SST), men and women have several mating strategies. Low levels of jealousy and mate-guarding behaviors might result in a low level of open, mate exchanges, or "swinging." Although this strategy may be rare, it can be inferred from the many clubs that cater to this behavior that there is a small portion of the population that engages in swinging. The focus of this study is on the life history and personality characteristics of those involved in swinging. It is hypothesized that women involved in swinging will be more likely to have grown up in father-absent homes than women not involved in swinging. It also is hypothesized that men and women involved in swinging will score higher on measures of extroversion and psychoticism than people not involved in swinging.

***The Benefit of Foreskin and the Impact of Circumcision on Sexual Behavior*****Moloney, Regan (State University of New York at Oswego, rburch@oswego.edu); Burch, Rebecca L.**

The literature available on the possible adaptive function of the prepuce is insufficient and contradictory. Because of sex differences in latency to sexual arousal and the possible male sexual strategy of coercion, we assert that the function of the foreskin is to assist in penetration when female lubrication is lacking. Differences in sexual behavior (sexual experience, thrusting, lubrication, semen displacement, penile sensitivity, refractory periods, etc.) between circumcised and uncircumcised men will be discussed, as well as female preferences for circumcised or uncircumcised partners.

***Height Predicts Jealousy Differently for Men and Women*****Park, Justin H. (University of Groningen, j.h.park@rug.nl); Buunk, Abraham P.**

We examined the relationship between height and jealousy in humans. Drawing on evidence that taller males have reproductive advantages (suggesting that height is correlated with mate value), it was hypothesized that taller men may tend to be less jealous than shorter men. In contrast, as female height has been shown to have a curvilinear relationship with reproductive success (with females of average height having most success), it was hypothesized that female height may have a curvilinear relationship with jealousy. Results supported the hypotheses: Among men, height was negatively correlated with self-reported jealousy; among women, the relationship between height and jealousy was curvilinear, with individuals of around average height reporting the lowest level of jealousy.

***Sperm Competition and Sexual Behavior in Swingers*****Periss, Virginia A. (Florida Atlantic University, vperiss21@yahoo.com); Mize, Krystal; Beasley, Shanna; Shackelford, Todd; Goindoo, Anthony; Paff, Jessica**

One female reproductive strategy involves concurrent sexual behavior with multiple partners to increase the likelihood that the "best" genes fertilize a woman's egg(s). Sperm competition -- the simultaneous presence of sperm from two or more males in a female's reproductive tract -- can be examined in swinging relationships. Swingers engage in open sexual relationships with multiple partners. We propose that women who engage in open sexual relationships can increase their level of sperm selection opportunities as well as their chances of becoming impregnated. Men who engage in open sexual relationships will amplify their reproductive opportunities through regulating sperm allocations and displacement. It is predicted that men will display different thrusting behaviors with their in-pair partners after seeing her engage in extra-pair sexual relationships and with out-of-pair partners relative to in-pair partners. In addition, there should be a significant difference in sexual behavior and sperm competition in swingers compared to monogamous couples.

***Evidence for Differential Susceptibility to Putative Father Absence Effects: The Role of Relationship Status*****Perrett, David (University of St Andrews, l.g.boothroyd@dur.ac.uk); Boothroyd, Lynda**

Father absence and family stress have long been associated with age of menarche and it has previously been reported (Boothroyd & Perrett: HBES 05) that there is also an association between family background and facial attraction. In the current study however, father absence or a poor father-daughter relationship were associated with a difference in facial preferences and age of menarche only amongst those who were single or in unhappy/uncommitted relationships. Those who reported that they were in happy and committed relationships showed no difference between father absent and present individuals in terms of either current facial preferences or past pubertal development. Thus tendency to be in a positive relationship in adulthood seems to indicate some critical difference between subgroups of father absence girls. This further supports the notion (proposed by, e.g., Belsky, 1997) that some individuals may be more susceptible to the "effects" of rearing environment than others.

***Assortative Mating Among Dating Couples: The Case Against Phenotypic Convergence*****Remiker, Mark W. (University of Wisconsin-Eau Claire, remikemw@uwec.edu); Baker, Jonathan P.; Pike, Allison; Bodenstab, Erica; Bleske-Rechek, April**

Research on married couples has documented positive assortment on intelligence, attractiveness, values, and, to a lesser degree, personality; further, marital assortment has been linked with marital satisfaction. In the current study, we first tested the hypothesis that if partners mate assortatively (rather than converge over time), then assortative mating coefficients for dating couples should be similar in magnitude to those found for married couples. Second, we investigated couple assortment on variables not previously studied, including sociosexual orientation, and the links between assortment and partners' relationship satisfaction. Thus, 50 heterosexual dating couples completed a variety of self-report measures and had their pictures taken for outsider attractiveness ratings. We found moderate assortative mating coefficients that endured after controlling for relationship duration. Partners also were moderately similar on sociosexual orientation and physical attractiveness. We discuss the

importance of distinguishing between self-perceived similarity in attractiveness and other-rated similarity in attractiveness for predicting relationship satisfaction.

***Playing the Mating Game: Public Displays of Affection Convey Strategic Social Information***

**Rouby, David A. (Florida State University, rouby@psy.fsu.edu); Maner, Jon K.; Davis, Jennifer S.**

The current research assessed various functions of public displays of affection (PDA) and individual differences in motivations for displaying public affection. We examined whether motivations for PDA covary with sociosexuality, narcissism, sexual jealousy and relationship variables such as satisfaction, interest in alternatives, and perceived partner commitment. Results supported the idea that PDA may serve multiple and distinct functions. Moreover, individuals engaged in PDA to serve functions related to their current mating concerns.

***Love in the Afternoon: Compliance to Sexual Offers from Slightly Unattractive to Exceptionally Attractive Potential Partners in Germany, Italy, and the USA***

**Schuetzwohl, Achim (University of Bielefeld, achim.schuetzwohl@uni-bielefeld.de); Fuchs, Amrei (University of Bielefeld); Shackelford, Todd, K. (Florida Atlantic University); McKibbin, William F. (Florida Atlantic University)**

In the classic Clark and Hatfield (1989) study on men's and women's receptivity to sexual offers, slightly unattractive to moderately attractive confederates approached very attractive potential partners with one of three requests: "Would you go out with me tonight?", "Would you come over to my apartment tonight?" or "Would you go to bed with me tonight?". The majority of the men complied with the "apartment" and "bed" requests. In contrast, only one woman complied with the "apartment" and no woman with the "bed" request. We conjectured that the women's extremely low compliance might have been partly attributable to the confederates' low attractiveness which failed to meet the high standards of attractiveness posed by the very attractive women to a short-term mating partner. We tested this conjecture in a questionnaire with a German, Italian and American sample varying the attractiveness of the requestors from slightly unattractive to exceptionally attractive.

***There is a Sex Difference: Sociosexuality and Jealousy Across Heterosexual and Homosexual College Populations***

**Shea, Danielle (Whitman College, nelsonh@whitman.edu); Nelson, Holly**

Much evolutionary psychology has ignored homosexual populations in spite of this population providing a potentially robust test of evolutionary theories (Symons, 1979). Finding concurrence between heterosexual and homosexual people of the same sex supports the notion that a natural sex difference underlies the differences seen between men and women in sexual expectations and experiences. The finding that heterosexual and homosexual men are more similar to each other than either is to heterosexual or homosexual women in sociosexuality and jealousy provides more robust support for evolved sex differences based on differential reproductive capacity. Heterosexual and homosexual single college students from a variety of campuses completed online measures of sociosexuality and hypothetical jealousy scenarios (after Buss). I discuss the relevancy of sexual orientation, sociosexuality, and jealousy to evolutionary theory and why heterosexual and homosexual populations of the same sex have not developed past the natural sex difference.

***Neural Correlates of Romantic Jealousy: A Functional Near Infrared Spectroscopy (fNIRS) Study***

**Thomson, Jaime (Drexel University, jwt26@drexel.edu); Shackelford, Todd K.; Schuetzwohl, Achim; Platek, Steven M.**

Sex differences in reaction to a romantic partners infidelity are well documented and hypothesized to be attributable to sex-specific jealousy mechanisms. There have been few cognitive-based investigations of jealousy and no neuroimaging studies of jealousy. Here we extend our previous cognitive-based studies by using functional near infrared spectroscopy (fNIRS) to investigate changes in frontal lobe oxygenation caused by stimuli and scenarios designed to elicit sex-specific jealousy mechanisms. Consistent with the frontal lateralization approach-avoidance hypothesis, we predicted that imagery associated with sex-specific jealousy mechanisms [sexual infidelity (sex without love) for men and emotional infidelity (formation of deep committed bond without sex) for women] would be associated with greater right frontal activation than left frontal activation. Preliminary data support this prediction, and suggest that evolution crafted sex-specific response modules to deal with infidelity and that the mechanism implicated in cognitive adaptation to infidelity is related to the manifestation of the jealousy mechanism.

***More Sexual Assaults, Perpetrated Mainly by Males on Females, During a Seasonal Period of Increased Conceptions of Infants by Males and Females of a Human Population*****Turmel, Jean-François (Institute of Research in Evolutionary Genetic Psychology, jfturmel22@hotmail.com)**

The communication reports that more sexual aggressions, perpetrated mainly by males on females of a population, occurred during a summer period during which more infants have been successfully conceived by males and females of the population. In a synthetic evolutionary perspective, considering that males and females of the population conceived successfully more infants during the summer period in the past, males of the population who have assaulted sexually females during the summer period experienced a higher reproductive success, they have engendered more descendants than males of the population who have not assaulted sexually females during the summer period, more descendants engendered by the alleles of their genitors engendering males who assault sexually females during the summer period, leading to numerous males of the population who have assaulted sexually females during the summer period. This synthetic evolutionary perspective enables to predict and prevent the sexual aggressions of individuals of human populations.

***Assortative Pairing for Sensational Interests, Mate Value, Life History, and Delinquency in Costa Rica***  
**Vasquez, Geneva (University of Arizona, geneva@u.arizona.edu); Wolf, Pedro S.A. (University of Arizona); Vargas, Carolina (University of Costa Rica); Figueredo, Aurelio Jose (University of Arizona)**

To investigate assortative pairing for sensational interests (SIQ-R), mate value (MVI), life history strategy (Mini-K), and delinquency (D-20), young Costa Ricans (roughly age 18-28) rated themselves and either their opposite-sex romantic partners (101 pairs) or their same-sex best friends (122 pairs) on these traits. Within-person correlations among all four traits were similar for friends and lovers: SIQ-R correlated positively with D-20, whereas Mini-K correlated negatively with D-20. The perceived assortative pairing coefficients for SIQ-R, MVI, D-20, and Mini-K were statistically significant for both friends and lovers. The actual assortative pairing coefficients for SIQ-R, MVI, D-20, and Mini-K were also statistically significant for friends. This replicates previous results in the USA and Mexico. Thus, these four traits seem to be used as intrasexual displays in all three samples. For Costa Rican lovers, only the assortative pairing coefficients for MVI and D-20 were statistically significant, unlike in the USA and Mexico.

***Sex Differences in Reaction to Different Types of Sexual Infidelity?*****Wade, T. Joel (Bucknell University, jwade@bucknell.edu); Kelley, Ryan; Church, Dominique**

Evolutionary theory based research shows that women and men can differ in their responses to sexual and emotional infidelity. However, research has not examined the question of whether men and women react similarly or differently to a partner's engagement in different types of sexual infidelity. The present research sought to answer this question. Based on prior research, good genes theory, and short term mating environments and desires, sex differences in reactions to different types of sexual infidelity were not expected. Both women and men were expected to report higher levels of upset when a partner engaged in sexual intercourse rather than when a partner engaged in oral sex, heavy petting, or kissing with another person. The results were consistent with the hypothesis. Both men and women were most upset by a partner's engagement in sexual intercourse with another person. These findings are discussed in terms of prior infidelity research.

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**Thursday – Hall of Flags, Balcony:*****Relationships Between Evolutionary Psychology, Motivation, and Extraversion-Introversion*****Bell, Sherry E. (SBAA, DrSherryBell@aol.com)**

The relationship between evolutionary psychology and motivation and personality is discussed. An explanation of natural selection and how it is related to personality is presented (McDonald, 1995). A brief description of evolutionary psychology is provided (Buss, 1999; Tooby & Cosmides, 1992). The Big Five of personality is described (Costa & McCrae, 1999). The personality dimension of Extraversion-Introversion is examined (Eysenck & Eysenck, 1982). The concepts of status seeking, impulsivity, and body temperature are examined (Buss, 1999; Franken, 2002). Consideration is given to how these findings can be applied to modern day business settings. Extraverts can be expected to excel in jobs that require competition and opportunity for advancement. On the other hand, Introverts can be expected to excel in jobs in quiet environments and where the presence of others is either minimized or eliminated.

***Distinguishing Dominance and Prestige: Validation of a Self-Report Scale*****Buttermore, Nicole R. (University of Michigan, [buttermo@umich.edu](mailto:buttermo@umich.edu))**

Henrich and Gil-White (2001) suggested that an individual can gain status through two distinct strategies: dominance and prestige. Dominance is defined as the use of force or the threat of force to gain resources, whereas prestige is deference that is freely given by others. To test this hypothesis, Buttermore, James, and Kirkpatrick (2005) developed the Self-Perceived Social Status Scale (SSSS), which differentially assesses dominance, status, and prestige. The present study seeks to establish the convergent and discriminant validity of the SSSS. Participants will complete a battery of personality measures. Scores on the dominance subscale of the SSSS are predicted to be related to constructs such as aggression and submissiveness, whereas scores on the prestige scale are expected to be related to constructs such as narcissism, openness to experience, and agreeableness. Neither dominance nor prestige should be related to global self-esteem. Data collection is currently in progress.

***Familiarity Accentuates Gaze-following in Women but not Men*****Deaner, Robert O. (Duke University Medical Center, [deaner@neuro.duke.edu](mailto:deaner@neuro.duke.edu)); Shepherd, Stephen V. (Duke University Medical Center); Ristic, Jelena (University of British Columbia); Platt, Michael L. (Duke University Medical Center)**

People rapidly shift their attention in the direction other individuals are looking, following gaze in a manner suggestive of an unmodifiable reflex. Recent studies indicate, however, that gaze-following may be modulated by social variables, such as gender and status. We hypothesized that familiarity should also influence gaze-following. Male and female subjects viewed a male face looking left or right and then indicated the location of a target appearing randomly left or right. Crucially, subjects were either from the same academic department as the individuals whose faces served as gaze cues or from outside the department. Replicating previous studies, subjects responded more quickly when gaze predicted target location. However, departmental females showed greater gaze-following than did non-departmental females; no differences were found between the two male groups. Moreover, departmental females, but not males, showed greater gaze-following for individuals whom they reported seeing frequently. Thus, both gender and familiarity influence social attention.

***Sex Differences in Lying and Being Lied To*****Demarest, Jack (Monmouth University, [demarest@monmouth.edu](mailto:demarest@monmouth.edu)); Griffin, Aislyn Jill**

College students were given three scenarios varying the reasons for lying (i.e., manipulation, protect someone's feelings, cover up infidelity) and asked how strongly they felt a lie was told, how likely they would tell that lie, and how upset they would be if lied to in this way. Sex of the liar and the victim were varied. Results showed that lying about infidelity was most upsetting, that males were more likely to lie to females, and females were more likely to lie to males, that females were more upset than males by lies, and that participants were more likely to view a situation as a lie if the liar was male and the victim was female. Discussion will focus on conflict between the sexes in relationship maintenance tactics.

***Bias in Welfare Tradeoff Ratios*****Ermer, Elsa (University of California, Santa Barbara, [ermer@psych.ucsb.edu](mailto:ermer@psych.ucsb.edu)); Cosmides, Leda; Tooby, John**

Choosing one action over another has consequences, intended or not, for other members of one's social group. These circumstances create selection pressures for mechanisms designed to track which individuals dispense benefits versus inflict costs on oneself, and for motivational systems that value or devalue those individuals' welfares accordingly. These relationships are hypothesized to be tracked and summarized by welfare tradeoff ratios, internal regulatory variables that govern which cost-benefit transactions with particular individuals one should accept. Welfare tradeoff ratios should be regulated by many factors, including kinship and relative formidability. In the present study, subjects rated targets on personality traits and questions designed to assess welfare tradeoff ratios. Results showed that both men's and women's ratings reflected a higher welfare tradeoff ratio towards male targets than towards female targets. These results are consistent with social dominance theory's conception of sex as a fundamental human dominance system.

***Mating Intelligence Conceptualized as Adaptive Cross-Sex Mind-Reading Errors*****Geher, Glenn (State University of New York at New Paltz, [geherg@newpaltz.edu](mailto:geherg@newpaltz.edu)); DeWispelaere, Elisabeth; Lavalley, Jill E.; Musicaro, Regina**

This work examined errors in cross-sex mind-reading. Heterosexual males (N = 124) and females (N = 292) were presented with items that included clusters of three personal ads written by members of the opposite sex. For half the items, participants chose the ad that represented the person they would most want for a long-term mate; for the other items, they chose short-term partners. Next, they examined items that were initially judged by members

of the opposite sex. Participants were asked to guess which ads were rated most positively by members of the opposite sex. Ads were then rated by independent judges for presence of short-term/sexual qualities and long-term/non-sexual qualities. Errors in this task tend to be sex-specific. Males tend to overemphasize sexuality when judging short-term desires of females. Females showed a men-are-always-pigs bias by overestimating the degree to which males value sexual qualities in long-term mates.

***Sex Differences in Mental Rotation Ability: The Influence of Varying Levels of Abstraction***

**Gray, Melissa (Saint Mary's University, melissa.gray@smu.ca); Fisher, Maryanne (Saint Mary's University); Cox, Anthony (Dalhousie University)**

As a result of numerous studies conducted in the field of spatial-cognition, it has become well known empirically that males possess an advantage over females in tests of spatial ability involving mental rotation. This study expands on this research by using three novel approaches to the Mental Rotation Test (MRT). Three-dimensional blocks were created to replicate the drawings used in the original MRT. These blocks were made by hand out of wood, painted white and included solid black lines to match the original models. Participants completed the MRT with either the original paper-and-pencil version, a version containing photographs of the replicated models or with the actual models. It is hypothesized that with the use of more real life, or less abstract, stimuli the sex difference found on the MRT disappears or is reduced. Our findings confirm this result, such that less abstraction tends to reduce the sex difference.

***Sex Differences in Use of Communication Technology***

**Green, Lauren (Saint Mary's University, mlfisher@smu.ca); Fisher, Maryanne (Saint Mary's University); Cox, Anthony (Dalhousie University)**

Advances in communication technology, such as e-mail or instant messaging, allow for people to interact with relative ease and speed, regardless of where they are physically located. Thus, because people use e-mail quite readily as a way to keep in contact with family, friends, and mates, it represents an opportunity for the testing of evolutionary-informed hypotheses. For example, one could explore sex differences in familial contact with matrilineal or patrilineal kin. Or, using the framework of sex difference in jealousy, one could predict that women send less email to opposite sex friends when they have a mate, whereas relationship status might not influence men's behaviour. Also, it is possible to investigate whether men guard their mates by sending them numerous emails or messages during the day that require a response. We will present some initial findings on these phenomena, and discuss other ways to explore communication technology for evolutionary-based research.

***Is Romantic Commitment Depressing for College Age Males?***

**Hipp, Daniel (State University of New York at Oswego, rburch@oswego.edu); Minter, Danielle; Burch, Rebecca L.**

In a sample of over 650 undergraduates, we examined the romantic and sexual factors in a relationship that may influence depressive symptoms in males and females. Although large gender differences exist in commitment to the relationship, variation in commitment also led to very different effects on emotional wellbeing. For females, several factors in the relationship (relationship length, strength, seriousness, commitment, etc.) correlated negatively with depressive symptoms, even when frequency of intercourse was controlled for. For males, however, very few relationship variables had an impact on depressive symptoms, and controlling for frequency of intercourse decreased the number further. Male commitment to the relationship had a strong positive correlation to feelings of punishment.

***Sex Differences in Resource Allocation***

**Hoben, Ashley D. (Saint Mary's University, Ashley.Hoben@smu.ca); Fisher, Maryanne (St. Mary's University); Cox, Anthony (Dalhousie University)**

According to evolutionary psychological theory, one strategy men use for intrasexual competition is to display available resources. Due to the link between competition and mate preferences, it is not surprising that women prefer men with resources, or with the potential to acquire resources. We used "The Sims" computer game to examine how men allocate a set amount of money in terms of buying goods that display resources, but are not necessary for a house's function, such as a pool table. We further predicted that, due to differences in parental investment and behaviours associated with raising offspring, women would allocate their resources towards necessary goods for daily living, such as expensive appliances. Our results support these predictions and indicate that using "The Sims" for exploring resource allocation is highly valuable.

***Male Dominance Related Self-Deception Among Women*****Hrgovic, Josip (Ivo Pilar Institute of Social Sciences , josip.hrgovic@pilar.hr); Hromatko, Ivana**

Numerous findings suggest that self-deception positively influences various mental states, including depression. Likewise, many studies have shown that there is a negative correlation between socio-economic status and depression. In most human cultures men are the socially dominant gender, and at the same time, the incidence of depression is higher among women. It could be hypothesized that self-deception has an adaptive function of reducing depression among women. To test this hypothesis, we explored the relationship between self-deception, depression, and attitudes towards male dominance, as a function of socio-economic status of the respondents, among 110 female students of the University of Zagreb. The results are interpreted in the context of adaptiveness of self-deception in women, regarding male dominance.

***Toward an Evolutionary Feminist Theory*****Ingo, Kate M. (Colorado State University, Pueblo, km.ingo@colostate-pueblo.edu); Pratarelli, Marc E. (Colorado State University, Pueblo); Mize, Krystal D. (Florida Atlantic University)**

Female intrasexual competition is perceived as a hindrance to the Feminist movement. This paper argues a modern feminist theory could be consistent with Natural Selection. The SSSM feminist framework believes female competition is fostered by a patriarchal power structure benefiting from a division amongst women. Feminists argue that environment plays far greater roles in shaping people than does biology, and thus cultural reform will alleviate this competition. It is an implicit assumption of the hunter-gatherer model that survival is a cooperative venture between partners. Thus, women competing over high status mates and men over a woman's mate value are simply functional coevolved strategies; they do not impose a value-laden hierarchy. Nature may give the appearance of inequality and injustice between the sexes. However, a cognitively complex brain-mind could reconcile the meaning of coevolved strategies and educate individuals past their perceived ills toward more equitable outcomes with an evolutionary feminist framework.

***What Strategies Has Natural Selection Shaped for Regulating Investment?*****Jackson, Eric D. (University of Michigan, edjacks@umich.edu); Nesse, Randolph M.**

Although it seems clear that natural selection shaped the capacity for varying investment of both energetic and material resources, there are differing hypotheses regarding its origins and little evidence about what degree of variability would be optimal. By implementing a computer-based model with multiple agents, we were able to compare numerous resource allocation strategies. We examined how different strategies affected short and long term patterns of resource acquisition in different investment environments. Our results over many runs indicate that agents with a capacity for variable investment averaged greater gains than fixed capacity agents, especially as rate of return predictability increased. However, outcomes varied dramatically from run to run with the best strategy on average being substandard on some runs. This may help to explain why natural selection has left such large individual differences in mood regulation mechanisms.

***Educational Practice and the Second Law of Thermodynamics*****Kaminsky, James S. (Auburn University, kaminjs@auburn.edu); Ross, Margaret E.; Forbes, Sean A.**

This paper calls attention to bio-genetic differences presented in the human dimorphic phenotype for educational research and development. We argue that the emerging body of research in neurobiology and evolutionary psychology is a most exciting contemporary gambit for curriculum reform. It is a literature that has been ignored by educators as an unfortunate consequence of the fractious conflict that presently obtains between Left and Right educational gender theory. If there are significant differences between male and female brains we assume that there should be significant academic performance differences between males and females when segregated into a single-sex environment. This paper tests the implicit assumptions of brain modularity for education practice through a regression analysis of 7th and 8th grade SAT 10 scores in public school classrooms segregated by sex.

***Why Big Guys Don't Smile: Preliminary Evidence for Reactive Heritability in Collegiate Football Players*****Koenig, Bryan L. (New Mexico State University, blkoen@nmsu.edu); Ketelaar, Timothy**

Reactive heritability refers to the phenomenon whereby individuals determine their social strategy based on heritable individual differences (Tooby & Cosmides, 1990). For example, compared to smaller individuals, larger individuals are more likely to prevail in fights; therefore, evolution may have favored a universally shared psychological mechanism for determining aggression calibrated on one's own body size. Thus, larger individuals should be more aggressive than smaller individuals. Results of two studies of perceptions of collegiate football players were consistent with reactive heritability. In these studies participants viewed and rated photos (headshots) of male football players gathered from team webpages. Study 1 confirmed that larger football players were perceived as more aggressive and less prosocial than were smaller players. Study 2 found that larger

football players smiled less than smaller football players. Further analysis demonstrated that perceptions of aggressiveness and prosociality were mediated by the degree to which football players smiled.

***An Examination of Differences Among Identical Twins, Fraternal Twins, and Non-Twins on Academic and Personality Factors***

**Kuch, Fred (University of Nevada, Las Vegas, [fkuch@instructme.com](mailto:fkuch@instructme.com)); Zvoch, Keith**

As part of the Early Childhood Longitudinal Study (ECLS), the U.S. Department of Education gathered data on over 17,000 children, tracking them from kindergarten through fifth grade. Over 7,000 variables were measured, including many home environment (e.g., familial SES, family structure, parental investment) and academic achievement and socio-emotional indicators. Relevant data are also available at the classroom and school levels. The database contains 54 pairs of identical twins, and approximately 100 pairs of fraternal twins. The research question this study sought to examine was the degree to which identical twins, fraternal twins, and non-twin children differed across various factors, including standardized test scores and socio-emotional ratings. We hypothesized that there would be less variance between identical twins and the other groups, and less variance between fraternal twins and non-twins, but that the within pair similarities and differences would vary by outcome measure.

***Height in Women Predicts Maternal Tendencies and Career Orientation: A Replication Across Cultures***

**Law Smith, Miriam J. (University of St Andrews, [mjls@st-and.ac.uk](mailto:mjls@st-and.ac.uk)); Deady, Denis K. (University of Stirling, UK); DeBruine, Lisa M. (University of Aberdeen, UK); Jones, Benedict C. (University of Aberdeen, UK); Lawson, Jamie F. (University of St Andrews, UK); Feinberg, David R. (Harvard University); Cornwell, R. Elisabeth (University of Colorado at Colorado Springs); Stirrat, Michael R. (University of St Andrews, UK); Perrett, David I. (University of St Andrews, UK)**

Previous research has shown that in women increased height related to decreased maternal tendencies and increased career orientation (Deady & Law Smith, 2006, *Personality and Individual Differences*). The current study aimed to test this across multiple countries using data collected from women in an online questionnaire hosted by the BBC website ( $n > 70,000$ ). As predicted, in pre-reproductive women (aged 20-29), increased height related to decreased maternal tendencies (ideal number of children, ideal age at first child) and increased career orientation (importance of having a career). In post-reproductive women (aged over 45), increased height related to decreased reproductive events (fewer children, had first child at older age). Results provide further support for the idea that stature is a measure of physical masculinisation, which is reliably associated with psychological masculinisation in women.

***Birth Order, Personality, and Conformity to Parental Expectations in the Choice of a Long-Term Mate***

**McAndrew, Francis T. (Knox College, [fmcandre@knox.edu](mailto:fmcandre@knox.edu)); Franciskovich, Samantha J.**

Sulloway's "family niche theory" proposes that firstborns and laterborns will diverge from each other on personality traits and the extent to which they endorse the values and attitudes of their parents. We tested these predictions in a college sample of 26 male and 63 female students. Participants filled out a personality scale that assessed a variety of personality traits. They also rated the importance of 16 characteristics for a potential long term mate, and responded to these same 16 items as they thought their parents would if the parents were choosing a long term mate for them. There were several significant birth order and sex differences on personality traits, and a significant interaction revealed that laterborn males were less likely to conform to their parent's mate preferences than firstborn males; females showed exactly the opposite pattern. Overall, the results did not support Sulloway's hypotheses.

***Self-Friend Agreement and Assortment in Same-Sex Friendship: Why Sexual Strategy Matters***

**Preder, Stephanie (University of Wisconsin-Eau Claire, [bleskeal@uwec.edu](mailto:bleskeal@uwec.edu)); Fasteland, Kelsey;**

**Wiechmann, Emily; Wojtanowicz, Marla; Bleske-Rechek, April**

Same-sex friends are unique in their potential to both facilitate mating (e.g., through networking) and impede mating (e.g., through rivalry). If humans have an evolved friendship psychology that guides the selection of friends who facilitate rather than impede mating, then they should demonstrate sensitivity to the sexual strategy their friends pursue. In the current study, we investigated self-friend agreement and assortment on sexual strategy among 43 male and 99 female same-sex friendship pairs. Men, and especially women, showed high self-friend agreement on sexual strategy. High agreement coefficients endured after controlling for assortment on sexual strategy; and near-zero correlations among numerous sets of randomly constructed friendship pairs suggest the friendship correlations are valid. Female but not male friendship pairs demonstrated moderate assortment on sexual strategy. We discuss potential links between degree of assortment on sexual strategy and women's perceptions of friendship trueness, friendship stability, and rivalry in the friendship.

***Perceived Vulnerability to Disease is Positively Related to the Strength of Preferences for Apparent Health in Faces*****Welling, Lisa L.M. (University of Aberdeen, [lisa.welling@abdn.ac.uk](mailto:lisa.welling@abdn.ac.uk)); Conway, Claire A.; DeBruine, Lisa M.; Jones, Benedict C.**

People who are particularly vulnerable to disease may reduce their likelihood of contracting illnesses during social interactions by having particularly strong aversions to individuals who appear ill. Consistent with this proposal, here we show that individuals who perceive themselves to be particularly vulnerable to disease have stronger preferences for apparent health in faces than individuals who perceive themselves to be relatively less vulnerable to disease. This relationship was independent of possible effects of general disgust sensitivity. Furthermore, perceived vulnerability to disease was not related to preferences for other facial cues that are attractive but do not necessarily signal an individual's current health (i.e., perceiver-directed smiles). Collectively, these findings reveal a relatively domain-specific association between perceived vulnerability to disease and the strength of aversions to facial cues associated with illness and are further evidence that variation in attractiveness judgments are not arbitrary, but reflect potentially adaptive individual differences in face preferences.

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**Thursday – Hall of Flags, Rear:*****Men's Self Esteem Relates to Available Resources and Potential Rivals' Physical Muscularity*****Boudreau, Suzanne (Saint Mary's University, [mlfisher@smu.ca](mailto:mlfisher@smu.ca)); Fisher, Maryanne**

Intersexual competition theory suggests that mate preferences lead to the form of the competition in the opposite sex. Since women prefer men with resources and high levels of physical strength, men should intersexual compete by displaying either available resources or strength. We hypothesized that men's magazines devoted to fitness would decrease male participants' self esteem, in that the models would demonstrate far superior strength, as depicted by highly developed muscularity. We also predicted that men who had less money would be especially affected by the magazines, as they cannot effectively compete with their resources. Our results support our hypotheses. Furthermore, the models who were rated most attractive by women tended to be less muscular, potentially leading to more realistic competitors. Men viewing these models were particularly susceptible to decreases in self-esteem, especially when the amount of money carried the day of the study was less than usual.

***Lonely Hearts Go Online: A Field Experiment on Sexual Advertisements*****Camilleri, Joseph A. (Queen's University, [4jac1@qlink.queensu.ca](mailto:4jac1@qlink.queensu.ca)); Krupp, Daniel B. (McMaster University)**

Research using personal dating advertisements ("lonely hearts" paradigm) has been conducted for over thirty years. In that time, researchers have found reliable differences in the types of information men and women provide (e.g., men advertising financial resources, women advertising attractiveness) that are consistent with evolution-minded theories of mating psychology. If, in fact, the information provided on personal advertisements reflects sex-typical mating strategies, such advertisements should result in greater interest from the opposite sex. To test this hypothesis, ostensibly real individual profiles were posted on an online dating service, varying by sex, age, and resources (high vs. low occupational status). As hypothesized, men were less choosy and contacted younger women more often, whereas women contacted older men more often, and the sex difference for resource preference was marginally significant in the expected direction, providing further support for the notion of sex-typical mating strategies, using a more controlled design in the "field".

***Nasal Breathing Antagonizes Contagious Yawning*****Gallup, Andrew C. (State University of New York at Albany, [andyalbany07@yahoo.com](mailto:andyalbany07@yahoo.com)); Gallup Jr., Gordon G.**

As yet no one has been able to identify the adaptive function of yawning. Recent research has shown that the tendency to yawn triggered by witnessing someone yawn, called contagious yawning occurs in about 45% of the population and is related to individual differences in self-processing. People who show contagious yawning recognize their own faces faster on a computer screen and excel on tests of mental state attribution (Platak, Critton, Myers & Gallup 2003). In the present study we show that patterns of breathing can also influence susceptibility to contagious yawning. When subjects were either allowed to breathe normally or instructed to breathe orally, the incidence of contagious yawning in response to seeing videotapes of people yawning was between 40-50%. However, when subjects were instructed to breathe nasally, the incidence of contagious yawning dropped precipitously. The implications of these findings for the adaptive/functional significance of yawning will be discussed.

***The Body Monologue: Preliminary Study of Self Mutilation in Chinese Undergraduate Students***  
**Ho Yuen Wan (University of Hong Kong, spookyho@gmail.com)**

Research on self mutilation has rarely been under systematic investigation in Chinese societies. The study preliminarily examines the relationship between self mutilation and psychological well-being with maternal bonding, hostility direction, aggression and dissociation experiences as developmental and cognitive preceding variables, among Chinese undergraduate students. The hypotheses are (1) individuals with self mutilation (SM) are likely to report impaired early parental bonding, (2) have higher level of general anxiety and hostility, and (3) show higher dissociated tendency than those without SM. Results will provide evidence to understand the phenomenon in Chinese societies as the base for cross-cultural comparisons. Examining potential relations between self mutilations, dissociation and other external aggressive acts will provide theoretical bases for future development of prevention and intervention programs.

***Conformity or Anti-Conformity? Producer-Scrounger Behavior in Group Performance***

**Ishibashi, Nobuyuki (Hokkaido University, ishibashi@lynx.let.hokudai.ac.jp); Kameda, Tatsuya (Hokkaido University); Hastie, Reid (University of Chicago)**

When animals engage in collective performance such as social foraging, the group is often divided into cooperative "producers" who actively forage and free-riding "scroungers" who exploit the producers' costly efforts (Vickery et al., 1991). Previous research testing the producer-scrounger model with human laboratory groups has confirmed this phenomenon in a variety of task settings, showing that the producer-scrounger ratio in a group approached a mixed equilibrium over time (Kameda & Nakanishi, 2002, 2003; Kameda & Tamura, in press). This study explores the phenomenon by examining individuals' micro-decisions in response to social-frequency information. In the experiment, we manipulated social-frequency information about the number of other producers in the group. If the producer-scrounger model is correct, subjects should decide to produce when there are too few producers in their group, but they should switch to scrounging when there are too many producers -- frequency-dependent anti-conformity. The results provided partial support to this hypothesis.

***Investment Allocations for Long- and Short-Term Romantic Partner Attributes***

**Kruger, Daniel J. (University of Michigan, djk2012@gmail.com); Jackson, Jenee J. (University of Arizona)**

We compared investment allocations for long- and short-term relationship partner attributes by sex and examined the relationship between allocations and a multidimensional measure of sociosexuality. Sex differences exhibited the expected pattern. Women allocated more investment for leadership, affluence, confidence and bravery. Men allocated more investment for physical attractiveness and stylishness. More investment was allocated for faithfulness, ethics/morals, honesty, and intelligence in long-term partners. More investment was allocated for stylish, physically attractive, confident, affluent, and brave in short-term partners. Long-term mating orientation was positively related to allocations for faithfulness, honesty, ethics/morals, and intelligence, and negatively related to allocations for physical attractiveness, stylishness, affluence, and bravery for long term relationships. Short-term mating orientation was positively related to allocations for physical attractiveness and stylishness, and negatively related to allocations for ethics/morals, honesty, bravery, and faithfulness for long term relationships. Sociosexuality was not as strong of an influence on allocations for short term partners.

***Women's Preferences for Aggressive Mates: Navigating a Dangerous World?***

**Lee, Sok W. (UCLA, swlee04@ucla.edu); Snyder, Jeff K. (UCLA); Navarrete, Carlos D. (Harvard University)**

Finding mates willing and able to provide protection from conspecifics has been posited to have been a consistent adaptive problem for women throughout evolutionary history (Buss, 1994; Symons, 1978). If protection from conspecifics was an enduring adaptive problem, women may value aggressive traits in men that are related to their ability to protect them. Likewise, the more dangerous a women's local environment, the stronger these preferences may be. The current study explored these hypotheses by asking women their long-term mate preferences, measuring their perceptions of fear and safety in their local environments in addition to demographic data designed to estimate the risk of exposure to crime in their childhood and current environments. Preliminary results indicate that greater fear of environments is significantly correlated with stronger preferences for aggressive traits in romantic partners.

***PANDAS/OCD and Host Manipulation***

**Long, Thomas G. (Drexel University, smp43@drexel.edu); Platek, Steven M.**

Recent research has uncovered a correlation between group A beta-hemolytic streptococcus infections (GABHS) and an acute onset of obsessive-compulsive disorder (OCD). The subgroup of children that have been shown to acquire this form of OCD have been diagnosed with pediatric autoimmune neuropsychiatric disorders associated with streptococcus infections (PANDAS). It has also been proposed, amid some controversy, that the reason for this trend is that antibodies designed to combat GABHS infections have an autoimmune effect on the basal

ganglia. The PANDAS-OCD relationship appears to be a unique form of host manipulation; i.e., by increasing surface touching through the expression of the OCD phenotype, GABHS might actually increase its fitness through spread amongst individuals along surfaces encountered by infected persons. Thus, selection may have favored manipulation of basal ganglia circuits, or even the evolution of mimicry of basal ganglial cells. This research adds to a growing literature on Darwinian medicine/evolutionary psychiatry.

### ***Consequences of Female Derogation on Male Perceptions of Attractiveness***

**Lucas, Deanna L. (St. Mary's University, [deanna@aimfocuscapture.com](mailto:deanna@aimfocuscapture.com)); Fisher, Maryanne**

Female intrasexual competition has been recently gaining attention in evolutionary psychology. While several studies have demonstrated that this phenomenon does occur, none seem to provide concrete evidence as to why. That is, research indicates women derogate a rival's attractiveness, but the reason for this derogation remains unknown. Therefore, we tested the possibility that women derogate rivals for the purpose of swaying a potential mate's perception of these rivals. We examined the impact of women's positive, negative and neutral comments of female faces on men's perceptions of women. We hypothesized that negative statements, similar to derogation of a rival, decrease men's attractiveness judgments. Furthermore, we predicted that the influence would be stronger when the woman making the comments was one the male considered extremely attractive, as compared to extremely unattractive. In general, our predictions were confirmed, and support the hypothesis that women derogate rivals to influence the perceptions of mates.

### ***Strategic Variation in Mate Preferences for Behavioral Traits***

**Lukaszewski, Aaron W. (University of California, Santa Barbara, [lukaszewski@psych.ucsb.edu](mailto:lukaszewski@psych.ucsb.edu));**

**Simmons, Zach L.; Roney, James R.**

This study attempted to derive a factor structure that describes evaluative dimensions underlying preferences for purely behavioral (i.e., non-physical) traits in a potential mate. Factor analysis performed on female ratings of 97 lexical trait descriptors revealed a factor seemingly related to paternal investment (e.g., loyal, trustworthy, likes children), and a factor related to assertiveness and dominance (e.g., daring, bold, take-charge). Because the traits contained in the second factor seem to describe behaviors associated with the expression of direct intrasexual competitive tactics, we attempted to determine whether this factor might in part index components of men's heritable fitness. To this end, we correlated women's sociosexual orientation (SOI) and conception risk with preferences for the factors. Conception risk and SOI both positively predicted preferences for the assertiveness factor. These results complement previous research suggesting that particular behavioral traits may partially indicate components of men's heritable fitness.

### ***An Experimental Study to Examine Strategies in Indirect Reciprocity Settings***

**Mashima, Rie (Hokkaido University, [mashima@lynx.let.hokudai.ac.jp](mailto:mashima@lynx.let.hokudai.ac.jp)); Takahashi, Nobuyuki**

Recent theoretical studies suggest that the key to the emergence of indirect reciprocity is discriminate altruism based on not only 1st-order information (others' previous behaviors) but also 2nd-order information (reputation regarding targets of others' previous behaviors). We conducted a laboratory experiment to examine people's actual strategies in indirect reciprocity settings. Eight participants played a repeated giving game. On each round, participants were endowed 50 yen and decided whether to give it to one of the other participants or keep it for themselves. When they made their decisions, they could see 1) 1st-order information: whether each target gave or did not give in the last round and 2) 2nd-order information: whether the person had given to a giver or a non-giver in the last round. Preliminary results clearly showed that participants used 1st-order information, but whether they used 2nd-order information was inconclusive.

### ***A Woman's Behaviour May Affect the Attractiveness of Others***

**Mishra, Sandeep (University of Lethbridge, [sandeep.mishra@uleth.ca](mailto:sandeep.mishra@uleth.ca)); Clark, Andrew P. (University of Bristol); Daly, Martin (McMaster University)**

Previous research has shown that viewing photographs of highly attractive women adversely affects men's evaluations of more typical women and of their own romantic partners. We attempted to replicate and extend these findings in two studies using male and female undergraduates. In study 1, the replication, we observed only one expected result: men that viewed photos of attractive women rated their partners as less attractive. In study 2, we examined whether exposure to proceptive behavior in an opposite-sex individual would have a stronger effect on the ratings of typical opposite-sex others and romantic partners. Results showed that mated men's ratings of their partners and unmarried men's ratings of other women were both lower following exposure to the proceptive opposite-sex individual, whereas women's ratings were unaffected. The results support the hypothesis that male perceptions of proceptivity may affect differential allocation of mating effort.

***Greater Sensitivity to Social Risk than to Natural Risk*****Nakanishi, Daisuke (Hiroshima Shudo University, nakanisi@shudo-u.ac.jp); Ohtsubo, Yohsuke**

People deal with two kinds of risk: natural risk and social risk. Natural risk is independent of other people (e.g., damages incurred by natural disasters), while social risk is associated with other person's behavior (e.g., being cheated by others). Cosmides (1989) maintains that people have an independent module to handle social risk. The purpose of this study is to investigate whether the different types of risk (natural/social) will lead people to behave differently. We modified the Iowa Gambling Task, in which a player engages in a series of choices that entails some risk, by framing the task as a natural/social risk problem. Instructions read as follows: Payoffs of the game are affected by climatic conditions in the natural risk condition, while payoffs are affected by hypothetical actors -- intention in the social risk condition. The results showed that they behaved more cautiously in the social risk condition.

***Deception and Cooperativeness: Evidence for Counter Strategy of Free Riders*****Ozono, Hiroki (Kyoto University, h.oozono@p01.mbox.media.kyoto-u.ac.jp)**

In social and economic exchange, the free rider problem often occurs. In order to solve this problem and achieve mutual cooperation, cooperators should be able to distinguish free riders from other cooperators and to avoid free riders. Given this assumption, it should be a case that free riders take a counter strategy; they should improve their ability not to be detected themselves as free riders (Hypothesis 1). Thus, they should be more skilful liars than cooperators. If so then, the cooperators should develop their ability to detect the deception by free riders more precisely (Hypothesis 2). I conducted two experiments to test these hypotheses. The results supported Hypothesis 1, but not Hypothesis 2. I discuss several reasons why the results did not support the second hypothesis.

***The Influence of Sexual Orientation and Relationship Context on Feminine/Masculine Face Preference*****Sakaguchi, Kikue (University of Tokyo, kikue@darwin.c.u-tokyo.ac.jp); Sakai, Yoshiko (Rikkyo University); Ueda, Keisuke (Rikkyo University); Hasegawa, Toshikazu (University of Tokyo)**

Four groups of participants (150 heterosexual men, 236 gay men, 195 heterosexual women, 132 lesbians) selected the most preferable one from five pictures of male faces varying in their masculinity (60%, 80%, 100%, 140%, 180% male) for 4 different relationship contexts: attractive, as a friend, as a short-term sex partner, as a long-term sexual partner. Heterosexual men and women, and lesbians tended to rate feminine male faces more attractive. Lesbians were the most extreme in that preference. On the contrary, gay men rated extremely masculine faces as the most attractive. In the friend choice context, all four groups sifted their preference to gender-neutral faces. Both gay men and heterosexual women showed the preference shift to more masculinity in short-term context. The results suggested that gay men, who are free from the cost of reproductive effort and the long-term relationship tend to be attracted to super-masculine looking males.

***Human Pheromone 4,16-Androstadien-3-One Enhances Perceived Male Attractiveness*****Saxton, Tamsin K. (University of Liverpool, tamsin.saxton@liv.ac.uk); Lyndon, Anna M.; Little, Anthony C.; Roberts, S. Craig**

A small number of the many constituents of human axillary secretions have been proposed as human pheromones. A lack of consistent evidence for "releaser" or "primer" human pheromones has led to implicit or explicit recommendation for a class of "modulator" pheromones. We specifically contrast these two classes within the ecologically-valid context of speed-dating. We found that males were rated as significantly more attractive by females exposed to the proposed pheromone 4,16-androstadien-3-one in an odour mask, compared with females exposed to the odour mask or to water alone ( $p < .001$ ). Enhanced ratings of physical attractiveness ("modulator" effect) did not, however, translate into increased rates of males being selected by a female for future meetings ("releaser" effect), even though physical attractiveness was a significant predictor of a male being selected. Other parameters of mate choice within the speed dating context are also discussed.

***Food Security and Preference for Low WHR*****Scott, Isabel (University College London, isabel.scott@yahoo.co.uk); Tovee, Martin (University of Newcastle, UK); Bentley, Gillian (University College London, UK); Ahamed, Farid (University of Chittagong, Bangladesh); Magid, Kesson (University College London, UK)**

Evolutionary psychologists suggest female waist-to-hip ratio (WHR) and body-mass-index (BMI) are markers of both mate value and attractiveness, with males having universal preferences for low WHR and BMIs. Recent studies suggest inter-population variation both in preferences and in the relationship between mate value and somatype, with bodyshapes conforming to the western ideal being advantageous only where food security is high. We explore this further among migrant Bangladeshi men in London and sedentees in Bangladesh. Participants viewed photographs of women with varying WHR and BMI and judged their attractiveness, health, wealth, fertility

and age. Migrants showed preferences for reduced BMI and WHR relative to sedentees, and also associated high socioeconomic status with significantly lower BMI and WHR than sedentees. Our data verify male preferences are plastic and subject to local influences. Past literature supporting male preferences for low WHR and BMIs likely reflect biases in choice of study populations.

***Social Closeness and Gift-Giving to Nieces and Nephews: A Twin-Family Study***

**Segal, Nancy L. (California State University, Fullerton, nsegal@fullerton.edu); Seghers, James P. (Kent State University); Chavarria, Kevin (California State University, Fullerton); Marelich, William D. (California State University, Fullerton); Mechanic, Mindy (California State University, Fullerton)**

This study purports to enhance understanding of altruistic behavior through the use of the twin-family method. It is based upon the concept that the children of monozygotic (MZ) twins are as genetically similar as half-siblings, while the children of dizygotic (DZ) twins are no more similar than ordinary first cousins. By the same logic, MZ twin aunts and uncles are the genetic parents of their nieces and nephews, while DZ twin aunts and uncles share the usual 25% average genetic overlap with their co-twin's children. The hypothesis is that the genetic closeness of the benefactor to recipient will be associated with the amount of resources given. Specifically, the frequency and expense of gift-giving to nieces and nephews will be higher for MZ than DZ twin aunts and uncles. Sample sizes vary from 288 to 323 twins depending upon the analyses in question.

***Circadian Activity, Episodic Fluctuation and Testosterone Baselines***

**Sharp, Martin A. (University of Wolverhampton, m.sharp@wlv.ac.uk); Al-Dujaili, Emad**

Comparatively little research is available about detailed daily patterns of T in females; particularly the biologically active free component, as measured in saliva. In the absence of reliable information, bio-behavioural studies involving female participants have tended to formulate salivary sampling strategies taken directly from research involving male participants. However, this approach may be inappropriate as circadian profiles and episodic fluctuation, if neglected, can act as a serious methodological confound. Accordingly, by determining a comprehensive picture of the circadian activity of salivary T in 36 healthy female subjects, it was possible to demonstrate that salivary T follows a circadian rhythm, the relative levels of which differ over two non-consecutive days. Moreover, throughout the course of the day T levels were highly variable, with fluctuation of individual data points exceeding 83% of 9am levels. These findings highlight the necessity of collecting multiple samples in bio-behavioural research involving T and women.

***Food Sharing Among Hunter-Gatherers: Reciprocal Altruism of Mutualism?***

**Smaniotto, Rita C. (r.c.smaniotto@rug.nl)**

Several models have been proposed to explain food sharing among hunter-gatherers and forager-horticulturalists. One of the most influential ones is based on Trivers' reciprocal altruism and predicts that A's sharing with B is contingent on B's sharing with A. This paper argues that the evidence for reciprocal altruistic food sharing is not very compelling. An alternative model is presented, which describes food sharing as a form of mutualism. Based on this model it is predicted that people share in a non-contingent way and based on needs with a limited number of "friends." By reviewing quantitative studies on food sharing, the degree of empirical support for both models are assessed.

***Sexual Dimorphism in Body Height: Further Evidence for Variable Preferences as a Strategy for Increasing the Pool of Potential Partners***

**Soevegjarto, Olivia (bernhard.fink@ieee.org); Fink, Bernhard (University of Goettingen, Germany); Neave, Nick (Northumbria University, UK); Brewer, Gayle (University of Central Lancashire, UK); Manning, John T. (University of Central Lancashire, UK); Pawlowski, Boguslaw (University of Wroclaw, Poland)**

It has been demonstrated that people adjust their preferences for sexual dimorphism in stature (SDS) between oneself and a potential partner, in relation to their own body height. A potential explanation is such preferences reflect a mechanism which aims at increasing the potential pool of partners. We studied preferences for SDS in a sample of 580 men and women from Austria and UK and recorded BEM Sex Role Inventory. Our data confirm that men and women adjust their preferences for SDS in relation to their own height. Moreover, we found that men with higher BEM masculinity had a preference for higher SDS. No such association between SDS and BEM scores was found for women.

***Facial Attractiveness and Skin Tone***

**Stephen, Ian D. (University of St Andrews, is77@st-and.ac.uk)**

Sexual selection has been proposed as a contributing factor in the evolution of light skin in northern human populations. Literature suggests that light skin is attractive in women because lightness correlates with youth and fertility, and women have lighter skin than men. This study examined the role of skin lightness on facial

attractiveness in student populations (age ~18-24). Skin darkness correlated with attractiveness for natural images of Caucasian women (male Caucasian judges) and Asian men (male and female Asian judges). Manipulating darkness of facial images independently of colour had no effect on attractiveness. This suggests that darkness may correlate with some other attractive feature, rather than being attractive in itself. Results are partially interpretable in terms sexual dimorphism, western fashion for suntan, and the effect of multi-ethnic experience in changing populations.

***Cheater Detection on the Wason Task: Another Test of Dominance Theory vs. Social Contract Theory***  
**Stroub, Kori J. (College of William & Mary, [kjstro@wm.edu](mailto:kjstro@wm.edu)); Diekmann, Robert A. (College of William & Mary); Burkett, Brandy N. (University of California, Santa Barbara); Kirkpatrick, Lee A. (College of William & Mary)**

Two theories rooted in evolutionary psychology that attempt to explain the deontic effect observed in the Wason-task literature are Cosmides' social contract theory (SCT) and Cummins' dominance theory (DT). SCT posits that cheater detection is related to the problem of human cooperation via reciprocal altruism, whereas DT emphasizes the context of status hierarchies and predicts that cheater-detection effects will be moderated by the relative social rank of the parties involved. In an unpublished paper Burkett, Kurzban, and Kirkpatrick were unable to replicate the central findings of DT using several variations of Cummins' original research materials. The current study is designed to extend this research by using newly designed versions of a common Wason task in which both social contract and social rank are directly and independently manipulated, to provide a crucial test of competing predictions derived by DT and SCT.

***Looking for Ms. Right: Allocating Attention to Facilitate Mate Choice Decisions***  
**Suschinsky, Kelly D. (University of Lethbridge, [kelly.suschinsky@uleth.ca](mailto:kelly.suschinsky@uleth.ca)); Krupp, Daniel B. (McMaster University); Elias, Lorin J. (University of Saskatchewan)**

The human body provides information that may be used by receivers to make decisions about mate value. Thus, we hypothesize that the human mind is designed to selectively attend to this information when making mate choice decisions. We presented young men with three images of the same woman (six women in total) simultaneously, varying the waist-to-hip ratio (WHR) of the images while holding other traits constant. While participants chose their preferred image, we monitored visual fixations using an infrared eye-tracker. We found that participants focused their attention selectively on body regions that putatively provide reproductive information in a manner consistent with the research hypothesis: reproductively relevant body regions received the most visual attention; images with lower WHRs and reproductively relevant regions in images with lower WHRs received the most visual attention; and images with lower WHR sizes were the most attended to and the most preferred.

***Attractive Faces Are Not Always Average***

**Unger, Layla (University of Aberdeen, [U01LU5@abdn.ac.uk](mailto:U01LU5@abdn.ac.uk)); DeBruine, Lisa M. (Universities of St Andrews and Aberdeen); Jones, Benedict C. (University of Aberdeen); Little, Anthony C. (University of Liverpool); Feinberg, David R. (Harvard University)**

Although some researchers have proposed that attractiveness is simply a function of averageness, others have found that caricaturing highly attractive faces (increasing the distance between average and "attractive" shape) makes them mathematically less average but more attractive. A visual adaptation procedure, which has previously been shown to increase both preferences for and perceived normality of previously viewed face types, was employed to test whether facial attractiveness is dependent upon faces' proximity to average or their distance from average in the direction of "attractiveness". After exposure to attractive versions of individual faces, the highly attractive composite was rated as more normal, but less attractive. After exposure to unattractive versions of individual faces, this same composite was rated as less normal and more attractive, opposing the theory that face preferences are an artifact of general preferences for averageness and supporting the proposal that there are specific non-average characteristics that are particularly attractive.

***Sex, Cooperation and Prenatal Androgen: Sex-Cues Lead Men to Accept Unequal Pay***

**Van den Bergh, Bram (University of Leuven, [Bram.VandenBergh@econ.kuleuven.be](mailto:Bram.VandenBergh@econ.kuleuven.be)); Dewitte, Siegfried**

Three experimental studies demonstrate that "sex-cues" affect human decision making in ultimatum games. In the ultimatum game, two individuals divide a sum of money. The proposer offers a portion of the money to the responder. If the responder accepts the offer, the money is distributed in agreement with the proposer's offer. If the responder rejects the offer, neither player receives anything. Our experiments show that male responders are more likely to accept unfair offers made by proposers after exposure to lingerie or pictures of sexy women. Responders' digit ratios (a proxy for prenatal androgen exposure) moderate this main effect: Males with lower

digit ratios are more likely to reject an unfair split in neutral contexts, but more likely to accept unfair offers after a sex-cue.

***The Attractiveness of Self-Manipulated Waist-to-Hip Ratio***

**Vega, Sandra (Montclair State University, selfawareness@prodigy.net); Korievo, Amanda; Salotti, Dana; Keenan, Julian P.**

It is unclear if the WHR (waist-to-hip) ratio is an indicator of reproductive fitness. While data indicate that there may be a "universal" attraction to a given WHR, the debate remains as to its existence and specifics as an evolved mechanism. In the current study, we had participants manipulate their bodies, which were later rated by a separate group of subjects. It was found that males preferred the manipulated bodies, which tended towards a .7 ratio. Females, however, showed no such preference (all ratings were of female figures). These data support the argument that a .7 ratio may in fact be of evolutionary importance.

***Interracial Dating in a Homogeneous Society***

**Wehr, Paul A. (Hokkaido University, pwehr@lynx.let.hokudai.ca.jp); Kameda, Tatsuya**

Given that genetic heterozygosity enhances pathogen resistance, individuals in the EEA who were attracted to partners with phenotypic markers dissimilar to their own may have produced higher quality offspring. One way in which this desire for disparate markers might be expressed in contemporary humans is in a willingness to date interracially. Despite greater difficulties associated with long-term interracial relationships (different cultural or religious beliefs; language; discrimination), approximately half of all Americans surveyed in a recent study reported an interest in dating interracially. The current study investigated whether individuals living in a homogeneous society share a similar interest. Immigration policies in Japan have maintained a significantly homogeneous racial make-up, and access to interracial partners for Japanese is severely limited. Nevertheless, roughly half of our Japanese participants were interested in dating interracially. Results suggest that the desire for dissimilar phenotypic markers may be robust with regards to local heterogeneity.

***Late Pleistocene Climatic Variability and Hominid Cranial Capacity***

**Wolf, Pedro S.A. (University of Arizona, wolfp@email.arizona.edu)**

This study investigated the role of climatic variability on Hominid cranial capacity during the late Pleistocene, using data from the Vostok Ice Core and cranial capacity measurements from the anthropology literature dated between 270 and 10 thousand years ago. 134 distinct crania measures were collected from the literature. When there was more than one cranial capacity measurement of a cranium the mean was used in the analysis. A unit weighted factor of the isotope measurements was created. Then the mean and standard deviation of this unit weighted factor for the one thousand year period prior to the date given the crania in the anthropology literature was then calculated. These means and standard deviations were then used as variables in a series of hierarchical linear models. The analytical results are that climatic variability account for a substantial and significant proportion of the variance when it comes to increases in cranial capacity.

***Trust, Reciprocity, and Resources: Using Experimental Games to Understand Perspectives of College Students***

**Ziker, John (Boise State University, jziker@boisestate.edu); Harter, Kersti; Kennedy, Eric C.; Sweat, Skyler; Carpenter, Christopher**

Game theory contributes to evolutionary models of cooperation, the development of social norms and coalitions, bargaining, cheating, and monitoring. Following game theory models of cooperation, we conducted a series of experimental games at Boise State University in order to investigate student perspectives on trust, reciprocity, and common-pool resources. Introductory Anthropology students participated as research subjects. Participant choices were analyzed in light of independent data collected in the pre-game interview. Household size, self-reported payoffs to household cooperation (Likert scale), and age were among the most significant correlates of decisions, indicating the importance of micro-social environments on decision-making.

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## Thursday – Bodek Lounge, Rear:

***Intertemporal Choice and Social Cues***

**Aktipis, Athena C. (University of Pennsylvania, aktipis@psych.upenn.edu)**

The presence of social cues is arguably an important factor in decision-making in a variety of domains. Research has shown that the presences of face-like stimuli and other social cues can increase cooperation in a laboratory setting. The present study extends this approach, examining the effect of social cues (in the form of eye and

face-like stimuli) on future discounting as measured by the Hypothetical Money Choice Task. No overall effect is apparent; however, significant sex differences in the findings point to a potential evolutionary explanation drawing on reproductive decision making and mate choice.

***Facial Feature Manipulation: An Investigation of the Cross-Race Effect***

**Andrews, Jennifer J. (Central Michigan University, andre1jj@cmich.edu); Colarelli, Stephen M.; Otani, Hajime**

The common finding that people are better able to remember specific faces of people of their own race than other races is known as the cross-race effect (CRE). However little is known about which facial features are responsible for the CRE. Because the morphology of the nose is unique to some racial groups and maintains a stable shape as men and women age, we hypothesized that the nose may influence the CRE. By morphing the noses of African American and Caucasian stimulus faces, we investigated if the nose served as a cue influencing the CRE. Using a standard facial memory protocol, we presented 52 participants with target faces with and without morphed noses. A CRE was not found between the Caucasian and African American faces, but a high incident of false alarm rates occurred. However, we found a significant interaction between the face and nose factors, suggesting the nose may indeed play a role in the recognition of faces.

***MazeSuite: A Complete Set of Tools to Prepare, Present and Analyze Navigational & Spatial Evolutionary Cognitive Neuroscience Experiments***

**Ayaz, Hasan (Drexel University, ha45@drexel.edu); Levin, Sarah; Platek, Steven; Onaral, Banu**

MazeSuite is a complete set of tools that enables researchers to easily create and analyze 3D spatial and navigational experiments. MazeSuite can be used to design/edit 3D environments where subjects' performance is tracked. MazeSuite consists of three applications; an editing program (MazeMaker), a rendering module (MazeWalker), and an analysis/mapping tool (MazeViewer). MazeMaker is built using .NET architecture, which allows users to easily add objects (e.g., shapes, pictures) to an environment. MazeWalker is the presentation module that renders the map using industry-standard, OpenGL pipeline. Finally, MazeViewer can be used to do post-experiment analysis including analysis of time to maze completion, as well as plot subjects' course in the maze. MazeSuite has the capabilities of sending pulse-signals to physiological recording devices using standard computer ports. MazeSuite's 3 applications offer a unique and complete toolset for researchers who want to easily and rapidly deploy interactive 3D environments for research purposes.

***Human Self-Control as Instant Adaptation: Loss of Self-Control Results from a Generally Adaptive Coping Strategy***

**Bruyneel, Sabrina (Katholieke Universiteit Leuven, Sabrina.Bruyneel@econ.kuleuven.be); Dewitte, Siegfried; Geyskens, Kelly**

Human behavior is characterized by an impressive flexibility. Humans deploy behavioral strategies that override innate or well-learned behavioral programs, in which case they are said to exert self-control. Prior research documented the dramatic limitations of this human capacity: After exerting self-control, subsequent self-control performance deteriorates (labeled self-control depletion). We claim that this depletion effect is not as troublesome a phenomenon as is often advocated, but results from an instant adaptation strategy that helps people to cope with demanding tasks. Consistent with our instant adaptation hypothesis, we observed that as people engaged longer in a given self-control task, they became increasingly better at it (Study 1). In situations involving two subsequent self-control tasks, self-control performance decreased only when the second self-control task involved a different response conflict (replicating prior results) but improved when the second self-control task involved a similar response conflict as the first self-control task (Studies 2 and 3).

***The Sociology of R. A. Fisher*****Davis, Jeff (California State University, Long Beach, jdavis@csulb.edu)**

Fisher is widely known for his extraordinary contributions to population genetics and evolutionary biology. However, his sociological insights have received far less attention even though much of The Genetical Theory of Natural Selection is devoted to developing a theory of social selection and the evolution of human social organization. In this paper, I review Fisher's theoretical argument and the parameters of his model. I also elaborate some possible extensions to Fisher's model. In conclusion, I contend that Fisher's insights can form the basis of a fruitful theoretical research program in evolutionary sociology.

***Grapes in the Grapevine: Distinguishing for Different Types of Gossip Using an Adaptationist Analysis***  
**De Backer, Charlotte J. (University of California, Santa Barbara, charlotte.debacker@gmail.com); Nelissen, Mark (University of Antwerp)**

A general definition of gossip embodies so many different aspects that it might be better to make use of a classification system where well defined and significant different sub classifications of gossip are distinguished. Using an adaptationist analysis we distinguished for 16 different kinds of gossip that each has a different adaptive function. On a first classification level we distinguish for strategy learning gossip and reputation gossip. The first focuses on transmitted fitness-relevant behavior information and functions to vicariously gain experience at very low investment costs. Reputation gossip is information about the traits/behaviors attached to specific gossipees, and functions to teach and learn about the reputations of specific others and to manipulate these reputations. Both forms of gossip are further narrowed down according to more specific functional design.

***Involvement in Kin's Romantic Relationships: An Evolutionary Analysis*****Faulkner, Jason (University of British Columbia, jasonf@psych.ubc.ca); Schaller, Mark**

Drawing jointly on the logic of inclusive fitness and differential parental investment, we derived hypotheses about the extent to which individuals expend resources to maintain vigilance over the romantic relationships of their kin. We focused on three potentially-relevant variables: genetic relatedness, sex, and relationship status. To test these hypotheses, we conducted a study in which participants rated the extent that various kin are aware of, and express concern over participants' own romantic relationships. Results indicated that people are more vigilant of the relationships of close kin (compared to more distant kin), and are more vigilant of the relationships of female kin (compared to male kin). An interaction also emerged between sex and relationship status, suggesting that people are especially vigilant of female kin who are single (compared to female kin in committed relationships) and of male kin who are in committed relationships (compared to male kin who are single).

***Beliefs of Female U.S. Internet Users Concerning the Menstrual Cycle: A Possible Confound in Evolutionary Psychological Research?*****Fessler, Daniel M.T. (UCLA, dfessler@anthro.ucla.edu); Pillsworth, Elizabeth G.**

A considerable body of research tests adaptationist hypotheses by examining changes in women's preferences, desires, or behavior over the menstrual cycle. However, whether derived from scientific or folk sources, participants' beliefs concerning such changes constitute a potential confound in investigations of this type. To explore the extent to which women's beliefs about the menstrual cycle mirror scientific views on the subject, we conducted an Internet-based survey, querying U.S. participants (similar to those previously employed in our own and others' research) as to the timing of increases in conception risk, sexual desire, mood, flirtatiousness, appetite, etc.. Although most women understand the timing of conception risk, there is little consensus concerning many other issues. While investigators may be well-advised to measure relevant beliefs among their own subjects, our findings nevertheless provide preliminary grounds for concluding that most published menstrual cycle effects cannot be attributed to participants' conformity to preexisting beliefs.

***Interaction of Epistemic, Existential, and Ideological Motivations of Anti-Darwinian Cognitions*****Garvey, Kilian J. (The University of New England, kgarvey@une.edu)**

Following the outline of Jost's exploration of the basis of conservative political orientation, several original studies having to do with biological bases of cognitions associated with non-Darwinian explanations of life on Earth will be discussed. Two main neuropsychological attributes are hypothesized to lead to an incomplete assessment of epistemic, existential, and ideological complexity; (1) less efficient interhemispheric interaction and (2) overactive sympathetic nervous system reactions. Measurements associated with ontological hypothesis making include handedness, autonomic nervous system activity, right wing authoritarianism, tolerance of ambiguity, need for cognition, need for cognitive closure, fear and disgust, and suspiciousness and paranoia.

***Violence and Aggression in a Swinger Population*****Goindoo, Anthony (Florida Atlantic University, [invisus.ag@gmail.com](mailto:invisus.ag@gmail.com)); Beasley, Shanna; Mize, Krystal; Paff, Jessica; Shackelford, Todd**

Swingers are individuals in committed and invested relationships, who agree to mutually swap partners in an intimate and sexual manner. We predict that there should be some forms of mate-guarding and some levels of sexual jealousy that will be evident in swinger activities, even if the consent of both in-pair partners is given. Sexual jealousy and mate guarding behaviors have been shown to lead to violence and aggression. We propose that the swinger population, while having lower levels of in-pair mate guarding and sexual jealousy, may still display levels of in-pair violence and aggression related to their levels of sexual jealousy and mate guarding. These levels of violence and aggression may be lower in swinger populations than in non-swinger populations and should be evidenced by the types and quantity of mate guarding behaviors observed.

***The Evolutionary Cognitive Neuroscience of False Memories: A Transcranial Magnetic Stimulation Study*****Gorman, Jamie (Montclair State University, [selfawareness@prodigy.net](mailto:selfawareness@prodigy.net)); Keenan, Julian Paul**

False memories are typically thought to provide an adaptive function, though they can also be reproductively harmful to an individual. The proximate and ultimate processes of false memories remain unknown. While previous studies have attempted to examine the neural correlates of false memory through patient studies and various neuroimaging techniques including PET, ERP, fMRI and event-related fMRI, no research has utilized transcranial magnetic stimulation (TMS) to study the mechanisms underlying false memory. We examined regions that may be tied to a greater network of self and Theory of Mind (ToM). These data demonstrate that false memories may be related to a general cortical network involving higher-order processing. Such a network may provide an adaptive function in sometimes providing false modeling of mental states, including the self.

***Generalized Reciprocity Norm as an Adaptive Strategy Among Lower-Working Class Citizens*****Inukai, Keigo (Hokkaido University, [inukai@lynx.let.hokudai.ac.jp](mailto:inukai@lynx.let.hokudai.ac.jp))**

Managing various life uncertainties was a major adaptive challenge in the EEA and continues to be a problem in modern societies. Kameda, Takezawa, & Hastie (2005) argued that people develop strategies to deal with this problem contingent on their access to material resources. Compared to middle-upper class individuals, lower-working class people often cannot accumulate supernumerary personal assets. It is argued these people may have developed various social institutions as alternative solutions to uncertainty, including norms of generalized reciprocity. To address this question, we conducted surveys with students in 7 Japanese universities. A hierarchical linear regression analysis revealed that, when controlling for the university factor, individual SES indices (parents' occupation, education, and income) were significant predictors of the students' endorsement of a generalized reciprocity norm. As expected, students from lower-working class families endorsed the norm more vigorously than those from middle-upper class families, and expressed stronger emotional responses to norm violations.

***An Optimal Foraging Approach to Hunting with Dogs in Nicaragua*****Koster, Jeremy M. (Pennsylvania State University, jmk458@psu.edu)**

Previous research suggests that human hunters generally make decisions that conform to those predicted by optimal foraging theory. In most studies, however, hunters use projectile weapons and unambiguously identify potential prey. This poster presents results of an observational study in the Bosawas Reserve, Nicaragua, where most hunters rely on dogs to locate and corral their prey. However, while dogs can be more effective than their human counterparts at locating certain types of prey species, hunters are initially uncertain about the types of prey that their dogs have corralled. Only after catching up to their dogs can hunters identify with certainty the prey species and evaluate the difficulty of continuing the pursuit, as prey are often located in deep underground burrows or tree falls. The implications of such "recognition constraints" are considered from an optimal foraging perspective.

***Cyclic Shifts in Jealousy Across the Menstruation Cycle*****Lyons, Jason C. (Tarleton State University, mellgren@uta.edu); Mellgren, Roger L. (University of Texas at Arlington)**

Distress due to physical and emotional infidelity has been studied in both men and women. The findings suggest an evolved adaptation in which men are more likely to show distress towards physical infidelity while women are more likely to show distress towards emotional infidelity. Due to evidence of shifts in female adaptations across the menstruation cycle (i.e., face preferences) this study examines reports of physical and emotional distress by women across 4 stages of the menstruation cycle (menstrual, follicular, ovulatory, and luteal) for both heterosexual and homosexual incidents of infidelity. The results of a forced choice test showed no significant changes across the menstrual cycle. However, reductions in distress to emotional infidelity and increases in distress to physical infidelity during the ovulatory phase of the menstruation cycle were observed. For forced choice situations involving homosexuality, physical infidelity was significantly more distressing across all 4 stages of the menstruation cycle.

***A Bias for Social Information in Human Cultural Transmission*****Mesoudi, Alex (University of Missouri, mesoudia@missouri.edu); Whiten, Andrew (University of St Andrews); Dunbar, Robin (University of Liverpool)**

The "Machiavellian intelligence" or "social brain" hypothesis posits that primate intelligence evolved in response to social selection pressures, such as keeping track of third-party conspecific relationships, rather than non-social selection pressures such as finding food or using tools. One potential consequence of this is that human cultural transmission may be biased towards the transmission of social information over equivalent non-social information. This was tested experimentally by passing social and non-social information along multiple chains of participants. Experiment 1 found that gossip, defined as information about intense third-party social relationships, was transmitted with significantly greater accuracy and in significantly greater quantity than equivalent non-social information concerning individual behaviour or the physical environment. Experiment 2 replicated this finding controlling for narrative coherence, and additionally found that information concerning everyday non-gossip social interactions was transmitted just as well as the intense gossip interactions, supporting the operation of a social bias in cultural transmission.

***On the Moral Kinship of Humanized Chimeras: A Plea for "Capacity Dignity"*****Ravelingien, An (Ghent University, an.ravelingien@ugent.be); Braeckman, Johan**

Ethical controversy has arisen surrounding the potency of advanced human-to-animal chimerism technology. The fear exists that animals will be created which are "human" enough to challenge the concept of "human dignity". Limiting chimerism experiments on the basis of whether or not it undermines or challenges human dignity implies a clear demarcation of those characteristics which are typically and importantly human. Our evolutionary ties with other animals seem to annul attempts to set out the uniquely human properties to which human dignity may be attributed. As a consequence, it has been suggested that the attribution of a particular moral status to humans cannot transgress an intuitive basis. We will argue that the difficulties inherent in the notion of human dignity lie not in the impossibility to acquire a list of uniquely human properties, but rather in the difficulty to demonstrate the relevance of these properties, and particularly of their being human.

***The Evolution of Metaphor: Evolutionary Primitives as the Source of Metaphor Source Domains***  
**Robins, Shani (Stanford University & The Institute of Transpersonal Psychology, kurzban@psych.upenn.edu); Kurzban, Robert (University of Pennsylvania)**

We seem to understand abstract concepts such as knowledge, argument and life via metaphorical mappings from more concrete domains of experience, such as vision, movement, or manipulating objects. For example, we implicitly evoke a LIFE IS A JOURNEY metaphor in stating that "we're at a crossroads" or "he's reached his final destination" and an ARGUMENT IS WAR metaphor in stating that "your claims are indefensible," or "he attacked and shot down my argument." Linguist Lakoff argues that it is not a coincidence that our lexicon contains such statements. The conceptual structures from the source domains of a JOURNEY and WAR are used to organize the conceptual structures of the target domains of LIFE and ARGUMENT respectively. We posit that it is not a coincidence that these source domains are used. Such ubiquitous source domains are evolutionary primitives that provide the original, core structures upon which to build and transfer concepts.

***Investigating Evolutionary Theories of Altruism Using Organ Donation Materials: Does One Size Fit All?***  
**Scott, Stephen H. (Appalachian State University, ss39884@appstate.edu); Rudine, J.L.; Rocheleau, Courtney A.; Waring, Douglas A.**

Approximately 18 people die daily, marooned on an organ recipient waiting list currently at 91,500+ and increasing (UNOS, 2006). Simply increasing awareness has had limited impact on donation rates, suggesting a need for alternative approaches. The current research examines this problem using three established evolutionary theories of altruism: Inclusive Fitness, Reciprocal Altruism, and Cultural Altruism. The effects of a pro-organ donation brochure on willingness to donate were tested using a 5 (familial, reciprocal, cultural, generic cultural, or control) by 2 (factual, emotional) between-subjects design. Significant differences between the respected levels of altruism and the control were observed. Post hoc analyses show an effect of theory-item correspondence (e.g., inclusive fitness-framed brochure had greatest effect on questions regarding family; reciprocal-framed brochure had greatest effect on personal behaviors). Further implications for research will be discussed, including using a cloze task comprehension test to further assess differences between these accepted theories of altruistic motives.

***Why Whine?***

**Sokol, Rosemarie I. (Clark University, rsokol@clarku.edu); Thompson, Nicholas S.**

Whining is an excellent vocalization for regulating the proximity of attachment partners. Children's whines are not only difficult to ignore, they also typically organize a response, often in the favor of the child. Whining appears to belong to a suite of attachment getting vocalizations, along with infant cries and motherese. For the present study, participants were presented with the task of shadowing a story spoken in a neutral tone of voice, while a second story played to the other ear. This second story was occasionally interrupted by a person either whining or speaking in motherese. The number of errors made during these times was recorded, as well as participant's physiological arousal. Participants showed increases in skin conductance when listening to whines and motherese as compared to neutral speech. Further, they more often reported hearing the whine than the motherese, one indication that adults are designed to attend to whines.

***Extending Alexander's EDSC Model: Information Behavior***

**Spink, Amanda H. (Queensland University of Technology, ah.spink@qut.edu.au); Narayan, Bhuvan**

Alexander's Ecological Dominance and Social Competition (EDSC) model currently provides the most comprehensive overview of human traits in the development of a theory of human evolution and sociality (Alexander, 1990; Finn, Geary & Ward, 2005; Irons, 2005). His model provides a basis for explaining the evolution of human socio-cognitive abilities. Our paper explores the extension of Alexander's model to incorporate the human trait of information behavior in synergy with ecological dominance and social competition as a human socio-cognitive competence. This paper discusses the various interdisciplinary perspectives exploring how evolution has shaped information behavior and why information behavior is emerging as an important human socio-cognitive competence. This paper outlines these issues, including the extension of Spink and Currier's (2006a,b) evolution of information behavior model towards a more integrated understanding of how information behaviors have evolved (Spink & Cole, 2006).

***Women and Aggression***

**Stewart, Tracy L. (TracyStwrt@aol.com)**

In Evolutionary Psychology, much has been written about male competition and the fact that men typically compete with each other directly and physically. Throughout evolution, it has also been essential for females to compete with each other for the mate with the most resources and then continue to compete with each other to ensure that one's mate does not stray or that the opportunity to win other mates with more resources is not lost.

With this in mind, a closer look at how women have adapted to the reality of inter-sex competition is necessary. Although research from diverse fields has recognized that there is an element of primarily indirect, relational aggression involved in female competitive behaviors, an evolutionary perspective is needed to explain how such aggression has become adaptive and why aggression is manifested differently in the two sexes. This paper intends to offer such an explanation based on research from developmental psychology, evolutionary psychology, sociology, and neuroscience.

***Understanding the Facilitation Effects of the Wason Selection Task: A Meta-Analysis of the Abstract Logic and Thematic Content Studies***

**Wasieleski, David M. (Duquesne University, wasieleski@duq.edu); Sivasubramaniam, Nagaraj**

The Wason selection task has been utilized in a multitude of fashions from its inception, and this meta-analytic review is necessary in order to determine which manipulations of the task have the most profound effects on the selection of p and not-q. We examined over 150 studies conducted between 1968 and present which have used this instrument, and tested for the moderator effects of facilitation on task accuracy. Evolutionary psychologists have used this instrument to test one of their fundamental hypotheses that detection of cheaters on social contracts is enabled by the presence of intent to cheat and benefit derived by cheating. We evaluated studies which framed the conditional rule in terms of a social contract against abstract logic tasks, pragmatic reasoning schemas, and descriptive rules. In addition to computing cumulative effective sizes, we will also test for effects of moderators on the choice of correct cards, using regression analysis.

***The Universal Quest for Status: Implications for Health Care***

**Welch, W. Pete (w.pete.welch@gmail.com)**

Status-seeking behavior is universal across human cultures, presumably because dominant individuals have greater access to mates and food. Using this EP finding, this poster offers a theoretical foundation for a number of apparently unrelated phenomena associated with health care (a major and continuing public policy issue). Prominent among these are the (perceived) shame associated with seeking treatment for certain conditions (e.g., mental health and AIDS), the stigma associated with enrollment in Medicaid and other social welfare programs, physician anger over the shame of malpractice suits, and the need for providers to be respectful toward patients. The economic model of the desire for material goods dominates public policy analysis. However, a status model, derived from EP, yields insights into a range of public policy issues. (See the work of Robert Frank, a plenary speaker.)

***The Influence of Age in Marriage Dissolutions in Natal, RN, Brazil***

**Yamamoto, M. Emilia (Universidade Federal do rio Grande do Norte, Brazil, emiliayamamoto@gmail.com); Lopes, Nivia A.**

Marriage represents a compromise between male and female strategies. When sexual strategies conflict, misunderstandings occur and may lead to separation. The purpose of this investigation was to analyze the influence of age in marriage dissolutions. We examined adversarial marriage dissolution files from three family jurisdictions in Natal, RN, Brazil. We divided the couples in five age categories. Results showed that a similar proportion of women from all age classes were responsible for divorce applications, except for women over 46, which were less represented. An inverse trend was observed for men, with the higher proportion of applications by older men. We also examined couples with an age difference of two years and more. Younger spouses, both male and female, were significantly more responsible for divorce applications than their older partners. We suggest that age and age difference in relation to the spouse are important influences in marriage dissolutions.

## Friday – Reading Room:

### ***Mate Guarding and Sexual Jealousy in Swingers***

**Beasley, Shanna L.** (Florida Atlantic University, [Stabast@hotmail.com](mailto:Stabast@hotmail.com)); **Mize, Krystal; Paff, Jessica; Goindoo, Anthony; Shackelford, Todd K.**

Swingers engage in behavior that includes exchanging partners in a sexual and intimate fashion. If the trading of partners is openly accepted within a couple, then there should not be any significant signs of sexual jealousy or mate guarding. This is in conflict with evolutionary psychological meta-theory, which states that there will be sexual jealousy and mate guarding in invested relationships in which resources are exchanged. We propose that all individuals are susceptible to sexual jealousy and will show signs of mate guarding within invested relationships. We predict that although swingers will display some sexual jealousy and mate guarding, these levels will not reach the same levels as an equivalent, non-swinger population and may be much lower.

### ***Mechanisms that Minimize Self Semen Displacement***

**Bordador, Jeremy** (State University of New York at Oswego, [rburch@oswego.edu](mailto:rburch@oswego.edu)); **Burch, Rebecca L.**

If the human penis evolved to displace semen left by other males, what is to prevent this adaptation from displacing the male's own semen? Mechanisms identified that appear to preclude or at least diminish self-semen displacement include the following post-ejaculatory changes: 1) penile hypersensitivity, 2) loss of an erection, and 3) the refractory period. Males report penile hypersensitivity after ejaculation and the majority of both males and females report loss of erection shortly after ejaculation. As another adaptation to self-semen displacement, males who do not withdraw and continue to thrust past the point of ejaculation show post-ejaculatory thrusting that is shallower and less vigorous. The vast majority of males and females reported that thrusting became noticeably shallower and less intense following ejaculation.

### ***Signs of Love or Signs of Lust? The Value of Body-Modifications as Mate Attraction Cues***

**Bromley, Melanie L.** ([mlbromley@gmail.com](mailto:mlbromley@gmail.com))

It was shown in our previous study that women with certain body-modifications (i.e., lower-back tattoos) were more likely than women without any body-modifications to engage in a one night stand. This leads us to question whether certain types of body-modifications are intended as indicators of short-term sexual availability. If body-modifications are signals, it is useful then to distinguish between a sender's motivation for communicating and a receiver's corresponding reaction to the content of the signal. Our analysis revealed that both women's and men's beliefs about the value of body-modifications shifted as a function of short-term versus long-term sexual strategies. Therefore, by examining a male's discrimination between female displays for short-term and long-term mating opportunities and a female's perception of the value of the display as such, we were able to identify the direction and strength of body-modifications as applicable cues within the realm of sexual strategy and mate attraction behavior.

### ***The IntraPair Copulation Proclivity Model***

**Burch, Rebecca L.** (State University of New York, Oswego, [rburch@oswego.edu](mailto:rburch@oswego.edu)); **Gallup, Gordon G.**

The effectiveness of semen displacement as means of competing for paternity after an extra pair copulation is critically related to time since the extra-pair encounter. In order to substitute their semen for those of their rivals, we expect resident males to show a high propensity to initiate relatively immediate copulation with their partner under conditions in which they have reason to question her fidelity. However, if females (consciously or not) engage in extra-pair copulations as a means of using high quality/genetically different males to cuckold their mates, then because of sperm competition and the potential for semen displacement, we expect females to avoid copulating with their in-pair partners soon after an EPC. Females should attempt to avoid sex with committed partners for a time following infidelity to maximize the likelihood of impregnation by the extra-pair male. Data supporting this model and implications for future research will be discussed.

### ***When Intrasexual Collaboration Overrides Intrasexual Competition***

**Buunk, Abraham P.** (Royal Netherlands Academy of Arts and Sciences and University of Groningen, [a.p.buunk@rug.nl](mailto:a.p.buunk@rug.nl)); **Massar, Karlijn**

This study tested the hypothesis that to attract potential mates, males will, more than females, collaborate in acquiring mates, and will therefore choose more physically attractive and dominant companions in a mating context than in a neutral context. Overall, the findings supported this prediction. In the mating as compared to the neutral context, men, but not women, found the attractiveness of a companion more important, preferred a more socially dominant companion, and found the social dominance of a companion more important. Males as well as females preferred in general companions who were less attractive than themselves, but preferred a more

attractive companion in a mating than in a neutral context. The effects for social dominance were in general more pronounced among individuals high in sociosexuality.

#### ***Are Polyandrous Women Like Polygynous Men?***

**Clark, Andrew P. (University of Bristol, A.P.Clark@bristol.ac.uk)**

Although men and women both vary with respect to monogamous/polygamous inclinations, as indexed by the Sociosexual Orientation Inventory (SOI), the implications of this variation may differ. That is, the variation in mating tactics underlying SOI variation is not necessarily equivalent for each sex. I examined the relationships between scores on the SOI, and scores on the Single-Item Self-Esteem scale (SISE), the Self-Perceived Mating Success scale (SPMS), and a Limerence scale. Although SISE and SPMS scores were related to each other in both men and women, SOI scores were related to SISE and SPMS scores only in men (both positively), suggesting that SOI variation may be a good assay of tactical variation in males but not in females.

#### ***I'm Happy that He Failed: Examining the Events that Trigger Schadenfreude Within Same-Sex Friendships***

**Colyn, Leisha A. (Bowling Green State University, akg@bgsu.edu); Gordon, Anne K.**

Friends provide many benefits. However, same-sex friends may also compete with us for mates. Schadenfreude is the feeling of pleasure that occurs when another person experiences a misfortune. We view schadenfreude as a psychological mechanism designed to help us deal with the problems associated with competition. In this research, we focus on competition between same-sex friends. Undergraduate participants described a time when they experienced schadenfreude vis-a-vis a same-sex or other-sex friend and completed a survey regarding the types of events that would be most likely to cause them to feel schadenfreude within their friendships. We expected men to feel schadenfreude in their same-sex friendships over specific events that caused a loss to the friend's mate value, such as a sports defeat or loss of status. Conversely, we expected women to experience schadenfreude when their same-sex friends experienced a decrease in physical attractiveness or reputational damage. Results generally supported these predictions.

#### ***Blackmailing: A Keystone Strategy in Stabilizing Human Mating System***

**Damle, Anuja S. (anujadamle@rediffmail.com); Watve, Milind G.**

In species with biparental care, faithful parenting can be considered as cooperation and extra-pair mating or cuckoldry as defection. Mate guarding has evolved as a counterstrategy in biparenting animals but in humans, language and gossiping can lead to cooperative mate guarding or social policing and punishment. However, this system can be invaded and destabilized by second order free riders, i.e. individuals that do not contribute to policing but gain from it. We suggest that opportunistic blackmailing can give direct returns on investment and thus stabilize policing. Hence, a stable or stably oscillating polymorphism can result with obligate monogamy as one of the dominant traits. In the absence of blackmailing obligate monogamy becomes extinct. Although the frequency of blackmailing events remains low, it can act as a keystone to stabilize social and genetic monogamy. The model explains both intra and inter-gender variability in mating strategies in humans.

#### ***Big Pimpin' and Payin' My Bills: Hip-Hop and Evolved Psychological Sex Differences***

**Davies, Alastair (Florida Atlantic University, adavies1@fau.edu); Shackelford, Todd K.**

"Can you pay my bills? Can you pay my telephone bills? Do you pay my automob' bills? If you did, then maybe we could chill. I don't think you do. So, you and me are through." These lyrics from a female hip-hop group, illustrate women's hypothesized evolved preference for men with economic resources. I argue that, due to sexual selection, men and women have evolved different psychologies in a number of areas, related primarily to intra-sexual competition for access to mates and to inter-sexual selection for mates. I contend that the verbal expression of these different psychologies is, however, sometimes restricted by rules of "polite" society and by political correctness but that such restrictions are less prominent in some areas of hip-hop culture. I, therefore, quote hip-hop lyrics to provide a window onto several hypothesized evolved psychological sex differences.

#### ***Testosterone and Sexual Jealousy***

**Deditius-Island, Heide K. (Pacific University, allen.szalda-petree@umontana.edu); Szalda-Petree, Allen D. (University of Montana); Zava, David (ZRT Laboratory)**

Given the link between aggressive behavior, testosterone and cortisol, it was hypothesized that serum and salivary testosterone and cortisol would be predictive of scores on measures of sexual jealousy, multidimensional jealousy, aggression, and passionate love. The results partially supported the first hypothesis testosterone was positively correlated at the .05 level with the behavioral component of sexual jealousy, the cognitive component of multidimensional jealousy. Bioavailable testosterone was unrelated to passionate love or aggression. Further there was no predictive relationship between cortisol, sexual or multidimensional jealousy, passionate love or aggression. An exploratory investigation of predictive traits from the five factor personality model with

testosterone and cortisol yielded positive correlation between testosterone and fantasy and a negative correlation with components of neuroticism: anxiety, angry hostility and depression. Cortisol was negatively correlated with conscientiousness, altruism, activity, competency, order, and modesty.

#### ***Mating in the Modern Era***

**Jonason, Peter K. (New Mexico State University, peterkarljonason@yahoo.com); Li, Norm (University of Texas at Austin)**

Through the use of modern technologies such as phones, email, text messaging, instant messaging, and two-way pagers, individuals are able to make contact with each other with greater ease than ever before. Utilizing this technology, young adults are engaging in a new type of relationship on college campuses and that entails low levels of emotional or romantic commitments but tends to last longer than the typical short-term tryst or one-night stand. These relationships tend to be recurring low-investment sexual relationships. The current study is a descriptive project that begins to examine the use of modern communication technologies to initiate sexual liaisons. Individuals reported the amount of contacts made and received, the time of day they send or receive such requests, the relative mate-value of the rejector or acceptor of such contacts, and demographic information. Subjects also qualitatively reported their motivations to engage in such a relationship.

#### ***How Reproductive Strategy and Attractiveness Impacts Reactions and Behavioral Intentions in Response to Sexual and Emotional Infidelity***

**Jones, Daniel N. (University of Arizona, jonesdn@gmail.com); Figueredo, Aurelio J.; Dickey, Erin D.; Jacobs, William J.**

We examined how Mating Effort, Mate Value, and Sex would impact how bothered an individual reported being in response to sexual and emotional infidelity, the negative emotions they reported that they would experience, and their reported behavioral intentions. In addition to replicating more familiar sex differences in jealousy, we found that individuals higher in Mating Effort were more bothered by sexual infidelity. We found this effect using both forced choice and Likert scale measures. Higher Mating Effort also predicted greater intention to engage in negative behaviors in response to infidelity in general and being both more tempted and more likely to respond to any infidelity with negative behaviors. We discuss the implications of the reported impact of individual differences in reproductive strategy on romantic jealousy, the importance of controlling for the collinearity between reactions to sexual and emotional infidelity, and the need for addressing related methodological issues within jealousy research.

#### ***Sex Differences in the Nature of Jealous Interrogations***

**Kuhle, Barry X. (BarryKuhle@gmail.com); Laguna, Kerrie D. (Lebanon Valley College); Schmitt, David P. (Bradley University); Good, Roseauna G. (Lebanon Valley College); Leo, Jennifer L. (Lebanon Valley College); Davis, Kathy D. (Lebanon Valley College)**

Upon discovering a romantic partner's infidelity, most men and women would have many questions for their partner. However, the types of questions men and women ask should differ due to the different costs sexual and emotional infidelity historically posed for each sex. As such, we hypothesize that humans have sex-differentiated design features dedicated to interrogating an unfaithful partner. In Study 1 (N = 69), participants were asked to define what it means for a serious romantic partner to be unfaithful. In Study 2 (N = 113), participants listed questions they would ask a partner upon discovering that he/she was unfaithful to them. In Study 3 (N = 103), participants rated how likely they would be to ask various questions of a recently unfaithful partner. Discussion will focus on (1) sex differences in subjective definitions of unfaithfulness and (2) sex differences in the type of questions posed to an unfaithful partner.

#### ***No Effect of Marriage or Fatherhood on Salivary Testosterone Levels in Bangladeshi Men***

**Magid, Kesson S. (University College London, k.magid@ucl.ac.uk); Chatterton, Robert T. (Northwestern University, Chicago); Ahamed, Farid U. (Chittagong University, Bangladesh); Bentley, Gillian R. (University College London, UK)**

A growing body of data suggest an association between salivary testosterone in human males and pair bonding and/or parenthood. However, the bulk of these studies investigated North American males. In a preliminary study of 42 men aged 19-59 years resident in Sylhet, NE Bangladesh, an ANCOVA, controlling for age, failed to reveal significant effects of parity (0-8 children) or marriage (14 married, 28 unmarried) on morning, evening, or pooled salivary testosterone levels. Our findings may relate to cultural issues relevant to Bangladeshi males such as arranged marriages and low rates of premarital sex. Future studies will examine whether the contrasting social environment of second generation migrant males in London UK differ from the results for Bangladeshi residents.

***"Familiarity Breeds Sexual Contempt": Do Childhood Incest-Avoidance Mechanisms Impair Adult Sexual Relationships?***

**Newlin, David B. (RTI International, [dnewlin@rti.org](mailto:dnewlin@rti.org)); Schap, Joseph R. (University of Baltimore); Strubler, Kevin A. (Towson University)**

Incest has clearly deleterious genetic and social effects, yet selfish gene theory (Dawkins, 1976) has the inherent contradiction that incest is the most direct way to pass on one's (selfish) genes. We propose that mechanisms of incest-avoidance, such as childhood cohabitation with siblings and observing care of a younger sibling (Lieberman et al., 2003), are expressed as "familiarity breeds sexual contempt". This psychobiological mechanism may interfere later with long-term sexual relationships among biologically unrelated individuals. Secondary analyses of the Laumann et al. (1994) sex survey to determine the effects on adult sexual relationships of having had a younger or older opposite-sex sibling (compared to those with only same-sex siblings or with none) partially confirmed the hypothesis among men but not women. Alternative interpretations are considered. We will attempt to replicate these tentative findings in the original Kinsey surveys (1948; 1953) since the age of the data should not affect these hypotheses.

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**Friday – Hall of Flags, Balcony:*****Testing Hypotheses for Adaptation with Cross Cultural Data***

**Borgerhoff Mulder, Monique (University of California, Davis, [mborgerhoffmulder@ucdavis.edu](mailto:mborgerhoffmulder@ucdavis.edu)); Nunn, Charles L. (Max Plank Institute); Langley, Sasha (University of California, Berkeley)**

Evolutionary anthropologists increasingly apply phylogenetic comparative methods to test adaptive hypotheses for crosscultural variability in behavior, traditions, and material artifacts. This is because, like biologists, they are concerned with the lack of independence among samples. Given the potential for horizontal transmission of cultural traits among human societies, we question the appropriateness of applying phylogenetic comparative methods to the analysis of cultural traits. We develop a spatially explicit computer simulation model to investigate trait evolution in relation to phylogeny and geography under different levels of horizontal transmission. Our results reveal that independent contrasts are sensitive to increasing rates of horizontal transmission, that Mantel tests fail to cleanly discriminate between datasets characterized by different levels of horizontal and vertical trait transmission, and that partial Mantel tests do not produce markedly improved statistical performance when testing for associations among traits. Our simulations highlight the importance of reconsidering how we analyze cultural macroevolutionary patterns.

***Facial Expression: The Effect of the Smile in the Psychological Perception of Delinquents***

**Freitas-Magalhaes, A. ([fm@ufp.pt](mailto:fm@ufp.pt))**

Criminals who smile are judged more favorably and less responsible than those who have neutral expressions, an effect more pronounced for women than men. 420 Portuguese participants (18-70 yrs) judges the smile of the criminals on the Smile Perception Scale (SPS) (Freitas-Magalhães, 2003). Results showed that women judged the targets more favorably and less responsible independent of age and sex. The effect of the smile was attenuated in the case in which the crime was a serious one.

***Love as a Commitment Device: Evidence from Behavioral and Lexical-Decision Measures***

**Galperin, Andrew (UCLA, [andrew\\_galperin@yahoo.com](mailto:andrew_galperin@yahoo.com)); Laird, Kelsey; Gonzaga, Gian; Haselton, Martie**

We hypothesize that feelings of love function to facilitate commitment to one's romantic partner. We induced either love or sexual desire for the current partner in participants and then asked them to suppress the thought of an attractive other, in order to produce a paradoxical rebound effect (more thoughts). Preliminary behavioral data from Study 1 show that even after suppression, participants in the love condition kept a greater social distance between themselves and the attractive other than did participants in the sexual desire and control conditions. In Study 2, we test the prediction that participants in the love condition will show faster recognition of commitment-related words in a lexical decision task. In both studies, we also expect self-reports of love, but not sexual desire, to positively correlate with the primary measure of commitment. These results would suggest that love evolved to serve a domain-specific function as a commitment device.

***Gene-Culture Coevolution of Human Sympathy: A Hypothesis***

**Kawakami, Yumi (Waseda University, [togawa@waseda.jp](mailto:togawa@waseda.jp)); Togawa, Tatsuo**

Strong sympathy for the suffering of others is ubiquitous among people from different cultural backgrounds, and may therefore be a genetic character. On the other hand, strong sympathy for other individuals is uncommon among non-human animals, and may therefore be a character unique to humans. When humans acquired culture,

it became possible for them to pass knowledge on to their descendants. At that stage, inherited knowledge would have been learned more effectively if it prompted a strong emotional response, almost equivalent to that evoked by personal experience. Thus, strong emotional reactions, such as sympathy for the suffering of others, would have evolved together with the development of culture. It is proposed that humans acquired the propensity to feel strong sympathy for others, or even for a character in a story, through gene-culture coevolution. It will be shown that altruistic behavior, with no expectation of return, can be explained by this hypothesis.

#### ***Cognitive Adaptations for Foraging: Female Attentional Bias for Plant Resources?***

**Krasnow, Max M. (University of California, Santa Barbara, krasnow@psych.ucsb.edu); Truxaw, Danielle (University of California, Santa Barbara); New, Joshua (Yale University); Gaulin, Steven J. (University of California, Santa Barbara)**

Previous research has demonstrated a female advantage in memory for resource locations, supporting the hypothesis that some sex differences in spatial cognition can be attributed to selection resulting from an ancestral sexual division of labor. Evidence that resource nutritional quality is positively related to location memory provides convergent evidence that the mechanisms responsible are indeed adaptations for foraging. The focus of the current research is to localize the source of this sex difference. In the current study, we briefly exposed participants to task-irrelevant images of "fruit on the tree" and other categories and tested their incidental memory for the identity and location of these images. If the adaptation creates a bias in the amount of mandatory attentional processing applied to the category of plant resources, we should find a female advantage in memory for identity and location information specifically for the fruit category.

#### ***fNIRs, Mazes, and Spatial Cognition***

**Levin, Sarah L. (Drexel University, sarahdrexel@gmail); Krawczyk, Malgorzata; Ayaz, Hasan; Platek, Steven**

Sex differences in spatial cognition may have evolved from evolutionary pressures for sex-specific neurocognitive capacities. Males excel at navigational and rotational spatial tasks, while females excel at object location and spatial working memory tasks (SWM). Studies found that males use more mileage estimates and cardinal directions and perform better on mazes. Females tend to remember more landmarks. The IFG is implicated in SWM, while the HE/RA model suggests the LFL as implicated in encoding and RFL in retrieving spatial episodic information. The gender differences in performance and neural activation of spatial abilities were researched using a 3-dimensional maze program in which objects were manipulated as well as the functional near infrared spectroscopy (fNIRs). We analyzed male and female navigational abilities in mazes with and without landmarks. Our results showed that males performed better than females, who used landmarks to complete mazes. The neuroimaging data from the fNIRs is also discussed.

#### ***The Evolutionary Theory of Jealousy: A Cross-Cultural Test***

**Mellgren, Roger L. (University of Texas at Arlington, mellgren@uta.edu); Hromatko, Ivana (University of Zagreb); Mann, Martha A. (University of Texas at Arlington)**

The two alternative forced choice method was used to assess how upset males and females were in the sexual or emotional infidelity of their mate with either a same sex person (homosexual relationship) or an opposite sex person (heterosexual relationship). A checklist of emotions was also given to the subjects to assess in more detail their feelings about the infidelities. In both the US and Croatia females showed a strong tendency to be upset by the emotional infidelity in the heterosexual case, but a complete reversal to the sexual infidelity in the homosexual case. Males were more upset by the sexual infidelity than females in the heterosexual case, but less upset by the sexual infidelity than the females in the homosexual case. Self reported emotions revealed anger, disgust and sadness to differentiate the feelings of the subjects to the different situations.

#### ***Mother and Mating: Female Sexual Motivation***

**Nagoski, Emily (Indiana University, enagoski@indiana.edu)**

The idea that women are sexually "choosier" than men is as old as sexual selection theory. Darwin himself and his contemporaries proposed that women are "coy." The standard, superficial description of women as choosy while men are promiscuous not only fails to account for the enormous intrasexual variability in sexual motivation, it also ignores a great deal of psychophysiological evidence about women's sexuality. This poster points out some basic misconceptions in evolutionary psychology about women's sexual motivation and describes a theoretical frame that accounts for the social and parenting functions of sex, intrasexual and intersexual variability, and fundamental theoretical issues in sexual motivation. Based on the Dual Control Model of Sexual Response, this framework takes careful account of psychophysiological research on men's and women's sexual response.

***The Use of Movie Remakes in the Comparative Study of Emotional Expressions in Different Cultural Backgrounds*****Ozawa, Noriko (Waseda University, n\_ozawa@fuji.waseda.jp); Togawa, Tatsuo; Suzuki, Masao**

Movie remakes produced in different countries allow emotional situations to be analyzed in different cultural contexts. We attempted to compare facial and bodily expressions in movie remakes and presented preliminary results at the last conference. However, the number of movies analyzed was small and the evaluation of cultural differences was relatively subjective. In the present study, we conducted an objective comparison in which image pairs of facial and bodily expressions from original and remake movies were analyzed using a questionnaire of 125 college students. The results confirmed that (1) facial expressions associated with each of six basic emotions is almost the same in different cultural contexts, although (2) the intensity of these expressions is different, and (3) there are significant differences in the bodily expressions associated with each basic emotion. The results suggest that movie remakes can be valuable artifacts for studying emotional situations in different cultural contexts.

***The Implicit Use of an Appetitive Motivational System in Commercial Advertising*****Poels, Karolien (Ghent University, karolien.poels@ugent.be); Dewitte, Siegfried (Catholic University of Leuven)**

We explore the tight linear relation between pleasure and arousal reactions to commercial ads, which we observed in earlier studies using the visual self-report measure SAM. In two studies we test the reliability of this linear relation, and its robustness by extending it to a varied sample of commercial ads (gender specific ads in study 1 and awarded versus non-awarded ads in study 2). Our results show that the linearity between pleasure and arousal reactions to ads is indeed reliable and robust. Similar research on various stimuli (e.g. pictures, sounds, words, odors) has revealed that emotional reactions to pleasant stimuli are organized around a universal and adaptive "appetitive motivation". This appetitive motivation is activated in context enhancing survival, e.g. care-giving, eating, and other inviting contexts. We argue that the appetitive motivation reflects an implicit mechanism that ad creatives use while creating ads and consumers have in mind while evaluating ads.

***Anger Promotes (Implicit) Ethnic Ingroup Favouritism in Men but not in Women*****Pollet, Thomas V. (University of Newcastle upon Tyne, T.V.Pollet@ncl.ac.uk); Lyons, Anthony; Nettle, Daniel**

Throughout human evolution intergroup conflicts played a pivotal role. Consequently, humans readily show a strong preference towards their ingroup. Yet the proximate causes, e.g., emotions, affecting ingroup preference are not fully understood. The effect of certain emotions, e.g., anger, for ingroup preference should vary between genders. Males were/are more involved in intergroup conflicts than females. Anger is predicted to increase ethnic-ingroup preference for men, but not for women. Participants (n=80) completed a mood induction writing task in which they wrote about an event that made them angry; in the control condition they wrote about a typical day of their life. Relative preferences for ethnic groups, age groups and gender groups were then measured by modified implicit association tests (IATs). Anger increased ethnic-ingroup preference for males but not for females. No such difference was found for age- or gender-ingroup preference. Results are discussed with reference to the evolution of intergroup conflict.

***Sex Differences in Cerebellar Weight in Mice and Rats: Not Androgen Receptor-Mediated in Rats*****Puts, David A. (Michigan State University, puts@msu.edu); Morris, John A.; Shaw, Allison S.; Jordan, Cynthia L.; Breedlove, S. Marc**

Sexual selection may produce sex differences in spatial ability and its neural substrates, including the cerebellum, which is involved in motor and perhaps cognitive aspects of spatial navigation. In humans, males exhibit superior spatial performance and larger cerebellums compared to females. The developmental causes of cerebellar sex differences are unknown, but gonadal steroid receptors have been found in the cerebellums of rodents and primates. We examined cerebellar weight in laboratory rats, in which males outperform females on spatial tests, and laboratory mice, in which spatial sex differences, if present, are smaller. We also examined cerebellar weight in *tfm* rats, genetic males with dysfunctional androgen receptors (ARs). We found that male rats had heavier cerebellums than did females, and the reverse in mice. *Tfm* male rats exhibited masculine cerebellar weight. These results suggest that selection for spatial ability may favor larger cerebellums, and that AR is unnecessary for masculinizing rat cerebellar weight.

***Function Predicts the Relationship Between Emotion Categories*****Rutherford, M.D. (McMaster University, ruthermd@mcmaster.ca); Chattha, H.M.**

An evolutionary perspective predicts an asymmetrical relationship between categories of facial expressions, rather than a symmetric color wheel-like organization. The perception of facial expression after-effects was used

to map the categorical relationships between percepts. In each of three experiments, subjects fixated on an image of a facial expression, then viewed an image with a neutral expression for 1 second. Subjects were then asked to report what facial expression the second image appeared to have. Experiment 1 revealed that happy and sad are opposites of one another, insofar as each symmetrically evokes the other as an afterimage. The second and third experiments reveal that fixating on an image of fear, anger, sadness or disgust yields an afterimage perceived as happy, whereas fixating on a happy face consistently results in the perception of a sad afterimage, suggesting an asymmetric relationship between categories of emotional facial expressions, supporting a functional perspective.

#### ***Female Adaptations to Small-Scale Warfare and Raiding***

**Savage, Chet R. (University of Missouri, Columbia, crscm4@mizzou.edu)**

Male adaptations for coalitional violence and raiding have long been the subject of study, with evidence showing these activities having clearly left their mark on male anatomy and behavior. Female adaptations for such small-scale warfare, however, have been largely neglected in the literature. I hypothesize that, like males, females have evolved specific adaptations to the activities surrounding male raiding. These adaptations center around manipulation of males for instigating war and brokering peace, protecting themselves and their children from male violence, and rape avoidance behaviors. I also hypothesize that females employ age-dependent alternative strategies/tendencies, with older females increasingly likely to take risks associated with instigating war, and younger females focusing on avoiding abduction and rape and protecting their children. I also hypothesize that females have adaptations to situations where abduction is unavoidable, possibly including emotional switching mechanisms to bond with the attacker that might seem counterintuitive except from an evolutionary perspective.

#### ***On the Universality of Sex-Related Spatial Competencies***

**Silverman, Irwin (isilv@yorku.ca); Choi, Jean (University of Lethbridge); Peters, Michael (University of Guelph)**

This study used the data of the world-wide BBC psychological survey to assess the universality of the differential, sex-related spatial competencies proposed in Silverman and Eals (1992) hunter-gatherer theory of human spatial sex differences. As predicted, men scored significantly higher than women on a test of three-dimensional mental rotations in each of the 40 countries and seven ethnic groups selected for the study. Close to predictions, women scored significantly higher than men on a test of object location memory in 35 of the 40 countries and all of the ethnic groups. The data are discussed in terms of their implications for evolutionary based theories in this area and future directions for research.

#### ***The Effect of a Partner's Smell on Anxiety, Mood and Emotion***

**Streeter, Sybil A. (University of Pittsburgh, sasst89@pitt.edu); Myers, Sarah; McBurney, Donald H.**

We have reported that people commonly smell their romantic partner's clothing during periods of separation to feel comforted, closer to the partner, good, happy, relaxed or to remember the partner. Adult Attachment style predicts the frequency of using a partner's smell for comfort and also influences response to stressors. We experimentally test the hypothesis that the smell of a romantic partner will decrease negative affect and state anxiety associated with a mild stressor task and predict that Adult Attachment style influences the degree to which the smell of one's partner will reduce those aversive states. Preoccupied individuals are predicted to benefit most and Dismissing to benefit least from their partner's smell.

#### ***Fear May Be Transferable Across Individuals: A Psycho-Physiological Experiment***

**Tamura, Ryo (Hokkaido University, tamura@lynx.let.hokudai.ac.jp); Kameda, Tatsuya; Inamori, Ritsuko**

Acquiring fear via observing another's fearful expression (fear contagion) can be a useful psychological device to detect an impending danger quickly. Previous brain-imaging research has revealed that the amygdala is activated when participants view another's fearful facial expression. This implies that fear may be transferable across individuals. To address this phenomenon more directly, we conducted a psycho-physiological experiment. We first video-recorded facial expressions of a target person (the sender) while she was watching a horror movie, simultaneously recording her psycho-physiological responses, including blood value pulse (BVP) and skin conductance response (SCR). We then showed the video clip (without sound) to a set of participants (the receivers) and measured their facial electromyogram (facial EMG), BVP, and SCR. The participants reported that they felt strong fear while watching the video clip. There was also some evidence that the physiological responses were synchronized between the sender and the receivers.

#### ***A Model for the Finite Expression of Multiple Mate Guarding Strategies***

**Thomson, Jaime W. (Drexel University, jwt26@drexel.edu); Platek, Steven M.**

Intentional deception evolved to increase fitness during human evolutionary history (e.g., deception about extra pair copulations, location of food and resources, paternity, etc.). Humans have a greater ability than other

primates to intentionally deceive, which could be driven by monogamous relationships. Natural selection has favored the use of cognitive resources for males to overcome extreme forms of violent behavior in an effort to keep the mate from defecting the relationship. Here we present an extension to David Buss' Mate Retention Tactics model to include cognitive resources such as deception and deception detection, which may be utilized as an alternative to the traditional behavioral tactics when males have these abilities.

***Mate Value and Jealousy: The Effect of Increased Attractiveness on Jealousy in Romantic Relationships***  
Zangrillo, Sarah (Whitman College, nelsonh@whitman.edu); Nelson, Holly

Males prefer physically attractive partners; however, those partners are judged to be more prone to infidelity, a highly undesirable characteristic. If mates believe their partners to be of both high mate value and more likely to cheat, then jealousy could function to promote retention of those partners. People who are romantically involved with a partner they believe to have high mate value should fear infidelity more than those who perceive their mate to have lower value. Furthermore, one's own mate value can moderate the relationship. Participants in this study completed measures of self-esteem (a proxy for mate value), a scale rating partner's physical attractiveness on multiple features tied to secondary sexual characteristics, and degree of jealousy aroused by several scenarios that depicted mate poaching attempts directed at their partner. This study shows how self and perceived mate value affects the degree of jealousy aroused by mate poaching attempts.

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## Friday – Hall of Flags, Rear:

***Visual Adaptation to Masculine and Feminine Faces Influences Generalized Preferences and Perceptions of Trustworthiness***

Buckingham, Gavin (University of Aberdeen, g.buckingham@abdn.ac.uk); DeBruine, Lisa M. (Universities of St Andrews and Aberdeen); Little, Anthony C. (University of Liverpool); Welling, Lisa L.M. (University of Aberdeen); Conway, Claire A. (University of Aberdeen); Tiddeman, Bernard P. (University of St Andrews); Jones, Benedict C. (University of Aberdeen)

Although previous studies of individual differences in preferences for masculinity in male faces have typically emphasized the importance of factors such as changes in levels of sex hormones during the menstrual cycle, other research has demonstrated that recent visual experience with faces also influences preferences for sexual dimorphism. Adaptation to either masculine or feminine faces increases preferences for novel faces that are similar to those that were recently seen. Here we replicate this effect and demonstrate that adaptation to masculine or feminine faces also influences the extent to which masculine faces are perceived as trustworthy: exposure to masculine or feminine faces increased the perceived trustworthiness of the type of faces seen during the adaptation phase. These adaptation effects support the proposal that visual exposure alone cannot explain the context-specificity of attitudes to self-resembling faces and may reflect a proximate mechanism that underpins phenomena such as imprinting-like effects in face preferences.

***Being Replaced: Jealousy, Friendship and the Banker's Paradox***

Burkett, Brandy N. (University of California, Santa Barbara, burkett@psych.ucsb.edu); Cosmides, Leda; Bugental, Daphne B.

Friendships are deep-engagement relationships that were critical for navigating and surviving in our ancestral past. The threat of another person encroaching on this relationship signifies the potential for investment received from a friend to be diverted elsewhere, leading to feelings of being replaced. When asked to think of a time when they were jealous of a relationship their best friend had with someone else, participants reported feeling replaced by the third party more when the interloper was of the same-sex as the participant than when the interloper was their friend's romantic partner. Conversely, participants reported feeling that their friend spent less time with them when the interloper was a romantic partner than when the interloper was a same-sex individual. These data suggest that same-sex individuals pose a threat specifically to replacing one's friendship slot whereas romantic partners are viewed as competitors for a best friend's time.

***Do Women's Preferences for Symmetry Change Across the Menstrual Cycle?***

Cardenas, Rodrigo A. (Michigan State University, harrisr@msu.edu); Harris, Lauren J.

Facial attractiveness is enhanced by physical symmetry and symmetrical decoration (Cardenas & Harris, 2006). According to the good-genes hypothesis, symmetry is preferred because it signals mate quality. One possible implication is that women will show an enhanced preference in the high-fertility phase of the menstrual cycle. Support comes from evidence that, during this phase, women prefer the scent of more symmetrical men (e.g., Gangestad & Thornhill, 1998). With faces, however, Koehler et al. (2002) found no support in women tested

during high-fertility (around ovulation) and low-fertility (menstruation). We tested women during high-fertility and the other low-fertility (mid-luteal) phase, and included decorated faces. Symmetry of face and decoration enhanced attractiveness, but effects were constant across the cycle. These results do not support the implication of the good-genes hypothesis but may be more consistent with the hypothesis that the preference is a by-product of how the visual system is designed.

### ***Analogy and the Massively Modular Mind***

**Chiappe, Dan L. (California State University, Long Beach, [dchiappe@csulb.edu](mailto:dchiappe@csulb.edu))**

Evolutionary psychologists propose the mind is made up of modules. I examine whether this view is compatible with the fundamental human capacity for analogy. The "conventional metaphor" view is consistent with massive modularity, as it holds there are limited and recurrent analogical mappings between particular content domains. However, it doesn't explain the full extent of our analogical abilities. We can compare any concepts we can explicitly represent. Furthermore, I will present experiments showing analogical reasoning makes use of non-modular executive functions that evolved to solve novel problems. These mechanisms activate relevant representations, and inhibit potentially distracting ones. They are crucial to analogy because it requires activating representations associated with a source concept (e.g., "spreads quickly" for "weeds") and mapping those features onto a target (e.g., "rumors"). Properties irrelevant to the mapping (e.g., "are plants") are inhibited. Importantly, source concepts can come from any domain, which is inconsistent with massive modularity.

### ***Integrating Physical and Social Cues when Forming Face Preferences: Differences Among Low and High Anxiety Individuals***

**Conway, Claire A. (University of Aberdeen, [c.conway@abdn.ac.uk](mailto:c.conway@abdn.ac.uk)); DeBruine, Lisa M.; Little, Antony C.; Hay, Julia; Perrett, David I.; Feinberg, David R.**

Although many researchers have proposed that facial attractiveness is a simple physical property of faces, social signals may also be important for attraction. Here we examined individual differences in the integration of social and physical cues when forming face preferences. Low anxiety individuals demonstrated preferences for facial cues associated with social engagement (i.e., viewer-directed smiles) from healthy faces, but not from unhealthy faces. By contrast, high anxiety individuals preferred social engagement from both healthy and unhealthy faces. Anxiety levels were positively related to the strength of overall preferences for social engagement, indicating that anxious individuals were not simply less discriminating in their face preferences generally. Collectively, our findings demonstrate that preferences for social engagement can be modulated by health of facial appearance and that systematic variation among individuals exists in the extent to which this modulation occurs.

### ***Milgram Revisited II: Contextual Influences on Imitative Behaviour***

**Coultas, Julie C. (University of Sussex, [julie.coultas@gmail.com](mailto:julie.coultas@gmail.com))**

The effect that queues or crowds of people have on the behaviour of others could be perceived as a type of "unthinking" cooperative behaviour. But is this type of imitative behaviour indiscriminate? Nine years ago, at HBES, some data were presented from a series of experiments partially replicating Milgram, Bickman and Berkowitz's 1969 study that examined the relationship between the size of a stimulus crowd looking up at a building and the response of passersby (Coultas, 1997). The results of previous and more recent studies are analysed, taking into account: group size, city size and the type of group (e.g., mode of dress). These ethological studies contribute to an understanding of the many influences on imitative behaviour. The questions of the influence of group size and whether conformist and imitative behaviour has changed across time and place are also addressed.

### ***Tool-Use Increases Survival of Animal Attacks: Evidence for Technological Selection***

**Crabb, Peter (Pennsylvania State University, Abington, [pbc1@psu.edu](mailto:pbc1@psu.edu)); Elizaga, Andrew**

Humans very likely were more "prey" than "predator" for most of our evolutionary history. In prey species, defense mechanisms tend to be under strong selection pressure, and one of the best defenses ancestral humans would have had against animal attacks is to use extrasomatic tools. To determine whether defensive tool-use confers survival advantage, we analyzed news stories reporting 174 animal attacks against humans on six continents between 1997 and 2006. Twenty-four percent of animal attacks provoked defensive tool-use, and in those cases tool-use significantly increased survival rates by 19% to 23% (all  $p$ s < .02). All defensive tool-users were adults, 77% were males, and 19% were relatives of attack victims. We conclude that even in modern environments, defensive tool-use against animal attacks continues to exert a measurable selection pressure on what may be called "tool-using sagacity." Given that ancestral humans would have had more contact with predatory animals, that selection pressure would likely have been larger in the past.

***The Relative Contributions of Cellulite and Body Size to Judgements of Female Mate Value*****Dalley, Simon E. (University of Groningen, S.E.Dalley@Rug.nl); Massar, Karlijn; Buunk, Abraham P.**

Is a large woman without cellulite considered more attractive than a small woman with cellulite? The present experiment investigated whether the presence of cellulite on a woman's buttocks and thighs is an indicator of her mate value, and whether it is a more important indicator of physical attractiveness than a contemporary sociocultural factor- body size. Male participants were randomly assigned to one of four conditions of a 2 (cellulite/no cellulite) by 2 (large/small) design. They were exposed to photographic images of a woman's buttocks and thighs and answered questions about her mate value. Results show a main effect of cellulite, in that independent of size, women with cellulite were considered less attractive as potential mates. Discussion focuses on the role of cellulite as a cue to age, and thus declining fecundity, or disease.

***Consumer See, Consumer Do: Why We Consume Celebrity Gossip, and Imitate Celebrities' Behavior*****De Backer, Charlotte J. (University of California, Santa Barbara, charlotte.debacker@gmail.com)**

Celebrity gossip is ubiquitous in Western cultures. A classification system of gossip is put forward that distinguishes between learning and reputation gossip. Human attention to celebrity gossip is considered to be a by-product of the adaptive curiosity in interpersonal gossip. The consumption of celebrity gossip can function as a learning strategy that helps to achieve prestige. In this perspective the consumption of celebrity gossip results in imitation strategies. Different models to explain human decision making in these imitation processes can be designed and tested. Second, the consumption of celebrity gossip can function as a one-way social strategy, where consumers regard celebrities as part of their social network. Third, the consumption of celebrity gossip can function as a social bonding strategy, offering food for talk with real-life members of our social network. Preliminary data support all three functions, and show that age and sex differences are present.

***The Reproductive Success of War Heroes*****Dingle, Greg (McMaster University, dingleg@mcmaster.ca)**

Non-kin based altruism is difficult for evolutionists to explain. Yet people across the world are known to perform acts of extreme altruism that appear to clash with their fitness interests. Individuals who perform these acts are typically praised by their communities. Their actions are deemed "heroic." This public reaction suggests possible benefits to these individuals, such as increased attention, prestige and attractiveness. If heroic acts conferred increased reproductive success among our ancestors, then heritable traits that underlie heroism could have been selected for. Alternatively, heroic acts may garner only momentary gratefulness and fleeting praise. To test whether heroism can affect reproductive success, I investigated 57 male US Medal of Honor recipients from WWI. I found that the Medal of Honor recipients were more likely to have married and had more children than other comparable groups of veterans, independent of age, socioeconomic status and geographic factors.

***Selfish Punishment: Altruism Can Be Maintained by Competition Among Cheaters*****Eldakar, Omar T. (Binghamton University, omar.eldakar@binghamton.edu); Farrell, Dene L.; Wilson, David S.**

Altruism is famously difficult to evolve because of potential exploitation by cheaters. Punishment can potentially deter cheating, but it often requires time, energy and risk. Altruistic punishment refers to a class of behaviors that deters cheating at the expense of the punisher, compared to non-punishers, who become second-order cheaters by benefiting from social control without sharing the costs. The costs of punishing cheaters, along with the cost of being cheated, make it difficult to explain altruistic punishment as an evolutionary stable strategy. This report suggests another way that altruism can be maintained; by cheaters who punish other cheaters. A multigenerational computer simulation model based on the public goods game consistently revealed an emergent negative correlation between cooperation and punishment in the population, concluding that competition amongst cheaters can promote the maintenance and stabilization of cooperation in a population.

***Visible Skin Color Distribution Plays a Major Role in the Perception of Age, Attractiveness and Health in Female Faces*****Fink, Bernhard (Ludwig-Boltzmann-Institute for Urban Ethology, Austria, bfink@gwdg.de); Grammer, Karl (Ludwig-Boltzmann-Institute for Urban Ethology, Austria); Matts, Paul J. (P&G Beauty, Rusham Park Technical Centre, Surrey, UK)**

Evolutionary psychologists have proposed that preferences for facial characteristics such as symmetry, averageness, and sexual dimorphism may reflect adaptations for mate choice because they signal aspects of mate quality. Here we show that facial skin color distribution significantly influences the perception of age and attractiveness of female faces, independent of facial form and skin surface topography. Shape and topography-standardized stimulus faces with the homogeneous skin color distribution of young people were perceived as younger and received significantly higher ratings for attractiveness and health than analogous stimuli with the

relatively inhomogeneous skin color distribution of more elderly people. Thus, skin color distribution, independent of facial form and skin surface topography, seems to have a major influence on the perception of female facial age and judgments of attractiveness and health as they may signal aspects of underlying physiological condition of an individual relevant for mate-choice.

#### ***Intra-individual Response to Sex Groupings***

**Forbes, Sean A. (Auburn University, [forbesa@auburn.edu](mailto:forbesa@auburn.edu)); Kaminsky, James S.; Ross, Margaret E.; Wadsworth, Danielle D.**

Working from the dual assumptions that males and females routinely segregate themselves into same sex groupings (Maccoby, 1988; Buss, 2002) and that the nature of social relationships differs for males and females, on average, (Buss, 2002), this study was an effort to investigate intra-individual effects of varying sex groupings on cooperative and aggressive behavior and psychophysiological response during a non-fitness task. Using a counterbalanced ABAC design, ten undergraduate participants were fitted with a galvanometer. Then, using a counterbalanced ABAC design, participants completed a series of puzzle exercises in three conditions-alone (baseline), same sex group (intervention 1), and opposite sex group (intervention 2). Investigators observed incidents of aggressive and cooperative behaviors in interventions. Participant data were analyzed using a Wilcoxon signed rank test. Following completion of each scenario participants indicated preference for each situation. Results are interpreted in light of sex groupings as an educational intervention.

#### ***Optimal Group Size and Social Constraints: Silver Prospectors in Gunnison***

**Glover, Susan M. (University of California, Davis, [smglover@ucdavis.edu](mailto:smglover@ucdavis.edu))**

Foraging in groups has advantages such as increases in resource capture or information sharing, and we expect foragers to adjust their group size according to ecological parameters (Smith 1985) to maximize per capita yield. However, social interactions can cause groups to be larger than optimal size. Using land claim and tax records from a late 19th Century silver rush in Gunnison County of Colorado, I show that foragers can optimize group size because the mode ( $n=2$ ) is the group size with the greatest per capita yield. However, foragers are frequently constrained by socio-economic constraints (e.g. kinship and status) resulting in groups of larger than optimal size. This research extends foraging theory to the analysis of economic behavior in market economies (Bowles 2004). Further, it is of practical interest to study behavior in a frontier resource extraction economy in order to design management plans of our current resource extraction frontiers.

#### ***The Electrophysiological Correlates of Perceived Attractiveness***

**Guise, Kevin G. (Montclair State University, [selfawareness@prodigy.net](mailto:selfawareness@prodigy.net)); Salotti, Dana; Murray, Elizabeth; Shelby, Cleo; Keenan, Julian, P.**

A growing body of literature on perceived attractiveness suggests that the human brain has evolved a mechanism for selection of mates possessing a distinct body type. Though mate value of human males is clear and often immediately realizable, no directly observable measure of female fertility (e.g., ovulation) exists. The human male must therefore rely on indirect measures of reproductive success. One such that has been identified is waist-to-hip ratio (WHR), which in females is positively correlated with the incidence of myocardial infarct, diabetes, and negatively correlated with the birth-weight of offspring. Singh (1993, 1994) demonstrated a cross-cultural and generation independent preference for females whose body shape conforms to a WHR of .70. This has since been replicated in Indonesian, Hispanic, British, Australian, and African-American populations, which suggests that the preference has been shaped by evolutionary pressures and therefore may have a neurological correlate. In the present study, ERPs were measured while subjects viewed pictures of pre- and post-surgical patients who had waist reduction and hip enlargement surgery. Differences were found in EEG alpha band (8-12 Hz) power in spatially distinct regions. These data suggest cortical regions may have evolved to select for reproductive value.

#### ***What a Difference a Mate Makes***

**Hromatko, Ivana ([ihromatk@ffzg.hr](mailto:ihromatk@ffzg.hr)); Tadinac, Meri; Prizmic, Helena**

Numerous findings suggest that female preferences for certain features of male face vary during menstrual cycle. Similarly, it has been shown that women's commitment to their current relationships changes during menstrual cycle. The aim of this study was to explore whether women who are currently in a romantic relationship differ in their ratings of male facial attractiveness from single women, in different phases of menstrual cycle. Two groups of women (in a relationship vs. single) rated the attractiveness of two sets of male faces (normal vs. symmetrical). ANOVA showed significant relationship x cycle phase x symmetry interaction: women in a relationship gave higher ratings of attractiveness for both normal and symmetrical faces in luteal compared to early follicular phase of the cycle, while single women showed the opposite pattern. The results are interpreted in terms of plasticity of hormone mediated adaptive design.

***The Golden Mean Ratio: Facial Measures Predict FA, Health, and Behavior***

Hughes, Susan M. (Albright College, [smbh@earthlink.net](mailto:smbh@earthlink.net)); Pipitone, R. Nathan (University at Albany, State University of New York); Harrison, Marissa A. (University at Albany, State University of New York); Gallup, Gordon G., Jr. (University at Albany, State University of New York)

We examined different ratios of particular facial measures that tend to approximate the Golden Mean Ratio of 1 to 1.618 and how deviations from the Golden Mean Ratio may relate to fluctuating asymmetry (FA) as well as certain features of health and sexual behavior. Seventy-seven participants had frontal face photographs taken and completed a questionnaire regarding their health and sexual behavior. Deviations from the Golden Mean Ratio of specific facial ratios predicted FA, and various features of health and sexual behavior. These data show that the aesthetic properties associated with those who display facial features that more closely approximate the Golden Mean Ratio may be adaptive in the sense that they are related to certain fitness features.

***Sexual Competition and Desirability in Human Females***

Illick, Nancy (University of Montreal, [nancy.illick@umontreal.ca](mailto:nancy.illick@umontreal.ca)); Perusse, Daniel

This study addresses the dynamics of selection and competition in order to establish a better understanding of the competitive strategies used by women. We principally investigated the use of selected indirect competition tactics and effects of female competition on desirability in order to test evolutionary hypotheses which suppose that behaviors that have benefits on fitness should be maintained throughout evolution. The study was conducted with 295 female and 239 male teenage participants. Competition between female participants and female participants' attractiveness was quantitatively documented by same-sex peer assessment survey. Our results show that females compete indirectly amongst themselves by emphasizing specific bodily features and by derogating those same features in rival females. We found a strong correlation between the use of competition tactics and reproductive success indicators and a negative correlation between being the victim of derogation and perceived desirability.

***Hair Length Influences Perceptions of Female Attractiveness When Salience of Facial Cues is Diminished***

Knapp-Kline, Kelley (Florida State University, Panama City Campus, [chrismom928@yahoo.com](mailto:chrismom928@yahoo.com)); Grant, Tara (Florida State University, Panama City); Morgan, Shannon (Florida State University, Panama City); Graydon, Joy (Florida State University, Panama City); Rudski, Jeffrey (Muhlenberg College)

Although it has been well established that facial features (symmetry, averageness) influence perceptions of female attractiveness (Grammer & Thornhill, 1994), the unique role of hair (e.g., length) in perceptions of female attractiveness is unknown. If hair length provides a unique signal to a woman's attractiveness that is largely independent of her facial characteristics, then it may be expected that a woman with blurred facial features adorned with different hair lengths (short, long) would be rated as significantly more attractive when depicted with long hair than with short hair. However, if hair does not contribute a unique signal of a woman's attractiveness, then no differences in attractiveness ratings should be observed. We tested this hypothesis by requiring participants (N=148) to view the same woman's face presented with different hair lengths, but whose facial features were uniformly obscured. Results indicated attractiveness ratings were significantly greater for long hair despite ambiguous facial cues.

***Do "Good Genes" Predict Forced Copulation? A Test of Whether Facial Symmetry and Masculinity Are Related to Sexual Battery***

Krill, Austen L. (Drexel University); Platek, Steven M.

In order to test whether facial symmetry and masculinity were related to incarceration for sexual battery we used Scion Image analysis software to quantify the degree of facial symmetry and masculinity (Thornhill & Grammer, 1994) of pictures of males convicted of sexual battery and battery without sexual contact. Our results show that persons convicted of sexual battery express a high degree of facial asymmetry and a low degree of facial masculinity. These results suggest that sexual battery could be used a strategy for reproductive success by males of lower genetic quality, as evidenced by higher facial asymmetry and lower facial masculinity.

***Why Do Men Insult Their Intimate Partners?***

McKibbin, William F. (Florida Atlantic University, [wmckibbi@fau.edu](mailto:wmckibbi@fau.edu)); Goetz, Aaron T. (Florida Atlantic University); Shackelford, Todd K. (Florida Atlantic University); Schipper, Lucas D. (Florida Atlantic University); Starratt, Valerie G. (Florida Atlantic University); Stewart-Williams, Steve (McMaster University)

Men sometimes insult their intimate partners and these partner-directed insults predict intimate partner violence. No previous research has investigated the intent of men's partner-directed insults. If insults are designed to retain a mate, then men's use of partner-directed insults should covary with other mate retention behaviors. Using the Mate Retention Inventory and Partner-Directed Insults Scale, we conducted two studies to test this hypothesis. Study 1 included 245 men who reported their use of mate retention behaviors and partner-directed insults.

Correlations and multiple regression analyses demonstrated the predicted relationships between men's partner-directed insults and mate retention behaviors. Study 2 included 372 women who reported their partner's mate retention behaviors and insults that their partner directed at them. The results replicated the results of Study 1. Discussion addresses limitations of the current research and important future directions for investigating the relationships between men's partner-directed insults and mate retention behaviors.

### ***Intimate Partner Homicide Methods in Heterosexual and Homosexual Relationships***

**Mize, Krystal D. (Florida Atlantic University, kmize1@fau.edu); Shackelford, Todd K.**

Previous research indicates that the method of killing may reflect the offender's motivational psychology. We investigated the effect of sex and sexual orientation of intimate partner homicide offenders on the brutality of killing methods. Guided by previous research and by evolutionary psychological meta-theory, we hypothesized that homicide brutality will vary with the offender's sexual orientation and sex, such that the percentage of killings coded as brutal will be higher for (a) homosexual relative to heterosexual relations, (b) men relative to women, (c) gay men relative to heterosexual men, and (d) lesbian women relative to heterosexual women. We also hypothesized that the rates of intimate partner homicide will vary with the sex of the partners, such that (a) homicide rates will be higher in couples comprised of two men relative to heterosexual and lesbian couples and (b) rates will be lowest in lesbian couples. Robust support was found for both hypotheses.

### ***Application of Game Theory to Bullying***

**Osipowicz, Karol Z. (Drexel University, kzo22@drexel.edu); Platek, Steven M.**

There is an ongoing debate about the causes and possible solutions to the problem of bullying. Not only is bullying prevalent in schools, but professional, sexual and now cyber bullying also occurs. Research not only indicates the obvious psychological detriment to the victims of bullies, but also suggests a similar detriment to the bullies themselves. The prevalence estimates from Solberg, & Olweus (2003) were applied to the optimization formula for the hawk dove game from Maynard Smith (1982). The results indicate that evolutionary Game Theory can be used to explain bullying. This also suggests that bullying occurs because selfish individual social strategies are kept at equilibrium to confer the largest selective advantage to all participants involved.

### ***Is "Accent" a Dedicated Dimension of Agent Representation?***

**Pietraszewski, David (University of California, Santa Barbara, pietrasz@psych.ucsb.edu); Schwartz, Alex**

Evidence from language acquisition suggests that phoneme repertoires are locally contingent and crystallize roughly around puberty. Thus, shared accents are diagnostic of being raised in the same language community. If immigration and coordination patterns extended across local language communities with sufficient ancestral regularity, and tracking common social origins proved beneficial, then the human cognitive architecture should be designed to represent agents' accents. Two hypotheses are empirically tested: 1) that agents' accents will be encoded and 2) that accent will behave as a different ontological entry than will social alliance or race.

### ***Evolved Psychology and the Perceptions of Animals***

**Thompson, Barty A. (Albright College, bthompson@alb.edu)**

While hunter-gatherers view non-humans as a respected resource pastoralists have developed deeper feelings of empathy for them and gone as far as to categorized them members of their family. In modern society similar contrasts in perspectives of animals are evident between sportsmen and animal rights activists. Some groups exhibit what appears to be a total lack of empathy with the plight of animals, while others display tremendous concern for the physical and mental well being of non-human species. While cultural forces effect these different viewpoints, our adaptations for kin selection and reciprocal altruism are also likely to influence when and why empathy is extended to non-human species. Preliminary evidence indicates that kin selection is the more significant determinant. Furthermore, it is argued that understanding how we categorize and treat animals provides valuable insights about our tendencies to extend ethical considerations to other humans.

### ***Androphilic Males Exhibit Greater Avuncular Tendencies than Gynephilic Males: A Test of the Kin Selection Hypothesis in Independent Samoa***

**Vasey, Paul L.; Pocock, David S.; VanderLaan, Doug P. (University of Lethbridge, doug.vanderlaan@uleth.ca)**

A basic assumption of the Kin Selection Hypothesis for male androphilia is that androphilic males will direct more altruistic behavior toward kin than gynephilic males. Previous empirical studies in the U.S.A and Britain have failed to find any support for this hypothesis. We conducted a questionnaire-based study to determine whether androphilic males behave more altruistically toward kin than gynephilic males in Independent Samoa, a small, non-Western, island nation in Polynesia. In Independent Samoa, transgendered androphilic males, known locally as fa'afafine, are highly visible and tolerated. Results indicated that fa'afafine reported significantly more

avuncular tendencies than gynephilic males. Additional analyses indicate that the increased avuncular tendencies of fa'afafine were not specialized adaptations favored by kin selection because they lack certain key design features.

***Kin and Reciprocal Altruism in Korean Immigrant Family Businesses***

**Yang, Chulguen (Central Michigan University, yang1c@cmich.edu); Colarelli, Stephen M.; Han, Kyunghee**  
Based on Hamilton's kin selection theory and its extension to non-relative coethnics, we expected that immigrant entrepreneurs would receive the most help from kin, second most from coethnics, and least from non-coethnics. Similarly, they would trust and be most likely to hire kin and co-ethnics. We surveyed 202 Korean immigrant entrepreneurs in the US. Entrepreneurs received more assistance from close than from distant relatives. However, coethnic friends helped as much as did close relatives. Kin were also perceived as more trustworthy than non-kin coethnics; yet trust was unrelated to intention to employ relatives. Immigrant entrepreneurs were more likely to hire non-coethnic workers than kin and non-relative coethnics-probably to match the ethnic backgrounds of the majority of their customers. Apparently, the economic benefits of weak kin selection between employees and co-ethnic customers (attracting and keeping customers) outweigh the benefits of weak kin selection between owners and coethnic employees.

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**Friday – Bodek Lounge, Rear:**

***To Die Like a Gentleman: Status Striving and Extreme Altruism in the Titanic Disaster***

**Allen-Arave, Wesley K. (University of New Mexico, allenara@unm.edu); Boone, James L.**

We argue that adherence to the "women and children first" honor code in the Titanic disaster constituted an honest signal of commitment among men to act dependably as protectors and providers. "Gentlemanly" displays serve to regulate social standing among men, and men's adherence to the "women and children first" rule varied in accord with their social prominence. Second class men, lacking the "reserves" of social prominence possessed by first class men and seeking to distinguish themselves from third class men, deferred to women and children at a greater rate than other men on the ship. Further, we argue that pay-offs to adhering to codes of honor should be greater for men in societies with a long history of warfare. Hence, men from populations with a history of chronic warfare were more likely to adhere to the "women and children first" rule than men from a population with no recent warfare.

***From the Child's Point of View: The Effect of Paternal Resemblance in Investment***

**Bellard, Megan (State University of New York at Oswego, rburch@oswego.edu); McAuliffe, Kyle; Burch, Rebecca L.**

In a sample of over 700 male and female undergraduates, self rated resemblance to mothers and fathers and its relationship to treatment throughout childhood was examined. Paternal resemblance had a greater impact than maternal resemblance in biological relationships, but paternal resemblance played little role in treatment of obviously unrelated (adopted, step) children. Correlations were positive and significant for positive acts (giving presents and money, spending time, relationship quality) and negative and non-significant for negative acts (physical punishment, arguments, paternal anger after wrongdoing) which may imply paternal investment in similar looking related children, and paternal indifference to dissimilar looking children.

***The Cognitive and Evolutionary Basis of Time's Cycle***

**Bronshzey, Yuriy S. (University of Kentucky, yuriy.bronshzey@gmail.com)**

Half a century ago, Mircea Eliade observed that around the world and throughout history, human beings have consistently embraced a cyclical notion of time, preferring to view life events and experiences as repetitions of timeless archetypes rather than unique episodes in an irreversible history. Though today anthropologists continue to cite Eliade's theory as a generally accurate characterization of cross-cultural religious practice, psychologists have never directly addressed it. This project aims to do precisely that: to imbed Eliade's observations within the growing knowledge and logic basic base of cognitive science and evolutionary psychology. Drawing on recent work by Jesse Bering, I argue that a cyclical view of time fits life events into an immanent order crafted by an implied intentionality. I then use Bering's intentionality-based model of "meaning" to propose why, as Eliade and others have observed, human beings might tend to discriminate the "sacred" from the "profane" in religious practice.

***The Many Manipulations of Morty Mouse: Children's Stories and the Parental Encouragement of Altruism***  
 Cassidy, Chris L. (University of Missouri, Columbia, CLCX97@missouri.edu); Palmer, Craig T. (University of Missouri at Columbia); VanPool, Todd (University of Missouri at Columbia); Wright, Jennice (Auxvasse School District, MO); Wright, Scott (Columbia School District, MO); Coe, Kathryn; Zuckerman, Mel and Enid (Arizona College of Public Health, Arizona Cancer Center, University of Arizona)

Evolutionary approaches to literature agree that story content is related to evolved psychological mechanisms. Most non-evolutionary analyses of children's stories assume stories are told to influence behavior. This poster shares the results of two experiments that attempted to explore various relationships between the evolved psychological mechanisms and the influence of children's stories on behavior related to reciprocal altruism. Both experiments used multiple versions of an original children's story featuring Morty Mouse. Some versions had Morty following a tit-for-tat strategy. In others he was altruistic toward all the other characters regardless of past behavior. The experiments differed in whether participants read and rated one version of the story or choose the version they preferred. Results from both experiments showed a strong preference for the indiscriminately altruistic version, which suggests that instead of reinforcing evolved psychological mechanisms for tit-for-tat interactions, children's stories may partially offset, or soften, the operation of evolved tendencies.

***Homo Timidus: Why Modern Horror Stories House Stone Age Monsters***  
 Clasen, Mathias F. (University of Aarhus, Denmark, mathias@tellerup.dk)

Evolutionary and cognitive science may help to elucidate and explain the perennial appeal of supernatural horror fiction. The evolutionary approach advocated here is contrasted with traditional psychoanalytic scholarship. I argue that horror fiction is a pleasure-and-revulsion technology -- one that activates or exploits adaptive threat-avoidance mechanisms (notably fear and disgust). The things we instinctively fear (e.g. snakes, spiders) are relics of the environment of evolutionary adaptedness, and so, to some extent, are the monsters of horror fiction. Fear is universal and presumably so is the scary story; arguably the most salient feature of the genre is its constants, rather than its traditionally-studied historical and cultural contingency. Evolutionary psychology informs horror study, and conversely cross-cultural and cross-temporal analysis of horror literature may inform evolutionary psychology by providing catalogues of universal fears. I analyze a selection of tales from diverse world cultures, and some initial features of the universal monster are presented.

***Affectively Motivated Cognition Supporting Creationism and Intelligent Design***  
 Garvey, Kilian J. (The University of New England, kgarvey@une.edu)

This research explores the role fear plays in predicting the non-directional motives that result in the cognitive approach to the evolution vs. creationism or intelligent design debate. Two measures of fear, (1) the right wing authoritarian scale (Altemeyer, 1996) and (2) the fear perception index (Eigenberger, 1998), predict approval of items supporting a biblical explanation of life on earth and, to a slightly lesser degree, approval of items supporting the concept of an intelligent designer. It is hypothesized here that the non-specific epistemic motivation of fear reduction results in selective exposure to information, which results in a position supportive of non-scientific alternatives to Darwinian evolutionary theory.

***Going Along Versus Going Alone: When Fundamental Motives Facilitate Strategic (Non)Conformity***  
 Griskevicius, Vladas (Arizona State University, vladasg@asu.edu); Goldstein, Noah J.; Mortensen, Chad R.; Cialdini, Robert B.; Kenrick, Douglas T.

Much psychological research, such as the classic Asch line studies, demonstrates the prevalence of conformity. But would men continue to conform in the presence of an attractive woman? And would women go against the group if motivated to attract a desirable man? Two experiments examined how two fundamental social motives -- mate-attraction and self-protection -- influenced conformity. Self-protection increased conformity for both men and women. In contrast, the effects of a romantic goal depended on sex, causing women to conform more, while engendering nonconformity in men. Men in a romantic state were particularly likely to nonconform when (1) nonconformity made them unique (but not merely a member of a minority), and when (2) the topic was subjective versus objective, meaning nonconformists couldn't be incorrect. Findings fit with a functional evolutionary framework, and indicate that fundamental motives, such as self-protection and mate-attraction, can stimulate specific forms of conformity or nonconformity for strategic self-presentation.

***Lateral Preferences for Holding a Doll, a Book, and a Package: Relation to Attentional Bias on a Chimeric Faces Test***

Harris, Lauren J. (Michigan State University, harrisl@msu.edu); Cardenas, Rodrigo A.; Spradlin Jr., Michael P.; Almerigi, Jason B.

Most women, left- as well as right-handers, hold infants with the head to the left of the holder's midline. One hypothesis links the effect to a left-attentional bias for perceiving emotions. Harris et al. (2002) supported the

hypothesis using the Chimeric Faces Test (CFT) to measure direction of attention, and an imagine-hold test to measure side-of-hold. The current study, with 66 women, provides further support on a doll-holding test. For control purposes, we measured side-of-hold for a book and a package and assessed handedness. Only the doll-hold showed a lateral bias, with 59% of women holding on the left, and only left-holders had a left-hemisphere CFT bias. Side-of-hold for the doll, book, and package were unrelated to handedness, and neither the handedness nor the book and package scores were related to CFT. Results will be discussed in the context of evolutionary theories about infant-care.

### ***Evolutionary Predictors of Consumerism***

**Heath, Kathleen M. (Indiana State University, [anheath@isugw.indstate.edu](mailto:anheath@isugw.indstate.edu)); Sheets, Virgil L. (Indiana State University); Gant, Larry M. (University of Michigan); Stanfield, Michael (Indiana State University)**

We explore sex and sociosexuality as predictors of consumer behavior. Participants imagined they were to win \$100,000 and described what they would do with the money. Most indicated that they would save the largest share, and there were few sex differences in the proportions saved, spent or given away. Students would spend money consistent with sexual selection and conspicuous consumption theories. Women emphasized spending on personal beauty relative to men (who favored spending on vehicles). Both sexes reported that they would give away some, with the largest amounts going to biological family. Correlations with sociosexuality revealed people high in sociosexuality would give money to romantic partners, but this was primarily true among women. Low relative income was associated with spending more money, but toward future improvement, and saving less. These findings suggest that evolutionary models may have utility in consumer psychology.

### ***Parent-Child Resemblance and Kin Investment: Are Looks Enough?***

**Heijkoop, Marianne ([m.heijkoop@fss.uu.nl](mailto:m.heijkoop@fss.uu.nl)); Dubas, Judith S.; van Aken, Marcel A.G.**

Before being able to invest in offspring, one has to recognize who they are. In humans, facial resemblance between parents and children has been suggested as an indicator of kinship. Because men, unlike women, cannot be certain about parenthood, facial resemblance may influence men more than women when making investment decisions. Investigations of sex differences in reaction to facial resemblance have produced mixed results. The present study attempts to clarify these discrepancies by investigating three different types of resemblance: self-perceived resemblance, social resemblance (remarks to the parent about resemblance by others), and actual resemblance (as assessed by university students using photographs) among 90 Dutch parents, using observed and self-report measures of investment. No relationship was found between facial resemblance and parental investment. Results will be discussed with respect to the external validity of prior investigations, the age of the children in this versus prior studies, and other indicators of kinship.

### ***Teaching Evolutionary Psychology with Video Analysis Reports***

**Jenkins, Christopher O.E. (University of New Mexico, [chrisoej@unm.edu](mailto:chrisoej@unm.edu)); Miller, Geoffrey F.; Dane, Laura K.**

We explain and validate a new teaching method for evolutionary psychology used in 5 courses so far: "video analysis reports" (VARs), which are one-page, single-spaced reports on DVD films rented and watched at home. VARs require concise analysis of diverse Darwinian themes (e.g. mating, kinship, group conflict) as depicted in recent, high-quality, R-rated dramas. Questionnaire data from 292 students shows that VARs are easy, quick, and enjoyable to write, yet they effectively assess and improve course comprehension, motivation, critical thinking, and scientific writing skills. VAR ratings are consistently high across student age, sex, ethnicity, religion, political attitudes, college major, GPA, ACT scores, writing experience, and Big Five personality traits. We also review which genres and films students rated most enjoyable and relevant (e.g. Saving Private Ryan, Boiler Room, American History X, Frida, Gattaca), and which film content they most dislike (e.g. rape, graphic sex, brutal violence, drug injection).

### ***Soul Belief and the Evolution of Empathy Inhibition***

**Koch, Gretchen S. (University of Aarhus, [gk@teo.au.dk](mailto:gk@teo.au.dk))**

Hume described empathy as the basis for morality, yet history is replete with examples of instances when people could have empathized with each other, but somehow avoided it. While several theories have been advanced to explain how empathy functions as an evolved adaptation, the causes of inhibition in cognitive empathy (or perspective-taking) deserve further exploration. Recent research with mirror neurons reveals two important relevant factors: 1. mirror neurons, also called "monkey-see, monkey-do cells," have their basis in the recognition of goal directed behavior, and 2. mirror neuron dysfunction is found in those with autism spectrum disorders, in whom the ability to empathize is severely inhibited or eliminated. Using such empirical research, this paper will extrapolate how the concept of responsibility that accompanies soul/body dualism may function as an inhibitor of cognitive empathy in favor of other adaptive pursuits.

***Testing a Darwinian Model of Electronic Communication Behavior*****Kock, Ned (Texas A&M International University, nedkock@tamiu.edu); Hantula, Donald (Temple University); DeRosa, Darleen (Right Management Consultants)**

A Darwinian model of behavioral effects of electronic communication technologies, generally known as media naturalness theory, posits that technologies that are more natural (i.e., that resemble face-to-face communication) pose fewer obstacles to effective communication among humans. The model also suggests that one common finding of the electronic communication research literature, namely that virtual teams often perform just as well or even better than face-to-face teams, is due to individuals finding ways to adapt and compensate for the obstacles posed by electronic communication media. Findings of two longitudinal empirical studies are discussed in which subjects acquired and exchanged knowledge through different communication media. One study involved 70 student subjects taking semester-long courses online and face-to-face. The other study involved 60 student subjects engaging in decision making and problem solving tasks in either virtual, or face-to-face teams. Both studies found support for the Darwinian model discussed above.

***Age of Puberty Effects Reproductive Success*****Lawson, Jamie F. (University of St Andrews, jfl4@st-and.ac.uk); DeBruine, Lisa, M. (University of Aberdeen); Law Smith, Miriam J. (University of St Andrews); Feinberg, David R. (Harvard University); Cornwell, R. Elizabeth (University of Colorado at Colorado Springs); Stirrat, Michael R. (University of St Andrews); Perrett, David I. (University of St Andrews)**

Life history theory predicts that reproductive strategy should be decided upon early in development. Human pubertal timing should reflect the strategy operated by an individual, whether low investment (producing high numbers of low quality offspring) or high investment (producing low numbers of high quality offspring). Individuals placed under early-life stress are expected to operate the former strategy, mature earlier and have more children (Wilson and Daly, 1997; Moffitt et al. 1992). We analysed questionnaire data from a sample of over 20 000 individuals aged 25-80 (in collaboration with the BBC). Socio-economic status (SES, as a measure of life stress) predicts number of offspring. Contrary to prediction, males reporting early pubertal development produced fewer children than later developing males (controlling for SES, and age). Pubertal timing had no significant effect on the number of children produced by females. Results will be discussed in terms of the evolution of human mating strategy.

***An Evolutionary Psychological Perspective on Spontaneous Conceptions About the Natural World*****Leth, Michael (University of Aarhus, leth@si.au.dk); Paludan, Kirsten**

For 30 years Science education research has been concerned with students "spontaneous conceptions" in many ways tantamount to folk biology and physics, trying to understand why and how these ideas develop. Efforts this far have not yielded any satisfactory, let alone unifying interpretation of the phenomenon. Here is presented an analysis of a large number of varied conceptions from most branches of Science, indicating that an integrated understanding is possible/plausible. Setting the analysis within a theoretical frame of evolutionary psychology, the results furthermore offer insights into human cognition within the ecological information-processing domain (Geary, 2005). Three families of cognitive strategies have been identified thus far: Humanization; the actually apparent; and simplistic structuring - each consisting of several distinct strategies. Between them, the three families could represent basic conditions for the cognitor: Perspective (the eye of the beholder); focus (what is looked upon); and applying order to the two former (structure).

***Facial Appearance, Apparent Health, and Actual Health*****Luevano, Victor X. (Brandeis University, zebrowitz@brandeis.edu); Zebrowitz, Leslie A.**

Previous research has separately examined the relationships between apparent health and the facial characteristics of attractiveness, sexually dimorphic features, averageness, and symmetry. This study simultaneously examined the relationship of all of these characteristics (plus perceived dominance, warmth, and facial expression) to apparent health in a representative sample of faces. Additionally, the relationship of these facial characteristics with actual health was examined. Attractiveness was the strongest predictor of men's and women's apparent health, but didn't predict actual health. Women's facial averageness was the second best predictor of apparent health, and a robust predictor of actual health. Men's perceived masculinity was the second best predictor of apparent health, and a robust predictor of actual health. The results of this study suggest that when judging health, humans are "blinded by beauty," but have also evolved to pay attention to valid cues specific to each gender.

***Nonconformistic Behavior as a Costly Signal of General Intelligence*****Millet, Kobe (KULeuven, kobe.millet@econ.kuleuven.be); Dewitte, Siegfried**

Evolving the capacity for observational learning helped humans to surmount the perils of trial and error learning. In that light, nonconformism is puzzling because nonconformists deny the advantages of observational learning. The cost that accompanies nonconformistic behavior leads us to suggest that nonconformistic behavior can be approached from a costly signaling perspective. Because intelligence reduces the likelihood of errors in trial and error learning, we claim that nonconformistic behavior is a signal of general intelligence. This claim has three implications. First, nonconformism should be correlated with general intelligence. Second, people should perceive nonconformistic behavior as a sign of intelligence. Third, highly intelligent consumers should suffer less from incidental nonconformism. Consistently, we found that higher scores on an intelligence test were related to nonconformist choices and to trait measures indicating unconventionality, that nonconformistic choices were perceived as a sign of intelligence, and that nonconformism was less stressing for highly intelligent people.

***The Evolution of Theory of Mind and Laterality: A Study Using Transcranial Magnetic Stimulation*****Murray, Elizabeth (Montclair State University, selfawareness@prodigy.net); Fallah, Mehran A.; Keenan, Julian P.**

Understanding higher order cognitive processes is of great value in elucidating brain/behavior relations and the neuroevolution of cognitive function. The unique ability to be self-aware (SA), the knowledge of one's own thoughts as belonging to the self, allows humans to think of oneself in the third-person and as a result, evaluate and monitor self-behavior. A cardinal aspect of social intelligence, it is a prerequisite for the ability of making inferences and attributions about various mental states of others, known as Theory of Mind (ToM). Evidence suggests that both self-awareness and ToM share similar neurocognitive substrates and are preferentially processed in the right hemisphere. Laterality differences were found during the Mind in the Eyes task, which is a measure of ToM. These differences are discussed in terms of the evolutionary cognitive neuroscience.

***Human Mutual Grooming: An Ethological Perspective on Its Form and Function*****Nelson, Holly (Whitman College, nelsonh@whitman.edu)**

Given that humans are primates and primates groom each other nearly ubiquitously, it is natural to ask to what extent humans groom others (non-professionally) and for what purpose. Using primate models and evolutionary theory, I propose a theory of human mutual grooming that conceptualizes it as a signal of investment that may be used in mate choice. I argue that humans evaluate potential mates based on the quality of caregiving they provide. A self-report measure was used to assess mutual grooming in couples, caregiving styles, partner-specific investment, and trust. Findings are discussed in light of costly signaling theory and are consistent with several proposed functions of grooming: 1) parental investment indicator, 2) signaling trust, and 3) courtship/flirtation, all of which play a role in pair bonding. Although humans may not appear to groom each other with the same fervor as other primates, I show that humans are groomers par excellence.

***Reproductive Strategies in a Modern Population, Possible Causes and Definite Outcomes*****Newson, Lesley G. (University of Exeter, L.Newson@ex.ac.uk)**

Evolutionary models of how environment and experience set an individual's reproductive strategy (e.g. Draper & Harpending, 1982) or influence the evolution of reproductive norms (e.g. Newson et al, 2005) have been tested using data from the National Childhood Development Study which is following the life experiences of over 10,000 UK residents, a cohort born during one week in March, 1958. Contrary to commonly held beliefs about the rebelliousness of children, parents appear to strongly influence their children. Parental ambitions, whether they are for reproductive success or career success, influence their children's preferences and behaviour. Whatever their reproductive strategy, however, most members of this cohort achieve very low reproductive success.

***Agency Is Assigned to Objects With Gravity-Inconsistent Motion*****Niehaus, Jeffrey L. (University of California, Santa Barbara, niehaus@psych.ucsb.edu); New, Joshua; German, Tim P.**

Previous studies have investigated several morphological and behavioral features that can cause an observer to treat an inanimate object as an agent (as measured by the object's ability to cue the observer's attention). The current series of studies investigates the possibility that another phylogenetically ancient signal of agency may be an object's tendency to move in a way not consistent with the action of gravity. Subjects took part in a reaction time study, and were told to respond as quickly as possible to the presence of a stimulus which would appear in either a cued or uncued location. The location was cued either by an object which had just moved as if by gravity, or by an object which accelerated and decelerated smoothly. Differences in reaction times reveal that these differences in motion pattern have an effect on the cuing of attention.

***Regional Brain Activation During an Ecologically Valid Test of Deception and Truth Telling: An fMRI Study***  
**Platek, Steven M. (Drexel University, smp43@drexel.edu); Mohamed, Feroze B. (Temple University); Gordon, Nathan J. (Institute for Investigative Training); Ahmed, Harris (Drexel University); Faro, Scott H. (Temple University)**

Recent investigations of the neural correlates of deception have lacked an evolutionary theoretical guidance. Here we developed an ecologically valid test of deception by creating suspects that were classified as either guilty or innocent in a gun shooting paradigm. Functional magnetic resonance imaging was used to measure BOLD signal activation differences between guilty and innocent subjects. Our results demonstrate that 1) almost twice as many brain regions are recruited during deception when compared to truth-telling, 2) that anterior regions of the cerebral cortex tend to be more active during deception when compared with truth-telling, which tended to be associated with increased activation in posterior regions, and 3) that regional activation patterns correlate with detection of changes in sympathetic nervous system responses using polygraph. These findings suggest the presence of evolved modularity for deception and truth telling.

***On the Adaptations of Mythological Creatures***

**Pocklington, Richard (New College of California, pocklington@gmail.com)**

Mythic creatures have properties which distinguish them from real animals. Here, I examine several of the common characteristics of mythic creatures (including crypticity, habitat choice, deadly gaze and other magical abilities) and test an hypothesis as to their function. From this experiment, I propose a theory of mythic creatures based both on the constraints of the evolved psychological propensities of the human mind and the transmission forces which sculpt the description of the creatures over time.

***Why It Hurts, and When and How***

**Shariff, Azim F. (University of British Columbia, azim@psych.ubc.ca); Kozak, Rob; Schaller, Mark**

Pain, in both its physiological and psychological varieties, has evolved to serve as a signal of present or impending danger to the organism. Pain sensitivity varies across persons and across different contexts, and it's plausible that the experience of pain is modulated for adaptive behaviour within the local social environment. We theorize that the underlying opioid system evolved to be responsive to sensory and inferential information indicating whether an organism's fitness is best served by social avoidance (resulting in a strong pain signal) or social approach (a more muted pain signal). As a consequence, sensitivity to painful stimuli are likely to vary depending on an individual's chronic or temporary goals relevant to a wide variety of social perils (e.g., interpersonal aggression, disease transmission) and social opportunities (e.g., mating and other interpersonal relations). A wide variety of supportive empirical evidence is reviewed, and new directions for research are suggested.

***Applying Costly Signaling Theory to Indian Wedding Costs***

**Shenk, Mary K. (University of North Carolina at Chapel Hill, mshenk@unc.edu)**

This paper will focus on the application of costly signaling theory to the high costs and lavish displays associated with wedding celebrations in modern South Asia. I will begin by reviewing the basics of costly signaling theory, including conditions for evolutionary stability in signaling systems, and discuss how the South Asian marriage case fits these criteria. Special attention will be paid to the two possible mechanisms by which benefits of the signal could accrue to the signaler, each of which constitutes a causal pathway through which signaling could operate. I then develop a simple model to test the possibility of signaling in one of these causal pathways, and present preliminary results indicating which measures of wedding costs show evidence of signaling motivations. I find that some results are consistent with a signaling framework, but that more detailed analyses are needed in order to clearly distinguish signaling from other motivations.

***Social Status Modulates Gaze-Following by Rhesus Macaques***

**Shepherd, Stephen V. (Duke University Medical Center, svsv@duke.edu); Deaner, Robert O.; Platt, Michael L.**

Humans quickly orient attention in the direction they observe other individuals looking, a behavior called gaze-following. We have shown social gaze cues also shift attention in macaques (Deaner & Platt 2003). These attention shifts occur rapidly and persist even when task-irrelevant. To test the hypothesis that this represents a reflexive mechanism, we probed effects of social status on gaze-following by 7 rhesus macaques. Monkeys performed an eye-movement task while viewing one of 32 macaque face images with averted gaze. We found the social status of both viewing and cueing monkeys modulated the effect of gaze on reaction time. Specifically, at a mere 1/10 second, low-status subjects showed strong gaze-following. High-status subjects were slower and followed only the gaze of high-status peers. These data suggest that the gaze following response is hardwired but nonetheless influenced by the critical variables that characterize primate social interaction.

***Liberal and Conservative Religions as Different Socio-Ecological Strategies*****Storm, Ingrid K. (Binghamton University, [dwilson@binghamton.edu](mailto:dwilson@binghamton.edu)); Wilson, David S.**

In evolutionary theory, the existence of religion has been explained as a behavioral strategy adaptive on the group level. This theory can also be used to account for the variance between different religious groups. Unique data collected using the Experience Sampling Method (ESM), where participants report their daily behaviors and experiences in detail, were used to examine differences between groups of protestant high school students in the USA. We use the three categories: Liberal, Moderate and Conservative based on Iannaccone's (1994) rating of protestant denominations on a series of scales measuring strictness. Our hypothesis is that membership in each of these groups will be reflected in the values, behaviors and experiences of individuals. The results show that the conservative Protestants are generally more satisfied, family-oriented and sociable than liberal Protestants and nonreligious students. We interpret these results as reflecting different socio-ecological adaptive strategies between different religious denominations.

***Evolution and Religious Ethics: The Ten Commandments*****Teehan, John (Hofstra University, [John.P.Teehan@hofstra.edu](mailto:John.P.Teehan@hofstra.edu))**

This presentation is based on a chapter of an in-progress book project, the thesis of which is that religious ethical traditions are cultural expressions of underlying cognitive/ emotional predispositions set down in the course of human evolution; and that a close reading of such traditions can detect the influence of evolution. This model does not deny the influence of cultural events in shaping religious ethics but does suggest evolution sets conditions from which such traditions originate and which they do not transcend easily. Not only can such an approach shed light on the nature of religious ethics, it also establishes the connection between religion and violence. Fundamental to religious moral psychology is a basic in-group/out-group divide, but more subtle conclusions may be drawn. For the sake of exemplification this paper will use this theoretical approach to analyze the Ten Commandments and uncover the evolutionary concerns embedded in the Decalogue.

***An Ecological Causal Link Between Mortuary Practices, Man-Eating by Carnivores, Material Culture and the Origins of Agriculture*****Watve, Milind G. (Life Research Foundation, [watve@vsnl.com](mailto:watve@vsnl.com))**

Applying prey choice models of foraging theory to predators of human ancestors it can be shown that mortuary practices may have resulted in freedom from predation. Claiming a dead body back from predators and prevention of scavenging may have been critical deterrents to predators. Although mortuary practices are widely different, making a corpse unavailable to large ground carnivores seems to be a common feature of all. The hypothesis is supported by recorded history of man-eaters. Unlike a commonly held view, mortuary practices were strongly adaptive and changed human ecology dramatically. The presence of predators makes settlement, agriculture and routine predictable movements impossible. The chain of events triggered by mortuary practices were freedom from predation, growth of material possessions, rise in material culture including arts and crafts, settlement, degradation of natural food resources and ultimately agriculture. Although agriculture has many independent origins, the above sequence seems to have followed faithfully everywhere.

***Transmission of a Religious Meme: A Case of the "Passion Play"*****Yang, Chulguen (Central Michigan University, [yang1c@cmich.edu](mailto:yang1c@cmich.edu)); Han, Kyunghye; Colarelli, Stephen M.**

We describe and test a model of psychological processes that influence the transmission of religious memes. The religious meme that we investigated was the passion play, a genre of stories about the suffering, death, and resurrection of Jesus of Nazareth that has been transmitted for over 1,000 years. Using a controversial cinematic adaptation of a passion play, "The Passion of the Christ," we examined the relationships between religious commitment, accuracy to the biblical texts, perceived violence, and emotional reactions and transmission of the stories. We found that religiously committed individuals were more likely to perceive the film as less violent and more accurate and more willing to engage in retelling the stories. We also found that aesthetic experiences and awe had direct impact on the actual pass-on behavior when the effects of violence, accuracy, and negative emotions were held constant. The theoretical implications of these findings are also discussed.

## Poster Locations

(Alphabetical by presenting author)

### Key:

The first number represents either the first (Thursday) or second (Friday) poster session.

The letter represent the room assignment: BDK = Bodek Lounge. HFB = Hall of Flags, Balcony. HFR = Hall of Flags, Rear. RDG = Reading Room.

The last number represents the poster position within the assigned room.

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Bromley, Melanie L.	2-RDG-3	Glover, Susan M.	2-HFR-47
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# Houston Hall – Second Floor

Ben Franklin Room

Golkyn Room

Class of '49 Auditorium



