

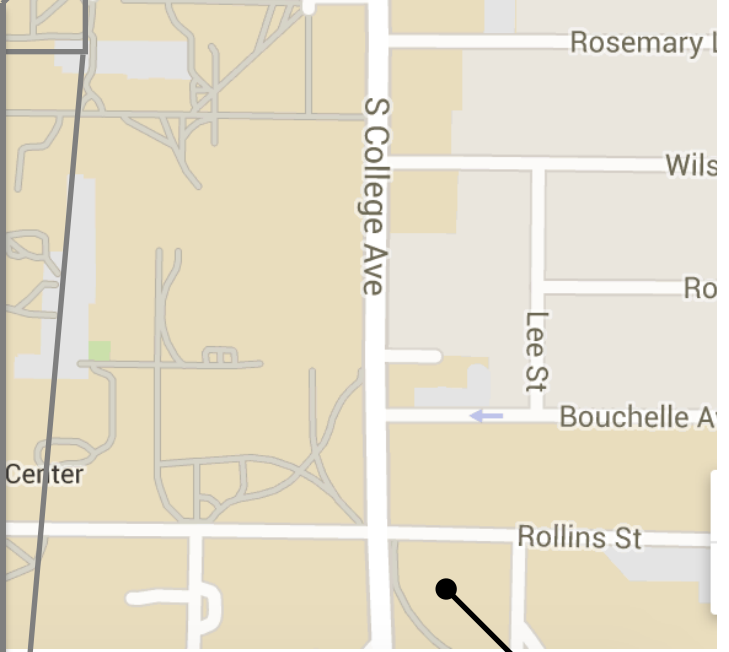
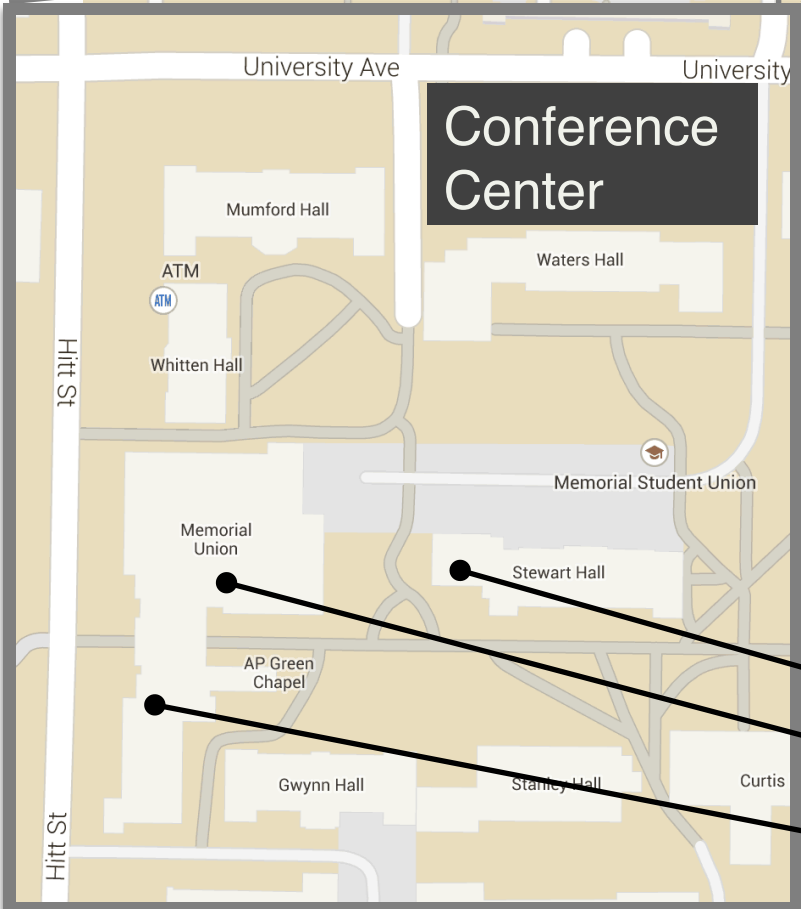
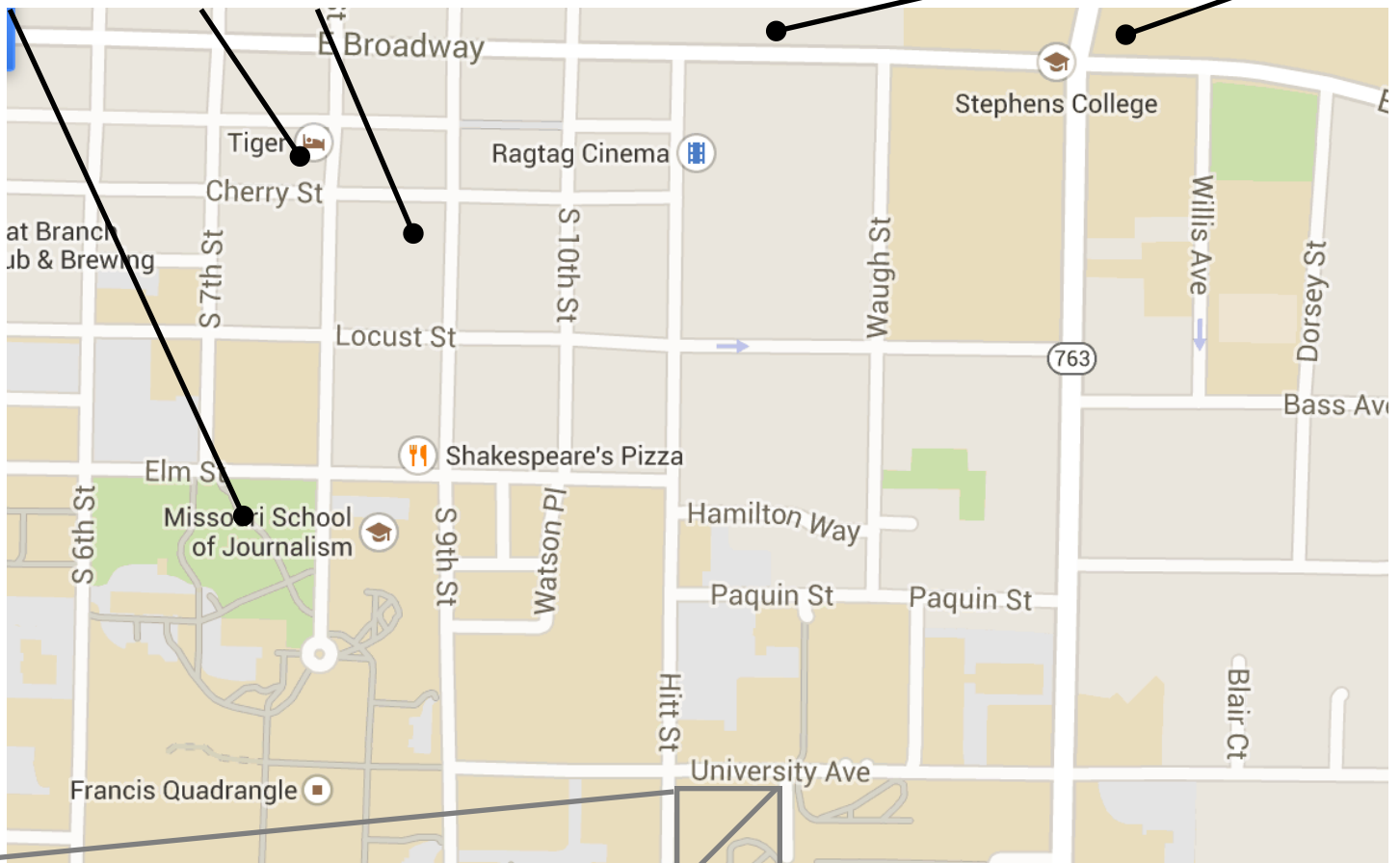
**Human Behavior & Evolution Society
27th Annual Conference**



**May 27-30, 2015
Columbia, Missouri**

Conference Venues

Peace Park Tiger Hotel Missouri Theater Broadway Hotel Kimball Ballroom



Residence Hall
Memorial Union South Memorial Union North Stewart Hall

WELCOME TO HBES 2015

Welcome to the 27th annual meeting of the Human Behavior and Evolution Society. We are excited to be hosting you this year at the University of Missouri.

Following the format from the last two meetings, the conference begins with a plenary lecture on Wednesday afternoon and culminates with the Keynote Lecture on Saturday night; there are no sessions on Sunday. And, following the format from some past meetings, there are conference-wide New Investigator and Post-Doctoral Competition sessions on Saturday afternoon to highlight the work of the best young HBES researchers. In addition to the usual Thursday night Poster Session, we have reserved space for the posters to be displayed Wednesday through Friday. We have also re-instituted the “Graduate Student Luncheon.” We received over 100 sign-ups, suggesting strong demand for mentorship. We hope this is a tradition that continues in future meetings. Finally, we’d like to mention a special symposium on Saturday morning honoring the legacy of Irven DeVore, who passed away last year, hosted by Melvin Konner, John Tooby, and Steve Gaulin.

There are many people who helped to make this conference happen. We’d like to highlight a few (see p. ii for a full list). We are grateful to the Poster, New Investigator, and Post-Doctoral Award judges. These awards help to highlight the accomplishments of young researchers, but require a fair bit of work of judges. We’d also like to thank the HBES mentors for donating their time and to Melissa Fales for helping to organize the event. We received tremendous support from HBES members and officers. In particular, we’d like to thank Lisa DeBruine, Ray Hames, and Robert Kurzban for their help in pulling off this conference. And for advice from past meetings, thanks to Martin Daly, Steve Gangestad, and Debra Lieberman.

Many people here at the University of Missouri helped put on this meeting. In particular, we’d like to thank Christy Sumners from the Conference Office, Elaina Frede from Student & Auxiliary Services, Christine Hudson from the Anthropology Department, and Heather Tearney from the University Bookstore. And, we would like to thank our sponsors, in particular Dean Michael O’Brien and the College of Arts & Sciences, and Jack Schultz and the Bond Life Science Center.

We hope you enjoy the conference and find it intellectually stimulating. If you have any questions or difficulties, please contact members of the Host Committee or Student Volunteers, who will be recognizable by their distinctive name tags.

Karthik Panchanathan and Mary Shenk
Conference Organizers, on behalf of the HBES Host and Program Committees

ACKNOWLEDGMENTS

HOST COMMITTEE: Napoleon Chagnon, Martin Daly, Mark Flinn, David Geary, Robert Lynch, Karthik Panchanathan, Mary Shenk, and Robert Walker

PROGRAM COMMITTEE: Martin Daly, Karthik Panchanathan, Mary Shenk, and Robert Walker

POSTER COMMITTEE: Edward Hagen, Debra Judge, Cristina Moya, and Catherine Salmon

NEW INVESTIGATOR COMMITTEE: Clark Barrett, Andreas Wilke, and Emilia Yamamoto

POSTDOCTORAL COMMITTEE: Russell Jackson, Tatsuya Kameda, and Joan Silk

VOLUNTEERS: Jeffery Alvey, Kotrina Kajokaite, Gretchen Perry, Heather Saxon, Jin Seok, Kathrine Starkweather, Marilyne Tamayo, and Amy Warren

MENTORS: Pat Barclay, Elizabeth Cashen, Steven Gangestad, Carolyn Hodges-Simeon, Robert Kurzban, Cristina Moya, Rebecca Sear, Michel Raymond, Annie Wertz, and Andreas Wilke

BOOK VENDORS: Hugh Galford (Library of Social Science) and Teresa Krauss (Springer)

UNIVERSITY SUPPORT: Jewel Coffman, Elaina Frede, Amanda J. Staley Harrison, Christine Hudson, John Murray, Jeffory Reeves, Christy Sumners, and Heather Tearney

HBES SUPPORT: Lisa DeBruine, Melissa Fales, Steven Gangestad, Steven Gaulin, Raymond Hames, Robert Kurzban, and Debra Lieberman

SPONSORS: College of Arts and Sciences, Christopher S. Bond Life Sciences Center, Department of Anthropology, Department of Psychological Sciences, Department of Economics

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PRESIDENT	Mark Flinn
PAST PRESIDENT	Randy Thornhill
TREASURER	Raymond Hames
SECRETARY/ARCHIVIST	Robert Kurzban
STUDENT REPRESENTATIVE	Melissa Fales
COUNCIL MEMBER AT LARGE (2015)	Catherine Salmon
COUNCIL MEMBER AT LARGE (2015)	Todd Shackelford
COUNCIL MEMBER AT LARGE (2017)	Clark Barrett
COUNCIL MEMBER AT LARGE (2017)	Lisa DeBruine
COUNCIL MEMBER AT LARGE (2019)	Steve Gaulin
COUNCIL MEMBER AT LARGE (2019)	Nancy Segal

NOTES

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SCHEDULE

WEDNESDAY, MAY 27

8:30 AM–11:00 AM	Publications Meeting	S207
11:30 AM–2:00 PM	Executive Council Meeting	S207
12:00 PM–5:00 PM	Conference Registration	Memorial Union North
12:00 PM	Posters can be put up	S2 & S3
2:30 PM–4:00 PM	Plenary: Raymond Hames	S107
4:00 PM–4:20 PM	Coffee Break	Memorial Union North
4:20 PM–5:40 PM	Sessions and Symposia 1 (p. 3)	S107, S110, S1, Parker
5:40 PM–7:00 PM	Dinner	On your own
7:00 PM–8:30 PM	Welcome Reception	Missouri Theater
8:30 PM–9:30 PM	Plenary: Alison Gopnik	Missouri Theater

THURSDAY, MAY 28

8:00 AM–9:00 AM	Plenary: Richard McElreath	Missouri Theater
9:30 AM–12:30 PM	Conference Registration	Memorial Union North
9:30 AM–10:50 AM	Sessions and Symposia 2 (p. 5)	S107, S110, S1, Parker
10:50 AM–11:10 AM	Coffee Break	Memorial Union North
11:10 AM–12:30 PM	Sessions and Symposia 3 (p. 7)	S107, S110, S1, Parker
12:30 PM–2:00 PM	Lunch	On your own
12:30 PM–2:00 PM	Student Mentoring Lunch	S1, S207, S107
2:00 PM–3:00 PM	Plenary: Christopher Kuzawa	Missouri Theater
3:30 PM–4:50 PM	Sessions and Symposia 4 (p. 8)	S107, S110, S1, Parker
4:50 PM–5:10 PM	Coffee Break	Memorial Union North
5:10 PM–6:10 PM	Sessions and Symposia 5 (p. 10)	S107, S110, S1, Parker
6:10 PM–7:30 PM	Dinner	On your own
7:30 PM–9:30 PM	Poster Session	S2 & S3

FRIDAY, MAY 29

8:00 AM–9:00 AM	Plenary: Lisa DeBruine	Missouri Theater
9:30 AM–10:50 AM	Sessions and Symposia 6 (p. 11)	S107, S110, S1, Parker
10:50 AM–11:10 AM	Coffee Break	Memorial Union North
11:10 AM–12:30 PM	Sessions and Symposia 7 (p. 13)	S107, S110, S1, Parker
12:30 PM–2:00 PM	Lunch	On your own
12:30 PM–2:00 PM	HBES Business Meeting	S207
2:00 PM–3:20 PM	Sessions and Symposia 8 (p. 15)	S107, S110, S1, Parker
3:20 PM–3:40 PM	Coffee Break	Memorial Union North
3:40 PM–5:00 PM	Sessions and Symposia 9 (p. 17)	S107, S110, S1, Parker
4:00 PM	Posters must be taken down	S2 & S3
5:30 PM–6:30 PM	Plenary: Gregory Clark	Missouri Theater
6:30 PM–9:30 PM	BBQ	Peace Park

SATURDAY, MAY 30

8:00 AM–9:20 AM	Sessions and Symposia 10 (p. 19)	S107, S110, S1, S2, S3
9:20 AM–9:40 AM	Coffee Break	Memorial Union North
9:40 AM–11:00 AM	Sessions and Symposia 11 (p. 21)	S107, S110, S1, S2, S3
11:00 AM–11:20 AM	Break	
11:20 AM–12:40 PM	Sessions and Symposia 12 (p. 23)	S107, S110, S1, S2, S3
12:40 PM–2:00 PM	Lunch	On your own
2:00 PM–3:00 PM	Plenary: Daniel Nettle	Missouri Theater
3:00 PM–3:20 PM	Coffee Break	Missouri Theater
3:20 PM–4:20 PM	New Investigator Talks (p. 25)	Missouri Theater
4:20 PM–4:30 PM	Quick Break	
4:30 PM–5:30 PM	Postdoctoral Talks (p. 26)	Missouri Theater
6:00 PM–7:30 PM	Banquet Dinner	Kimball Ballroom
8:00 PM–9:30 PM	Keynote: Bernard Chapais	Missouri Theater

FIND BUILDINGS ON CAMPUS MAP ON INSIDE FRONT COVER

Abbreviation	Room Name	Building
S110		Memorial Union South
S107	Wrench Auditorium	Memorial Union South
S207	Todd Room	Memorial Union South
S1	Stotler 1 (N103)	Memorial Union North
S2	Stotler 2 (N103)	Memorial Union North
S3	Stotler 3 (N103)	Memorial Union North
Parker	Parker Auditorium	Stewart Hall

SESSIONS AND SYMPOSIA PROGRAM

WEDNESDAY, MAY 27

SESSIONS AND SYMPOSIA 1
4:20 PM–5:40 PM

SESSION: MORAL COGNITION (P. 39)
WRENCH AUDITORIUM, CHAIR: ROBERT KURZBAN

4:20 PM – ROBERT KURZBAN
Costs of Neutrality in Moral Disputes

4:40 PM – MOSHE HOFFMAN
Cooperate without looking: Why we care what people think and not just what they do

5:00 PM – MASANORI TAKEZAWA
Neural mechanisms underlying indirect reciprocity: Emotion and reward calculation

5:20 PM – COLIN HOLBROOK
Moral Judgment and Contextual Contingency in Eight Societies

SYMPOSIUM: HUMAN MATING STRATEGIES: CONCEPTUAL DEVELOPMENTS AND NOVEL EMPIRICAL DISCOVERIES (P. 41)
PARKER AUDITORIUM, CHAIR: DAVID M. BUSS

4:20 PM – SARAH E. HILL
Perceived Disease Threat and Women's Desire for Sexual Variety

4:40 PM – DAVID P. SCHMITT
How Do Personal Attributes and Cultural Contexts Combine to Adaptively Influence Men's and Women's Sexual Strategies?

5:00 PM – DANIEL CONROY-BEAM

Two mate value discrepancy variables independently predict relationship satisfaction: Self v. partner and partner v. eligible alternative mate values

5:20 PM – DAVID M. BUSS

The Mate Switching Hypothesis

SYMPOSIUM: EVOLUTIONARY ARCHAEOLOGY: PHYLOGENETIC ANALYSIS AND NICHE CONSTRUCTION THEORY (P. 44)

STOTLER 1, CHAIR: MICHAEL J. O'BRIEN

4:20 PM – MICHAEL J. O'BRIEN

Phylogenetic Analysis in Archaeology

4:40 PM – MATTHEW T. BOULANGER

Phylogenetic Analysis of Paleoindian Projectile Points from Eastern North America

5:00 PM – MICHAEL J. O'BRIEN

Paleoindian Cultural Transmission in Eastern North America

5:40 PM – PHILIP A.F. LEFLAR

Urbanism and Human Evolution: Human Niche Construction and the Archaeology of Early Cities

SYMPOSIUM: EVOLUTIONARY APPROACHES TO NEEDS, IDENTITY AND CULTURE (P. 47)

S110, CHAIR: JORGE YAMAMOTO

4:20 PM – RUBY ROJAS

Factor Structure of Needs in Rural-Born Andean Mining Workers

4:40 PM – MAURICIO ALOSILLA-VELAZCO

Evolution, Needs structure, and Work in Latin America

5:00 PM – ADRIANA GARFIAS

Subjective well-being, culture and evolution. A cross-cultural comparison between Germany and Peru

5:20 PM – JORGE YAMAMOTO

Social identity factors in Peru. The paradox between collectivism and corruption?

THURSDAY, MAY 28

SESSIONS AND SYMPOSIA 2
9:30 AM–10:50 AM

SESSION: TESTOSTONE AND ITS CORRELATES (P. 48)
WRENCH AUDITORIUM, CHAIR: STEVEN W. GANGESTAD

9:30 AM – AMANDA C. HAHN

Women's, but not men's, testosterone modulates the reward value of infant cuteness

9:50 AM – SAMUELE ZILIOLI

Interest in children negatively predicts testosterone responses to sexual visual stimuli among heterosexual young men

10:10 AM – STEVEN W. GANGESTAD

Men's Oxytocin and Testosterone Responses to Thinking about Their Romantic Relationships: Associations with Own and Partner Relationship Involvement

10:30 AM – GIOVANNI A. MAGGINETTI

Facial masculinity, attraction, and formidability in a small-scale Amazonian population

SYMPOSIUM: PARENTAL INVESTMENT AND REPRODUCTIVE VARIABILITY ACROSS SOCIETIES (P. 51)

PARKER AUDITORIUM, CHAIR: JOHN P. ZIKER

9:30 AM – DAVID W. LAWSON

Rural Livelihoods and Biased Parental Investment in Child Education in Northern Tanzania

9:50 PM – RYAN SCHACHT

Patterns of family formation in response to the sex ratio

10:10 AM – ROSEMARY L. HOPCROFT

Mechanisms for a Trivers-Willard Effect in Educational Attainment in the U.S.

10:30 AM – JOHN P. ZIKER

Reproductive decision making in Ust'-Avam, Siberia: Fertility decline as a response to economic uncertainty

SYMPOSIUM: COALITIONS AND ALLIANCES: RESEARCHERS UNITING AROUND A COMMON GOAL (P. 54)

STOTLER 1, CHAIR: DAVID PIETRASZEWSKI

9:30 AM – AARON SELL

Bargaining power and adolescent aggressiveness: the role of fighting ability, coalitional strength and mate value

9:50 PM – JOHN Q. PATTON

Meat, Manioc and the Male Warrior Hypothesis: A Comparison of Men's and Women's Food Sharing Networks in a Horticultural Foraging Community in the Ecuadorian Amazon

10:10 AM – DAVID PIETRASZEWSKI

Promiscuous encoding and selective retrieval: A solution to a fundamental adaptive problem for coalitional psychology

10:30 AM – ANDREW W. DELTON

Coalitional psychology can explain enduring puzzles about political participation

SESSION: INFIDELITY CUES (P. 56)

S110, CHAIR: DAVID A. FREDERICK

9:30 AM – NICOLE BARBARO

Solving the Problem of Partner Infidelity: Individual Mate Retention, Coalitional Mate Retention, and In-Pair Copulation Frequency

9:50 AM – DAVID A. FREDERICK

Feeling Hurt Over Sexual versus Emotional Infidelity: Results from a Census-Representative Sample of Heterosexual, Gay, Lesbian, and Bisexual Adults

10:10 AM – YAEL SELA

Mate Retention Discrepancy and Mate Value Discrepancy in Long-Term Relationships

10:30 AM – PATRICK J. NEBL

The Competitive Thriftiness Hypothesis: Sex Differences in the Use of Frugality as a Costly Signal of Conscientiousness, Intelligence, Self-Control, and an Aversion to Short-Term Mating and Infidelity

SESSIONS AND SYMPOSIA 3
11:10 AM–12:30 PM

SYMPOSIUM: EVOLUTION OF LEARNING AND PLASTICITY (P. 59)
WRENCH AUDITORIUM, CHAIR: WILLEM E. FRANKENHUIS

11:10 AM – H. CLARK BARRETT

Open reaction norms, flexibility, and novelty in human evolution

11:30 AM – MARCO DEL GIUDICE

Some reflections on plasticity as a developing trait

11:50 AM – ANNIE E. WERTZ

The evolution of specialized learning mechanisms

12:10 PM – WILLEM E. FRANKENHUIS

The evolution of sensitive windows in a model of incremental development

SESSION: SEXUAL RESPONSE (P. 61)

PARKER AUDITORIUM, CHAIR: EDWARD MORRISON

11:10 AM – EDWARD MORRISON

Feeling hot hot hot: using facial thermography to explore sex differences in sexual arousal

11:30 AM – MICHAEL N. PHAM

Human sperm competition: A repeated-measures experiment showing evidence of ejaculate adjustment

11:50 AM – TODD K. SHACKELFORD

Partner Attractiveness Moderates the Relationship between Number of Sexual Rivals and In-Pair Copulation Frequency in Humans (*Homo sapiens*)

12:10 PM – GEOFFREY MILLER

Women prefer larger penises in short-term mating: Results from selection among 3D-printed models

SYMPOSIUM: COGNITION AND TRANSMISSION: EMPIRICAL EVIDENCE ON THE
ROLE OF INTELLIGENCE AND SOCIALITY IN HUMAN ADAPTATION (P. 64)
STOTLER 1, CHAIR: MICHELLE ANN KLINE

11:10 AM – LISA G. RAPAPORT

Social learning in nonhuman animals

11:30 AM – MICHELLE ANN KLINE

An Odd Couple: The Cultural and Cognitive Niches

11:50 AM – CRISTINE H. LEGARE

The ontogeny of cultural learning

12:10 PM – MAXIME DEREK

The foundations of human cumulative culture

SESSION: COGNITION (P. 66)

S110, CHAIR: RUSSELL E. JACKSON

11:10 AM – SHONA DUGUID

A comparison of how children and chimpanzees solve a pure coordination problem

11:30 AM – RUSSELL E. JACKSON

Evolved Navigation Theory and Cross-Cultural Visual Illusions

11:50 AM – MICHAL FUX

Precautionary Thought and Behaviour: Zulu rituals as case study

12:10 PM – ALEX DUNKEL

The evolution of cognition and hand use in primates: an interdisciplinary perspective

SESSIONS AND SYMPOSIA 4

3:30 PM–4:50 PM

SESSION: COOPERATION (P. 68)

WRENCH AUDITORIUM, CHAIR: LEE CRONK

3:30 PM – RANDOLPH M. NESSE

How social selection helps to solve the selfish gene crisis

3:50 PM – ATHENA AKTIPIS

Need-based transfers in cooperative systems

4:10 PM – LEE CRONK

Generous by nature: Risk, need, and the evolution of human cooperation

4:30 PM – RUTH MACE

Social structure and co-operation in human populations

SESSION: FLEXIBLE SEXUAL STRATEGIES (P. 71)

PARKER AUDITORIUM, CHAIR: VIVIANA A. WEEKES-SHACKELFORD

3:30 PM – SARAH RADTKE

Same-Sex Sexual Behavior in Self-Identified Heterosexual Women: Testing the Allomothering Hypothesis

3:50 PM – VIVIANA A. WEEKES-SHACKELFORD

Female mating psychology after having children

4:10 PM – JUSTIN R. GARCIA

Does Childhood Family Structure Influence Romantic and Sexual Outcomes Across the Adult Life Course?

4:30 PM – GREGORY D. WEBSTER

An investment model of sociosexuality, relationship satisfaction, and commitment: Evidence from dating, engaged, and newlywed couples

SESSION: ALLOPARENTING (P. 73)

STOTLER 1, CHAIR: DEBRA S. JUDGE

3:30 PM – DEBRA S. JUDGE

Child fostering in rural Timor-Leste: Patterns of sending and receiving children among related households and children's physical growth

3:50 PM – PAULA SHEPPARD

Grandparents and child health in Guatemala: opposite effects of paternal grandmothers and maternal grandfathers

4:10 PM – JAYME CISCO

Who supports breastfeeding mothers? A look at kin investment in the US

4:30 PM – GRETCHEN PERRY

Maintenance of kin connections: matrilineally biased visiting patterns in a patrilineal and patrilocal society

SYMPOSIUM: THE EVOLUTION OF HUMAN VOCAL BEHAVIOR: COMPARATIVE, CULTURAL, DEVELOPMENTAL, AND NEUROSCIENCE PERSPECTIVES (P. 75)

S110, CHAIR: GREG BRYANT

3:30 PM – MARCUS PERLMAN

Vocal control in the great apes

3:50 PM – D. KIMBROUGH OLLER

Vocal development in the human infant and in our closest primate relatives

4:10 PM – GREG BRYANT

The perception of spontaneous laughter across disparate cultures

4:30 PM – CAROLYN MCGETTIGAN

Laughing, on the inside: Using magnetic resonance imaging of the brain and vocal tract to investigate the perception and production of human laughter signals

SESSIONS AND SYMPOSIA 5

5:10 PM–6:10 PM

SYMPOSIUM: WHY ARE MEN MORE MOBILE? MATING BENEFITS AND PARENTING COSTS (P. 78)

WRENCH AUDITORIUM, CHAIR: LAYNE VASHRO

5:10 PM – ELIZABETH CASHDAN

Sex differences in range size: When is travel worth the risk?

5:30 PM – STEVEN GAULIN

Sex Differences in Travel Reflect Shifting Reproductive Priorities among Tsimane Forager-Horticulturalists

5:50 PM – LAYNE VASHRO

The Search for Additional Mating Opportunities Helps Explain Larger Ranges of Twe Men

SYMPOSIUM: DEEP RATIONALITY IN WOMEN'S BEHAVIOR: EVIDENCE THAT FEMALE PHYSIOLOGY AND BEHAVIOR IS COMPLEX AND STRATEGIC (P. 79)

PARKER AUDITORIUM, CHAIR: MARTIE G. HASELTON AND JAIMIE ARONA KREMS

5:10 PM – KELLY GILDERSLEEVE

Are women more attractive near ovulation?

5:30 PM – JAIMIE ARONA KREMS

Women selectively and strategically guard their (desirable) mates from ovulating women

5:50 PM – NICHOLAS M. GREBE

Extended sexuality in human females: Further evidence of effects of luteal phase and hormonal contraception

SYMPOSIUM: A TOUR UP SHIT'S CREEK AND TIPS FOR BUILDING YOURSELF A PADDLE (P. 82)

STOTLER 1, CHAIR: ALICE DREGER

5:10 PM – ALICE DREGER

A Tour Up Shit's Creek

5:30 PM – AMY ALKON

Tips For Building Yourself a Paddle

SYMPOSIUM: RESPONSE TO ENVIRONMENTAL AND SOCIAL STRESS (P. 83)

S110, CHAIR: JORGE YAMAMOTO

5:10 PM – FRANCISCO MOROTE

Into the Death Zone: copying stress in the world most dangerous mountain

5:30 PM – PATRICIA ALARCON

Well-being in teenage mothers in extreme poverty: problem or adaption?

5:50 PM – ENRIQUE PERALTA

Explaining the high rate of adolescent problem behavior in the Andean city of Juiliaca

FRIDAY, MAY 29

SESSIONS AND SYMPOSIA 6

9:30 AM–10:50 AM

SESSION: IMPLICIT STATISTICAL INFERENCE (P. 84)

WRENCH AUDITORIUM, CHAIR: ANDREAS WILKE

9:30 AM – ANDREAS WILKE

Hot hand bias in rhesus monkeys

9:50 AM – GARY L. BRASE

Revealing information parsing preferences in the mind, using statistical reasoning tasks

10:10 AM – MARIA JOHN

Value Attribution Related to Scarcity in Chimpanzees (*Pan Troglodytes*) and Children

10:30 AM – JOHN TOOBY

The nonsocial and social evolution of causal construal: An adaptationist approach

SESSION: PUNISHMENT AND COOPERATION (P. 87)

PARKER AUDITORIUM, CHAIR: ADAM SPARKS

9:30 AM – SANGIN KIM

Adjustment of Sanctioning Effort among Punishers in Public Goods Games

9:50 AM – MISATO INABA

Robustness of linkage strategy which leads to mutual cooperation

10:10 AM – ADAM SPARKS

Empty threats maintain public goods contributions, but not for long: the limited effect of another false cue

10:30 AM – TOSHIO YAMAGISHI

Punishment of ‘Norm Violators’ in Three Punishment Games

SYMPOSIUM: MECHANISMS OF ASSORTMENT AND COORDINATION WITHIN AND BETWEEN GROUPS (P. 89)

STOTLER 1, CHAIR: THOMAS FLAMSON AND ANNE C. PISOR

9:30 AM – THOMAS FLAMSON

Not Quite Burning Bridges: Overt vs. Covert Signals for Within-Group Assortment

9:50 AM – PAUL E. SMALDINO

The Evolving Multidimensionality of Social Identity

10:10 AM – JOHN A. BUNCE

An Evolutionary Model of Ethnic Boundaries and the Persistence of Indigenous Culture

10:30 AM – ANNE C. PISOR

Group choice vs. partner choice: Different assortment strategies in the face of resource shortfalls? New economic games and data from three populations of Amazonian horticulturalists

SYMPOSIUM: INCORPORATING TRADITIONS AND ETHNOGRAPHIC EVIDENCE INTO EVOLUTIONARY EXPLANATIONS OF HUMAN SOCIAL BEHAVIOR, WITH REFERENCE TO STORIES, ART AND RITUAL (P. 91)

S110, CHAIR: RYAN O. BEGLEY

9:30 AM – KATHRYN COE

Can Science Lead us to a Definition of Art?

9:50 AM – JELENA ČVOROVIĆ

Serbian Gypsy Witch Narratives

10:10 AM – GERALD BETTY

Comanche Stories of Social Behavior and Sacrifice

10:30 AM – LYLE B. STEADMAN

Traditions and Natural Selection

SESSIONS AND SYMPOSIA 7

11:10 AM–12:30 PM

SYMPOSIUM: EVOLUTIONARY INSIGHTS INTO ‘MALADAPTIVE’ FERTILITY: CONSTRAINTS, CONFLICT AND COOPERATION (P. 94)

WRENCH AUDITORIUM, CHAIR: GERT STULP

11:10 AM – CRISTINA MOYA

What do men want?: Can men really benefit from higher fertility than what is optimal for women?

11:30 AM – REBECCA SEAR

Cooperation and conflict in the human family: a cross-cultural investigation of how family influences fertility

11:50 AM – GERT STULP

Wealth, fertility, and adaptive behaviour: the fundamental problem of sociobiology revisited

12:10 PM – HEIDI COLLERAN

Social network and community level influences on contraceptive use: evidence from rural Poland

SESSION: FEMALE HORMONES (P. 97)
PARKER AUDITORIUM, CHAIR: MARTIE G. HASELTON

11:10 AM – BENEDICT C. JONES

A longitudinal analysis of women's salivary testosterone and intrasexual competitiveness

11:30 AM – CLAIRE FISHER

Women's preference for attractive makeup tracks changes in their salivary testosterone

11:50 AM – JAMES R. RONEY

Ovarian hormones predict within-cycle fluctuations in women's food intake

12:10 PM – MARTIE G. HASELTON

Are Ovulation Cycle Shifts in Humans Robust? Evidence from P-Curves

SESSION: RISK (P. 99)
STOTLER 1, CHAIR: X.T. WANG

11:10 AM – JANA B. JARECKI

Informational cues for risk differentiate between risk-attitudes in ten evolutionary domains

11:30 AM – IAN SMITH

Sex differences in economic risk preferences in hunter-gatherers

11:50 AM – DANDARA DE OLIVEIRA RAMOS

Effects of different forms of violence on Brazilian adolescents' risky behaviors: violent victimization vs sense of endangerment

12:10 PM – X.T. WANG

Partitioning Genetic and Environmental Contributions to Domain-Specific Risk Taking: A Twin Study and Meta-Analyses

SESSION: FAIRNESS, TRUST, AND COOPERATION (P. 101)
S110, CHAIR: DANIEL J. KRUGER

11:10 AM – ALEX SHAW

The impartiality account of fairness

11:30 AM – CRISTINA ACEDO-CARMONA

Checking the Evolutionary Mechanism of Personal Trust in Two Communities From Oaxaca, Mexico

11:50 AM – CAROLYN DECLERCK

Using (and misusing) cooperation heuristics

12:10 PM – DANIEL J. KRUGER

Advancing the understanding of attitudes towards police with a life history framework

SESSIONS AND SYMPOSIA 8

2:00 PM–3:20 PM

SYMPOSIUM: CONTEXTUAL AND ULTIMATE FACTORS UNDERLYING NON-KIN COOPERATION (P. 103)

WRENCH AUDITORIUM, CHAIR: PAT BARCLAY

2:00 PM – MARIA EMILIA YAMAMOTO

Proximate influences on children's cooperation

2:20 PM – TOKO KIYONARI

Rational collaboration can induce voluntary cooperation in a social dilemma

2:40 PM – MAX KRASNOW

Looking under the hood of third party punishment reveals design for personal benefit

3:00 PM – PAT BARCLAY

“Greener than thou”: partner choice creates competition to save the environment

SESSION: BEHAVIORAL ENDOCRINOLOGY (P. 106)

PARKER AUDITORIUM, CHAIR: TESS ROBERTSON

2:00 PM – M. CATHERINE DESOTO

HPA and Personality: Don't control away sex differences

2:20 PM – DARIO MAESTRIPIERI

Do women find men with autistic-like traits attractive as long-term mating partners and why?

2:40 PM – TESS ROBERTSON

Cortisol and the evolved design of anger and guilt

3:00 PM – VICTOR KENJI M. SHIRAMIZU

Your (evolved) brain on porn: sociosexuality and attachment styles predict individual differences in HPA response to visual erotic stimuli

SYMPOSIUM: WHEN TO START, WHEN TO STOP?: INSIGHTS FROM LIFE HISTORY THEORY ON FERTILITY DECISIONS (P. 108)
STOTLER 1, CHAIR: LISA MCALLISTER

2:00 PM – MARY SHENK

Is status part of the human utility function? Implications for understanding variation in fertility

2:20 PM – LISA MCALLISTER

Mortality and Family Planning: using experimental methods to find a causative link between mortality and reproductive preferences

2:40 PM – ILONA NENKO

Test of first birth interval as a surrogate measure of women's nutritional status

3:00 PM – MARY C. TOWNER

How Relevant is Menopause to Human Fertility Behavior? A Life History Approach to Age at Last Birth in Rural Bangladesh

SESSION: PERSON PERCEPTION (P. 111)
S110, CHAIR: NADINE LAVAN

2:00 PM – LAWRENCE IAN REED

The Communicative Function of Sad Facial Expressions

2:20 PM – NADINE LAVAN

Who's laughing now? Authenticity of non-verbal emotional expressions modulates the perception of emotion category and person identity in the human voice

2:40 PM – LENE AARØE

Reaching Out or Pulling Away? The Effect of Pain on Cooperativeness is Modulated by Early Life History

SESSIONS AND SYMPOSIA 9
3:40 PM–5:00 PM

SYMPOSIUM: ADAPTATIONIST PERSPECTIVES ON HUMAN PERSONALITY:
EXPLAINING THE ORIGINS OF INDIVIDUAL AND CROSS-CULTURAL DIFFERENCES (P.
113)

WRENCH AUDITORIUM, CHAIR: AARON W. LUKASZEWSKI

3:40 PM – DANIEL SZNYCER

The logic of variation in social antagonism

4:00 PM – ERIC J. PEDERSEN

Individual differences in endorsement of the code of honor: A life history perspective

4:20 PM – CHRISTOPHER R. VON RUEDEN

Adaptive personality calibration in a human society: Effects of embodied capital on prosocial leadership orientation

4:40 PM – AARON W. LUKASZEWSKI

What drives personality covariation? A test of the socioecological complexity hypothesis

SYMPOSIUM: INSIGHTS FROM NONHUMAN PRIMATE DATA INTO BEHAVIOR AND LIFE HISTORY TRAITS (P. 115)

PARKER AUDITORIUM, CHAIR: EMILY LYNCH

3:40 PM – EMILY LYNCH

Fathers mediate social bonds among young offspring in olive baboons (*Papio hamadryas anubis*)

4:00 PM – KOTRINA KAJOKAITE

Should I stay or should I go? Natal dispersal in capuchin monkeys (*Cebus capucinus*)

4:20 PM – STACY ROSENBAUM

Group structure predicts variation in proximity relationships between male-female and male-infant pairs of mountain gorillas (*Gorilla beringei beringei*)

4:40 PM – MONICA H. AHSAN

Survival of the infants: An analysis of early life mortality in captive western lowland gorillas

SESSION: SEXUAL SELECTION (P. 118)

STOTLER 1, CHAIR: DAVIDE PONZI

3:40 PM – ANDREAS M. BARANOWSKI

Receptivity to Sexual Invitations: Gender differences may not be what they seem

4:00 PM – ANTHONIETA LOOMAN MAFRA

Male height: mate preference and actual choice

4:20 PM – LEIF EDWARD OTTESEN KENNAIR

Sexual interest vs hostile sexism: The relevance of sociosexual orientation in the understanding of opposite and same sex sexual harassment

4:40 PM – DAVIDE PONZI

Adaptive significance of interindividual variation in morningness/eveningness

SYMPOSIUM: A SEQUENTIAL CASCADE MODEL OF SOCIAL BIOGEOGRAPHY (P. 120)

S110, CHAIR: AURELIO JOSÉ FIGUEREDO

3:40 PM – TOMÁS CABEZA DE BACA

Some like it hot, wet, and fast: A population-level cascade model of the relationships among climate, population density, parasite burden, and life history strategies

4:00 PM – CANDACE JASMINE BLACK

Giving peace a chance by taking it slow: An ecological approach to life history, social equality, collective peace and sexual equality

4:20 PM – AURELIO JOSÉ FIGUEREDO

How slow life history strategy fosters the development of human capital via strategic differentiation and socioeconomic specialization as emergent properties of cooperative social systems

4:40 PM – MICHAEL ANTHONY WOODLEY OF MENIE

A sequential canonical cascade analysis of the evolutionary and developmental predictors of national IQ

SATURDAY, MAY 30

SESSIONS AND SYMPOSIA 10
8:00 AM–9:20 AM

SESSION: PSYCHOPATHOLOGY? (P. 123)
WRENCH AUDITORIUM, CHAIR: EDWARD H. HAGEN

8:00 AM – NANCY L. SEGAL

Cooperative Eyes in Evolutionary Context: Autism Spectrum Disorder Children and Typically Developing Children/Adults Compared

8:20 AM – THOMAS HAARKLAU KLEPPESTØ

Why is there a sex-difference in depression?

8:40 AM – ROGER J. SULLIVAN

Sex Differences in Wason Selection Task Performance in Schizophrenia and Autism

9:00 AM – EDWARD H. HAGEN

Testing the costly signaling and inclusive fitness models of suicidal behavior against the ethnographic record

SESSION: SOCIAL EVOLUTION (P. 126)
STOTLER 1, CHAIR: ADAM POWELL

8:00 AM – ADAM POWELL

The palaeogenetics of Holocene European hunter-gatherers and early farmers

8:20 AM – STEPHEN HAUSCH

The Ecological Theory of Emotions

8:40 AM – HEITOR BARCELLOS FERREIRA FERNANDES

The double-edged sword of warfare: Opposing historical and recent effects of armed conflicts upon collectivism, life history, human capital, and intelligence in Japan

9:00 AM – SHIMON SAPHIRE-BERNSTEIN

Gene-Culture Co-Evolution of the Oxytocin Receptor Gene (OXTR) II: New Revelations from Haplotype Analyses

SESSION: NEIGHBORHOODS (P. 128)
STOTLER 2, CHAIR: DANIEL BRIAN KRUPP

8:00 AM – CAROLINE UGGLA

Local ecology influences reproduction in Northern Ireland even with controls for individual resource access

8:20 AM – DAN O'BRIEN

Institutions or Evolved Behavior? Evidence that 311 Hotlines are Leveraging Human Territoriality in the Maintenance of the Urban Commons

8:40 AM – DANIEL BRIAN KRUPP

A Solution to the “Paradox” of Inequality and Conflict

9:00 AM – TAMAS DAVID-BARRETT

The evolution of constrained sociality

SESSION: PARENTAL INVESTMENT (P. 130)
STOTLER 3, CHAIR: DAVID COALL

8:00 AM – RANDY CORPUZ

Father involvement predicted by a male’s own early environment in a U.S. sample of first-time fathers

8:20 AM – DAVID COALL

Morning sickness as a proximate mechanism for allocating resources to the fetus and placenta: A life history perspective

8:40 AM – DEBRA LIEBERMAN

Certainty of Paternity in Humans Depends on Maternal Mating and Parenting Effort

9:00 AM – KATHERINE A. VALENTINE

Bioecological exchange theory: Both sexes trade resources for childcare when selecting a long-term mate

SYMPOSIUM: ADVANCES IN BIOPOLITICAL RESEARCH CONCERNING POLITICAL LEADERSHIP (P. 132)

S110, CHAIR: PATRICK A. STEWART

8:00 AM – MICHAEL E. PRICE

The evolution of leadership: Tests of the service-for-prestige theory

8:20 AM – GREGG R. MURRAY

Evolutionary Leadership Preferences: Group Interests, Distrust of Leaders, and Leader Evaluations

8:40 AM – BRYCE JENSEN DIETRICH

Vocal Pitch and Legislative Success in the U.S. House of Representatives

9:00 AM – PATRICK A. STEWART

Facing their fears (amongst other emotions): The influence of political ideology on the evaluation of ambiguous displays

SESSIONS AND SYMPOSIA 11

9:40 AM–11:00 AM

SYMPOSIUM: PARENTING STRATEGIES IN MODERN AND EMERGING ECONOMIES (P. 135)

WRENCH AUDITORIUM, CHAIR: KERMYT G. ANDERSON

9:40 AM – PETER B. GRAY

Fatherhood in St. Kitts: Patterns and Predictors of Partnership and Paternal Dynamics in a Caribbean Island

10:00 AM – KERMYT G. ANDERSON

Paternity Confidence and Birth Outcomes: Results from Six Million U.S. Birth Certificates

10:20 AM – KATHRINE STARKWEATHER

Strategies for Production and Reproduction: Complementarity Among the Shodagor

10:40 AM – HELEN E. DAVIS

Evidence of Diverging Strategies within Transitioning Populations: Wealth Stratification, Formal Education, and Fertility Differentials in Two Small Scale Societies

SESSION: PERSONALITY (P. 138)

STOTLER 1, CHAIR: BRENDAN ZIETSCH

9:40 AM – LEI CHANG

Attachment as Resource and Risk Management Strategies

10:00 AM – DALLAS NOVAKOWSKI

Individual Differences in Self-Esteem and Embodied Capital: Expanding the Sociometer Hypothesis

10:20 AM – JOSEPH H. MANSON

Individual Differences in Fearfulness and Card Selection on the Wason Task

10:40 AM – BRENDAN ZIETSCH

A test of the facultative calibration/reactive heritability model of extraversion

SESSION: HEALTH (P. 140)

STOTLER 2, CHAIR: MICHAEL BANG PETERSEN

9:40 AM – MICHAEL BANG PETERSEN

Healthy Outgroup Members are Psychologically Represented as Sick Ingroup Members

10:00 AM – IAN D. STEPHEN

Shape cues to health: Evidence from geometric morphometrics

10:20 AM – MICHAL KANDRIK

Men's testosterone and cortisol predict their preferences for healthy color cues in faces

10:40 AM – CASEY ROULETTE

Cannabis use vs helminthiasis among Congo Basin foragers: Evidence of self-medication?

SESSION: COALITIONS (P. 142)

STOTLER 3, CHAIR: ROBERT LYNCH

9:40 AM – MATEO PEÑAHERRERA AGUIRRE

The Brawler, the Brainier: Evolutionary repercussions of social conflict over neuroanatomical volume indicators and life history in non-human primates

10:00 AM – TANIA REYNOLDS

A Male Coalitional Competition Framework For Understanding Attitudes Towards Gay Men

10:20 AM – SERDAR KAYA

Outgroup Prejudice: An Evolutionary Perspective

10:40 AM – NAPOLEON CHAGNON AND ROBERT LYNCH

The impact of cross cousin marriage on alliances and fitness outcomes among the Yanomamö

SESSION: LIFE HISTORY (P. 144)
S110, CHAIR: CURTIS DUNKEL

9:40 AM – CURTIS DUNKEL

Using the California Q-sort Measure of Life History Strategy to Predict Sexual Behavioral Outcomes

10:00 AM – NAN ZHU

Environmental unpredictability and competition in shaping moral reasoning as a manifestation of life history strategies

10:20 AM – OLIVER SNG

The Crowded Life is a Slow Life: Evidence across Nations, States, and Individuals

10:40 AM – ANDREW TEMPLETON

The functional basis of individual differences in personality: A life history examination

SESSIONS AND SYMPOSIA 12
11:20 AM–12:40 PM

SESSION: FACULTATIVE RESPONSES IN MATING AND REPRODUCTION (P. 146)
WRENCH AUDITORIUM, CHAIR: LARS PENKE

11:20 AM – JESSICA AYERS

Dressed to Unimpress: How Sexual Cues Influence Non-Sexual Domains

11:40 AM – TOBIAS KORDSMEYER

Sexual selection for symmetry: Three indicators of developmental instability in relation to mating behaviour and success in humans

12:00 PM – LORA ADAIR

Death and taxes: Shifting fertility intentions in response to mortality and resource scarcity cues

12:20 PM – LARS PENKE

Male general intelligence does not increase female sexual attraction

SESSION: CULTURE AND EVOLUTION (P. 149)
STOTLER 1, CHAIR: JOSEPH WATTS

11:20 AM – JOSEPH WATTS

The Function of Human Sacrifice in Austronesia

11:40 AM – RANDY THORNHILL

Resolving Galton's Problem: Cultural Trait Origin is not the Same as Cultural Trait Maintenance

12:00 PM – HELENA MITON

Universal Cognitive Mechanisms Explain the Cultural Success of Bloodletting

12:20 PM – KESSON MAGID

Transmission dynamics and cultural evolution within a multigenerational Bengali migrant community in the UK

SESSION: NETWORKS (P. 151)

STOTLER 2, CHAIR: MATTHEW M. GERVAIS

11:20 AM – MATTHEW M. GERVAIS

The relational contexts of generosity in a Fijian social network: Evidence from a RICH economic game

11:40 AM – KRISTOPHER M. SMITH

Hunter-gatherer residence camps reveal that homogeneity in cooperation is due to reciprocity, not other mechanisms

12:00 PM – TASSIE KATHERINE HIRSCHFELD

Behavioral Ecology Meets Behavioral Economics: Modeling Organized Crime as an Evolutionarily Stable Strategy

12:20 PM – CURTIS ATKISSON

Modeling the effect of social networks on cooperation

SYMPOSIUM: A TRIBUTE TO IRVEN DEVORE (P. 153)

STOTLER 3, CHAIR: MELVIN KONNER

11:20 AM – MELVIN KONNER

11:40 AM – STEVEN GAULIN

12:00 PM – JOHN TOOBY

SESSION: FORMIDABILITY (P. 154)
S110, CHAIR: ALEXANDER K. HILL

11:20 AM – DAN NGUYEN

Upper-body strength and conflict resolution in human males

11:40 AM – ADAR B. EISENBRUCH

Evidence of Partner Choice Mechanisms in a One-Shot Bargaining Game

12:00 PM – AARON GOETZ

**Individual Differences in Men's Spontaneous Assessments of Formidability:
Preliminary Tests of Competitive Strategy Theory**

12:20 PM – ALEXANDER K. HILL

**Sexual selection favors low vocal pitch in humans and other anthropoid
primates**

AWARD NOMINEE TALKS
MISSOURI THEATER
3:20 PM–5:30 PM

SESSION: NEW INVESTIGATOR AWARD COMPETITION (P. 35)

3:20 PM – LOUIS CALISTRO ALVARADO

**Men's Life History and Buffered Hormonal Regulation of Skeletal Muscle
Phenotype: A Test of the Paternal Provisioning Hypothesis in Rural Polish
Men**

3:40 PM – RITA ANNE MCNAMARA

**My brother's keeper: Kinship psychology directing cooperative coordination
in Yasawa, Fiji**

4:00 PM – JULIAN DE FREITAS

**The Strategic Bystander: Recursive Theory of Mind and Common
Knowledge in Decisions to Help**

POSTDOCTORAL AWARD COMPETITION (P. 37)

4:30 PM – NICOLE CREANZA

A comparison of worldwide linguistic and genetic variation in human populations

4:50 PM – CAROLYN R. HODGES-SIMEON

Is the low male voice a costly signal?

5:10 PM – AMY BODDY

Are there tradeoffs between reproductive competitiveness and cancer susceptibility?

KEYNOTE AND PLENARY LECTURE ABSTRACTS

An Assessment of Inclusive Fitness Theory in Humans

RAYMOND HAMES
UNIVERSITY OF NEBRASKA
RHAMES2@UNL.EDU

INTRODUCTION BY NAPOLEON CHAGNON
UNIVERSITY OF MISSOURI

Shortly after its introduction in 1964 by W.D. Hamilton many evolutionary minded social scientists thought kin selection would likely explain a variety of altruistic and cooperative behaviors that had been attributed to culture. Both behavioral ecologists and evolutionary psychologists have been at the forefront in dealing with the complexity of kin altruism by researching inter-related problems from kin recognition and emotional valence towards kin to actuarial and field based observational accounts of kin investment. There is now clear evidence of the utility of kin investment in understanding a variety of behaviors such as alloparenting, matrilineal and pay-off based biases, and costly forms of altruism. However, while potent, kin selection's reach is limited: low cost reciprocal altruism dominates everyday interaction and higher level social norms guide many costly behaviors. The goal in this presentation is to identify areas in which kin investment is well documented, how investment varies across the life course, where kin investment is surprisingly absent, and some problems in current approaches to kin investment.

WEDNESDAY, MAY 27, 2:30 PM–4:00 PM, WRENCH AUDITORIUM

Childhood is evolution's way of performing simulated annealing: Life history, variability and learning

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INTRODUCTION BY DAVID GEARY
UNIVERSITY OF MISSOURI

I will argue for a theoretical link between the development of an extended period of immaturity in human evolution and the emergence of powerful and wide-ranging causal learning mechanisms, particularly the use of causal models and Bayesian learning. In the past 15 years we've discovered that even young children are adept at inferring causal structure from statistical patterns. But can they also learn more abstract theoretical principles? And are there differences in the ways that younger children, older children and adults learn that might be relevant to our extended immaturity? I will present two case-studies showing that preschoolers can learn abstract higher-order principles from data. The examples involve abstract relations (same vs. different), and abstract logical forms (AND vs. OR). In each case, younger learners were actually better at inferring unusual or unlikely principles than older learners. I relate this to computational ideas about search and sampling and to evolutionary ideas about human life history. Our hypothesis is that childhood is evolution's way of performing simulated annealing—a computational strategy in which an early period of broad exploration is followed by later more focused exploitation. Our distinctively long human childhood allows a period of broad "high-temperature" hypothesis search. The variability and noisiness that is so characteristic of young minds and brains has distinct cognitive advantages particularly in variable and unpredictable environments. It comes, however, with the cost of greater caregiving investment, and humans also seem to be particularly adapted for such investment with the distinctive "triple-threat" of pair-bonding fathers, grandmothers and alloparents.

WEDNESDAY, MAY 27, 8:30 PM–9:30 PM, MISSOURI THEATER

The evolution of statistical methods for studying human evolution

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INTRODUCTION BY ROBERT BOYD
ARIZONA STATE UNIVERSITY

Many published research findings are false. Blame for this fact has fallen heavily on statistical practice and malpractice. I review the history of applied statistics, with a focus on the cultural evolution of contemporary (mal)practice in evolutionary biology, anthropology, and psychology. I focus on problems of particular importance for the study of human evolution. I explain the goals and limitations of proposed remedies, with a focus on Bayesian inference and model comparison. Finally, I present a model of how the evidential value of any statistical procedure cannot be understood in isolation, but instead depends upon the population dynamics of a scientific community.

THURSDAY, MAY 28, 8:00 AM–9:00 AM, MISSOURI THEATER

Brain energetics and the evolution of human childhood

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INTRODUCTION BY RANDOLPH NESSE
ARIZONA STATE UNIVERSITY

Humans are unusual in having a childhood stage characterized by a prolonged period of exceptionally slow growth. Many hypotheses have been proposed to explain why humans have evolved this life history stage. In this talk, Kuzawa will discuss his recent collaborative work that quantifies the costs of human brain development and uses this information to shed light on the evolution of human life history. Compiling data from brain imaging studies, they find that the costs of the brain do not peak at birth, when relative brain size is largest, but at 4–5 years of age, when the brain consumes the equivalent of 66% of the body's energy use at rest. This childhood peak in brain costs reflects the proliferation of energy-intensive synapses prior to experience-driven synaptic pruning. Consistent with the hypothesis of a brain-body growth trade-off, body weight growth rate follows an inverse, linear relationship with brain glucose demands from infancy until puberty, and maximal brain glucose demands co-occur developmentally with the age of slowest body weight gain. These findings provide rare empirical evidence that humans have evolved very slow body growth (and by extension, a prolonged growth period) to free up energy for our unusually costly pattern of brain development. In addition, the finding that the peak in brain energy needs occurs after the age of weaning in most traditional small-scale societies shows that much of the energetic costs of human brain development are not provided by maternal metabolism, but by social provisioning and allocare.

THURSDAY, MAY 28, 2:00 PM–3:00 PM, MISSOURI THEATER

How do humans recognize kin?

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INTRODUCTION BY MARTIN DALY
UNIVERSITY OF MISSOURI

Kinship is central to theories of social behaviour. Hamilton's theory of inclusive fitness is widely recognised as the most important theoretical advance in evolutionary science since Darwin's original theories, predicting that many social behaviours will be contingent on relatedness. Optimal outbreeding theory also predicts that organisms will be sensitive to cues of kinship when choosing mates due to the costs of close inbreeding and excessive outbreeding. However, kin-biased behavior requires mechanisms to recognize kin. So how do you know who your kin are? Research on human kin recognition is currently fragmented by theoretic perspective, type of kin, discipline, and methodology. In this talk, I will bring together this diverse body of research and present evidence for how contextual kinship cues (e.g., co-residence, maternal perinatal association) and phenotypic kinship cues (e.g., facial resemblance, MHC similarity) are used by humans to allocate sexual and prosocial behavior. I will also discuss whether kin recognition is best characterized as a unitary system or as a collection of behaviors that may or may not share underlying mechanisms.

FRIDAY, MAY 29, 8:00 AM–9:00 AM, MISSOURI THEATER

The Intergenerational Transmission of Social Status: Nature versus Nurture

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INTRODUCTION BY MARY SHENK
UNIVERSITY OF MISSOURI

Using surname distributions it is possible to measure the intergenerational transmission of social status in some societies over as many as 24 generations. Such surname measures reveal that the heritable component of social status is transmitted between generations in a surprisingly simple, powerful, and law-like manner. Aspects of status observed in isolation—education, occupation, wealth, and health—regress rapidly to the mean. They do so at different rates for different aspects of status, societies and time periods. But underlying this surface confusion, surname distributions show people have an underlying social status that is strongly persistent over time. The correlation of this status across generations is on the order of 0.7–0.8. This persistence is the same for all societies and epochs. Status is inherited as strongly in modern Sweden as in pre-industrial England. It is inherited as strongly in egalitarian Sweden as in the inegalitarian USA. Status is inherited in the same way by individual families as by distinct social groups. Further the strength of this inheritance is great enough that it can take 10 generations for the descendants of high or low status families to be of average social status.

Can genetics explain this stable pattern of underlying status inheritance? In this talk I consider various tests that would rule out genetics. For example, for the correlation between individual parents and children to be 0.75, mating by underlying status value has to be highly assortative in all societies. Was this the case even in pre-modern societies where women did not have access to educations and occupations? If genetics is the main carrier of status, then family size or birth order should have little influence on children's social status. Completed family sizes in England for marriages prior to 1880 ranged from 1 to 18. Were social outcomes in such a setting—occupation, education, wealth and longevity—independent of family sizes? Were oldest children advantaged?

FRIDAY, MAY 29, 5:30 PM–6:30 PM, MISSOURI THEATER

The consequences of early-life adversity: Comparative evidence from humans and birds

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INTRODUCTION BY WILLEM FRANKENHUIS
RADBOD UNIVERSITY NIJMEGEN

In humans, adversity experienced in childhood is associated with poorer adult health and survival, and also with altered behavioural strategies such as accelerated reproduction. We can hypothesize that the altered behavioural strategies represent adaptive responses to finding oneself with poor prospects as a result of a poor start in life. Although this hypothesis appears plausible, the human data are inevitably correlational. It is thus very hard to establish that the role of early adversity is causal in the way the adaptive hypothesis requires. We have developed the European starling as a model for studying the effects of early-life adversity experimentally. We use cross-fostering to manipulate the nestling period so that siblings experience different levels of early competition. I will present data showing that even a brief period of subtle early adversity has lasting consequences, in particular by causing accelerated shortening of telomeres, the DNA caps on chromosomes. I will also show that birds exposed to early adversity, or with greater developmental telomere attrition, show a suite of behavioural changes, including increased impulsivity and altered food-intake regulation, that can be interpreted as facultative adaptive responses. More generally, I will advocate the advantages and opportunities of using comparative evidence, and evidence from long-lived birds in particular, in evolutionary research on development.

SATURDAY, MAY 30, 2:00 PM–3:00 PM, MISSOURI THEATER

Phylogeny and the evolutionary analysis of human behavior

BERNARD CHAPAIS
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INTRODUCTION BY SARAH HRDY
UNIVERSITY OF CALIFORNIA, DAVIS

Human behavioral ecology, evolutionary psychology, and dual inheritance theory have been described as “three styles in the evolutionary analysis of behavior” (Smith 2000). Here I focus on the contribution of a fourth “style,” the comparative method, or phylogenetic approach (PA), by emphasizing its significance for, and complementary with functional approaches. Traditionally, PA has been used to identify homologous and homoplasious similarities and has focused accordingly on traits that humans share with other primates. Interestingly, however, PA is also informative about the origins of complex social traits that other primates do not exhibit—e.g., patrilineal kinship structures, affinal kinship, and marital arrangements—and therefore it sheds light on a much greater portion of human social evolution. Many such traits appear to have emerged from the combination of more elementary building blocks that may or may not be present in other primates. Better knowledge of phylogeny in turn contributes to three issues regarding the evolutionary analysis of behavior. First, because it draws attention to the prior social state out of which a trait originated, PA helps identify the trait’s relevant functional consequences and may generate new hypotheses about its adaptive function. Second, PA may help clarify the biological underpinnings of human behavior. It suggests, for example, that many behavioral propensities might have a composite biological foundation and an emergent character, rather than reflect specific evolved mechanisms. Third, PA leads to the idea of an interface linking evolved psychological mechanisms and cultural variation through the intermediary of sociocultural categories, categories that have a composite biological foundation, but are socioecologically modulated and exhibit a highly polymorphic cultural content. ‘Universals’ are seen as a specific subset of such categories.

SATURDAY, MAY 30, 8:00 PM–9:30 PM, MISSOURI THEATER

AWARD COMPETITIONS

NEW INVESTIGATOR AWARD COMPETITION
SATURDAY, MAY 30, 3:20 PM–4:20 PM
MISSOURI THEATER

SA 3:20 PM

Men's Life History and Buffered Hormonal Regulation of Skeletal Muscle Phenotype: A Test of the Paternal Provisioning Hypothesis in Rural Polish Men

LOUIS CALISTRO ALVARADO (UNIVERSITY OF NEW MEXICO, LALVARAD@UNM.EDU),
MARTIN N. MULLER, MELISSA EMERY THOMPSON, MAGDALENA KLIMEK, ILONA
NENKO, GRAZYNA JASIENSKA

Testosterone is posited to mediate trade-offs between reproduction and survival through the management of sexually dimorphic musculature. Implicit in this hypothesis is a persistent link between testosterone and musculature, such that mating effort, elevated testosterone, and dimorphic musculature covary positively. Although this relationship consistently appears in mammalian males, including non-human primates, it is difficult to find in human males. Human reproduction is characterized by distinctive features—sexual division of labor, prolonged biparental care of altricial young, and male provisioning—that may render a fixed relationship between testosterone and muscularity maladaptive. We hypothesize that men's parenting effort, specifically provisioning and subsistence activities, becomes a primary determinant of muscularity, termed the 'Paternal Provisioning Hypothesis' (PPH). We examined demographic, life history, and anthropometric data from 122 rural Polish men (at the Mogielica Human Ecology Study Site) during the summer harvest and winter. Consistent with the PPH, fatherhood jointly predicted heavier workload and decreased testosterone, but positively predicted muscle mass and strength measures—whereas testosterone levels were not associated with either. Furthermore, within-individuals, men experienced intensified workload and suppressed testosterone during summer, along with augmented musculature and strength. Correspondingly, relaxed workload in winter was associated with elevated testosterone production, but also muscular atrophy.

SA 3:40 PM

My brother's keeper: Kinship psychology directing cooperative coordination in Yasawa, Fiji

RITA ANNE MCNAMARA (UNIVERSITY OF BRITISH COLUMBIA, RAMCNAMA@PSYCH.UBC.CA), JOSEPH HENRICH

Bonds of kinship are among the oldest organizing principles humans use to structure social interactions. Despite these ancient roots, kinship norms often co-opt the psychology of genetic relatedness and extend it to non-related, fictive kin. To investigate how kin terms and biological relatedness might interact in cooperation, we deploy a coordination-based economic game among members of a known kin network in Yasawa, Fiji. Yasawa provides an interesting test case due to their intensive kin-based cooperation necessary for survival in Yasawa's sometimes-harsh environment. We find that Yasawan kin terms can be described in two dimensions of respect/familiarity and joking/authority. Likelihood of making more generous offers (regardless of coordination) increases with genetic relatedness, but only for the most closely related individuals. However, successful coordination on the most productive outcome increases with years lived in the village. Those with the fewest years in the village are more likely to coordinate with kin who are more respected, while those in the village the longest do not show this kin term effect. Thus kinship norms may facilitate coordination while relatedness may boost generosity.

SA 4:00 PM

The Strategic Bystander: Recursive Theory of Mind and Common Knowledge in Decisions to Help

JULIAN DE FREITAS (UNIVERSITY OF OXFORD, JULIAN.DEFREITAS@PSY.OX.AC.UK), KYLE A. THOMAS, PETER DESCIOLI, AND STEVEN PINKER

The more potential helpers there are, the less likely any individual is to help. The traditional explanation for this *bystander effect* is that responsibility diffuses across the number of bystanders. We investigate the role of recursive theory of mind—is helping contingent on what bystanders know about one another's mental states? Game-theoretic models suggest that people might use such information if their decisions to help are strategic. Here we present three experiments in which groups of participants responded to a (fictional) person who needed help from at least one volunteer. Participants were in groups of two or five and had different information about whether other group members knew that help was needed. We find that people's helping decisions closely track the depth of their recursively-shared knowledge with other group members (e.g., "John knows that Michael knows that John knows help is needed"). These results demonstrate that the bystander effect results not from a simple diffusion of responsibility but instead from actors' strategic computations.

POSTDOCTORAL AWARD COMPETITION
SATURDAY, MAY 30, 4:30 PM–5:30 PM
MISSOURI THEATER

SA 4:30 PM

A comparison of worldwide linguistic and genetic variation in human populations

NICOLE CREANZA (STANFORD UNIVERSITY, CREANZA@STANFORD.EDU), MERRITT RUHLEN, TREVOR J. PEMBERTON, NOAH A. ROSENBERG, MARCUS W. FELDMAN, AND SOHINI RAMACHANDRAN

Worldwide patterns of genetic variation are driven by human history. To test whether this demographic history has left similar signatures on phonemes—sound units that distinguish meaning between words in languages—to those it has left on genes, we analyzed phonemes from 2,082 languages and microsatellite polymorphisms from 246 populations. Globally, both genetic distance and phonemic distance between populations were significantly correlated with geographic distance; populations that were closer to one another tended to be more similar, genetically and linguistically. However, the spatial structuring in genes and languages did not occur on the same scale: whereas genetic distance showed spatial autocorrelation worldwide, phonemes were more similar only within a range of ~10,000 km, and the geographic distribution of phoneme inventory sizes did not follow predictions from genetics of an out-of-Africa serial founder effect. Further, although geographically isolated populations lose genetic diversity via genetic drift, phonemes are not subject to drift in the same way: relatively isolated languages exhibited more variance in number of phonemes than languages with many neighbors, suggesting that geographically isolated languages may be more susceptible to phonemic change. These analyses shed light on the similarities and differences in genetic and linguistic signatures of human population history.

SA 4:50 PM

Is the low male voice a costly signal?

CAROLYN R. HODGES-SIMEON (BOSTON UNIVERSITY, CRHODGES@BU.EDU), MICHAEL GURVEN, AND STEVEN GAULIN

The human voice is one of the most conspicuous and dimorphic human secondary sexual characteristics. Researchers often assert that low male voices are costly signals of phenotypic quality; however, no evidence currently exists linking low voices with indicators of quality (i.e., health or physical condition) during the ages where the larynx develops to adult proportions. In the present study, we examine the relationships between condition, testosterone, and vocal parameters in 91 Bolivian peri-pubertal adolescent males. Condition is operationalized as immune function (based on secretory IgA) and energetic reserves (body-fat percentage), and ‘masculine’

vocal parameters is operationalized as having low fundamental frequency, narrow formant position, and low fundamental-frequency variation. We target peri-pubertal individuals to capture variation in vocal parameters during the canalization period for vocal fold and vocal tract growth. Results indicate that males in better energetic condition have higher testosterone levels and lower voices, controlling for age. Further, testosterone mediates the relationship between condition and a lower voice (i.e., lower fundamental and formant frequencies). We suggest that testosterone plays a key mediating role in the causal pathway linking phenotypic condition to a 'masculine' voice. Our results provide support for a costly-signal model of low men's voices.

SA 5:10 PM

Are there tradeoffs between reproductive competitiveness and cancer susceptibility?

AMY BODDY (ARIZONA STATE UNIVERSITY, AMY.BODDY@ASU.EDU), HANNA KOKKO, FELIX BREDEN, GERALD S. WILKINSON, ATHENA AKTIPIS

The factors influencing cancer susceptibility is a major open question in the field of cancer biology. One under-explored source of variation in cancer susceptibility may arise from trade-offs between reproductive competitiveness (e.g., sexually selected traits, earlier reproduction and higher fertility) and cancer defense. We build a model that contrasts the probabilistic onset of cancer with other, extrinsic causes of mortality, and use it to predict that intense reproductive competition will increase cancer incidence. This prediction holds across different extrinsic mortality conditions and different levels of trade-off intensity, but we expect to see the largest effect of competition on cancer in species where low extrinsic mortality combines with high reproductive competition. We discuss evidence for the assumed trade-off between reproductive competitiveness and cancer susceptibility. Sexually selected traits such as ornaments, large body size or testis size require high levels of cell proliferation and may be associated with cancer. Similar associations exist for female traits such as interbirth intervals and timing of reproductive maturity. Trade-offs between reproduction and cancer defenses may be instantiated by a variety of mechanisms including higher levels of growth factors/hormones, less efficient cell-cycle control and DNA repair, or simply a larger number of cell divisions.

SESSIONS AND SYMPOSIA ABSTRACTS

WEDNESDAY, MAY 27

SESSION: MORAL COGNITION

CHAIR: ROBERT KURZBAN

WEDNESDAY, MAY 27, 4:20 PM–5:40 PM, WRENCH AUDITORIUM

WE 4:20 PM

Costs of Neutrality in Moral Disputes

ROBERT KURZBAN (UNIVERSITY OF PENNSYLVANIA,
KURZBAN@PSYCH.UPENN.EDU), ALEX SHAW, PETER DESCIOLI

A recently proposed theory of the function of morality, the Dynamic Coordination Model, posits that moral condemnation functions to coordinate third parties on the same side of conflicts that emerge, reducing the costs of such conflicts. One critique of this proposal that has been offered is that a better strategy when conflicts emerge is simply to stay out of the conflict. According to this critique, the Dynamic Coordination Model is suspect because there is no adaptive problem of choosing sides to be solved. If this critique is correct, then the cost of staying neutral when a dispute emerges should be relatively low, or even zero. We report the results of two vignette studies designed to compare the cost of sitting out of a conflict involving oneself, one's friend, and an acquaintance. In both studies, unsurprisingly, people perceive that siding against one's friend in a conflict entails costs in the form of damage to the relationship. Surprisingly, the costs of staying neutral are non-significantly different from the costs of siding against one's friend. These results are consistent with the prediction from the Dynamic Coordination Model that sitting out of conflicts entails costs that make a neutrality strategy a bad option.

WE 4:40 PM

Cooperate without looking: Why we care what people think and not just what they do

MOSHE HOFFMAN (HARVARD UNIVERSITY, HOFFMAN.MOSHE@GMAIL.COM), EREZ

YOELI, MARTIN NOWAK

Evolutionary game theory typically focuses on actions but ignores motives. Here, we introduce a model that takes into account the motive behind the action. A crucial question is why do we trust people more who cooperate without calculating the costs? We propose a game theory model to explain this phenomenon. One player has the option to “look” at the costs of cooperation, and the other player chooses whether to continue the interaction. If it is occasionally very costly for player 1 to cooperate, but defection is harmful for player 2, then cooperation without looking is a subgame perfect equilibrium. This behavior also emerges in population-based processes of learning or evolution. Our theory illuminates a number of key phenomena of human interactions: authentic altruism, why people cooperate intuitively, one-shot cooperation, why friends do not keep track of favors, why we admire principled people, Kant’s second formulation of the Categorical Imperative, taboos, and love.

WE 5:00 PM

Neural mechanisms underlying indirect reciprocity: Emotion and reward calculation

MASANORI TAKEZAWA (HOKKAIDO UNIVERSITY, M.TAKEZAWA@GMAIL.COM),
TAKAMITSU WATANABE, YO NAKAWAKE, AKIRA KUNIMATSU, HIDENORI YAMASUE,
MITSUHIRO NAKAMURA, YASUSHI MIYASHITA, MASUDA NAOKI

Indirect reciprocity is the mechanisms supporting large-scale cooperation. Two different types exist: reputation-based and pay-it-forward. Both are observed in the real world but theoretical models showed that reputation-based robustly evolves while pay-it-forward does not, suggesting that it is difficult to explain pay-it-forward by its strategic rationality. In order to answer this problem, we investigated neural substrata underlying indirect reciprocity with a brain-imaging experiment using the fMRI. We first found that the caudate, a part of the reward system connecting calculated reward to behavior, is activated when cooperation is chosen in both indirect reciprocity. Second, we found reputation-based recruited activation in the precuneus, a region associated with the self-centered cognition while the anterior insular (AI), a region associated with affective empathy, was recruited in pay-it-forward. We also found that gray matter volumes of each region and the resting-state functional connectivity from each to the caudate are positively correlated with each type of reciprocity. These results suggest that cooperation in both indirect reciprocity is executed as action that brings subjective reward to an actor but affective empathy or feeling of gratitude represented in the AI is interpreted as reward in the caudate, interfere the process of cost-benefit calculation and triggers pay-it-forward reciprocity.

WE 5:40 PM

Moral Judgment and Contextual Contingency in Eight Societies

COLIN HOLBROOK (UCLA, C.COLIN.HOLBROOK@GMAIL.COM), DANIEL M. T. FESSLER, HACKJIN KIM, LEEHYUN YOON

Morality has been theorized to arise at the conjunction of the cultural evolution of norms regulating social behavior and the biological evolution of psychological mechanisms that enhance individual fitness within social arenas. Accordingly, to the extent that moral condemnation ultimately serves to enhance one's reputation and protect one from higher-order punishment in the immediate social arena, moral judgments should be calibrated to address recent events within the individual's group, and to be sensitive to the pronouncements of local authorities. Contrary to these predictions, an influential body of work conducted by developmental psychologists with children in large-scale societies has concluded that condemnations of acts of unjust harm are not influenced by factors such as authority approval or spatiotemporal distance. This talk will present recent research focusing on adult, non-university samples drawn from both three large-scale societies (U.S.A., Ukraine, and Korea) and five small-scale societies (e.g., the Shuar). Participants evaluated the rightness or wrongness of transgressive acts (e.g., battery, theft) at baseline and in contexts of authority approval, spatial distance, and temporal distance. In support of the moral parochialism hypothesis, participants in all eight societies viewed actions involving the gross infliction of harm to be less immoral as a function of context.

SYMPOSIUM: HUMAN MATING STRATEGIES: CONCEPTUAL DEVELOPMENTS AND NOVEL EMPIRICAL DISCOVERIES

CHAIR: DAVID M. BUSS

WEDNESDAY, MAY 27, 4:20 PM–5:40 PM, PARKER AUDITORIUM

Although discovering the broad outlines of human mating strategies represents a major 'success story' of evolutionary psychology, fresh theorizing and new empirical discoveries are yielding deeper and more nuanced understandings of the complexity of human sexual psychology. This symposium showcases several of these new developments. Sarah Hill and her colleagues, in a programmatic set of five experiments, provides empirical evidence for a novel context-dependent shift in women's sexual strategies—cues to pathogen prevalence. David Schmitt, in a massive 58-nation cross-cultural project, provides evidence that personal attributes (e.g., masculinity, attractiveness) and culture-level contexts (e.g., GDP per capita) are linked with the pursuit of different mating strategies. Relatively little is known about how initial mate preferences influence within-relationship processes. Dan Conroy-Beam and his colleagues help to fill this void by testing hypotheses about the effects of two key mate value discrepancies on relationship satisfaction—partner-self and partner-eligible alternatives discrepancies. Relationship satisfaction-dissatisfaction may be an internal regulatory variable monitoring the value of staying or leaving. David Buss presents empirical tests of The Mate

Switching Hypothesis, which includes predictions about the effects of ‘relationship load’ and selfishly skewed welfare tradeoff ratios on dissolution probability. Collectively, these four lines of research yield evidence that human evolved mating psychology is more complex and context-dependent than initially envisioned by early theorists.

WE 4:20 PM

Perceived Disease Threat and Women’s Desire for Sexual Variety

SARAH E. HILL (TEXAS CHRISTIAN UNIVERSITY, S.E.HILL@TCU.EDU), MARJORIE L. PROKOSCH, DANIELLE J. DELPRIORE

Researchers in the evolutionary sciences have long understood men’s desire to mate with a variety of women. Because men’s obligatory investment in offspring production is relatively small, men can directly increase their number of descendants by mating with multiple partners. Relatively less is known, however, about the conditions that favor sexual variety seeking in women. Drawing from evolutionary models of diversified genetic bet-hedging, we examined the relationship between the perceived pathogen load in an environment and women’s desire for sexual variety. Across five experiments, we primed women with cues indicating that the rate of disease is increasing in their environment. We then measured their desire for novel sexual and dating partners. Results revealed that women with a history of vulnerability to illness respond to these cues by desiring a greater number of novel partners. This shift was not found in men and did not predict variety seeking in a non-sexual domain. In addition to providing evidence of a novel conceptual link between the pathogen load and patterns of human mating behavior, this research also provides new insights into women’s mating psychology and the conditions that favor sexual variety seeking in the greater investing sex.

WE 4:40 PM

How Do Personal Attributes and Cultural Contexts Combine to Adaptively Influence Men’s and Women’s Sexual Strategies?

DAVID P. SCHMITT (BRADLEY UNIVERSITY, DPS@FSMAIL.BRADLEY.EDU)

Facultative adaptations may underlie men’s and women’s differential pursuit of sexual strategies. For instance, high stress environments (i.e., high pathogens, mortality, violence) may facultatively evoke more short-term mating or ‘unrestricted’ sociosexuality. Evidence in support of this hypothesis is mixed, depending on whether associations are examined at individual or cultural levels. At individual levels, some facultative adaptations may be sex-specific, such as high self-esteem men pursuing more short-term mates, whereas high self-esteem women typically pursue less short-term mating. Personal levels of religiosity, wealth, attractiveness, strength, exploitativeness, risk-taking, masculinity, and various testosterone-related features appear to facultatively influence short-term mating. Culture-level factors associated

with short-term mating include religiosity, GDP, pathogens, sociopolitical gender egalitarianism, sex role ideologies, individualism, power distance, self-expression, in-group favoritism, public corruption, life satisfaction, short 5-HTTLPR gene variants, lactose tolerance, sex ratios, obesity, and height. Using multilevel modeling, links between sexual strategies and several individual-level factors (e.g., personal religiosity and socioeconomic status) and culture-level factors (e.g., average weekly religious service attendance and GDP per capita) were examined using data from 58 nations of the International Sexuality Description Project-2 (N = 35,000). Overall, findings suggested several facultative adaptations generate sociosexual variability in predictable ways at both individual and cultural levels of analysis.

WE 5:00 PM

Two mate value discrepancy variables independently predict relationship satisfaction: Self v. partner and partner v. eligible alternative mate values

DANIEL CONROY-BEAM (UNIVERSITY OF TEXAS, AUSTIN, DCONROYBEAM@GMAIL.COM), CARI D. GOETZ, DAVID M. BUSS

Evolutionary research continues to discover new features of human mate preference psychology, but the downstream consequences of mate preferences in the aftermath of mate selection remain unclear. Based on under-specified theory and weak correlations between preference fulfillment and relationship satisfaction, some contend that mate preferences are irrelevant to within-relationship processes. To better examine the role of mate preferences for within-relationship processes, we outline more evolutionarily cogent hypotheses and use multivariate analyses that more accurately capture mate preference fulfillment. We hypothesized that relationship satisfaction will be predicted by mate value discrepancies between partner and self and a novel discrepancy variable: partner versus eligible alternatives. Consistent with predictions, we found that relationship satisfaction is negatively predicted by the proportion of alternative mates who better fulfill mate preferences than do actual mates. Satisfaction is positively predicted by the extent to which partner mate value exceeds oneself on overall mate value. These effects explain the direct effects of mate preference fulfillment. These results provide evidence that mate preferences have a powerful effect on within-relationship processes through contributing to two, independent discrepancy variables: partner-self mate value discrepancy and the novel partner-potential mate value discrepancy.

WE 5:20 PM

The Mate Switching Hypothesis

DAVID M. BUSS (UNIVERSITY OF TEXAS, AUSTIN, DBUSS@AUSTIN.UTEXAS.EDU)

Leaving one mating relationship and entering another, serial mating, is commonly observed in many cultures. An array of adaptive problems can prompt a mate switch. These include (1) an unanticipated 'relationship load' not apparent on the initial mate

selection; (2) changes in the mate value of either partner, creating discrepancies where none previously existed; (3) the arrival of a new and interested potential mate of sufficiently incremental value to offset the costs of a breakup; and (4) getting ejected or 'dumped' by a current mate, necessitating re-mating. The Mate Switching Hypothesis suggests that humans have evolved adaptations to anticipate and appraise these adaptive problems, implement exit strategies, and solve challenges confronted in their aftermath. Data from several studies are presented that support various aspects of the Mate Switching Hypothesis: The cultivation of 'back-up mates,' assessing mate-inflicted costs that comprise 'relationship load,' monitoring selfishly-skewed welfare tradeoff ratios in a partner, gauging mate value discrepancies, and anticipating sexual, emotional, and economic infidelities. The Mate Switching Hypothesis provides a competing explanation to the 'good genes' hypothesis for why women have sexual affairs, and parsimoniously explains a host of other mating phenomena that remain inexplicable on alternative accounts.

SYMPOSIUM: EVOLUTIONARY ARCHAEOLOGY: PHYLOGENETIC ANALYSIS AND NICHE CONSTRUCTION THEORY

CHAIR: MICHAEL J. O'BRIEN

WEDNESDAY, MAY 27, 4:20 PM–5:40 PM, STOTLER 1

Darwinian evolution has long played a role in American archaeology, although more often than not it has been largely a metaphorical role. Within the last several decades, however, there have been serious efforts to transfer evolutionary theory to archaeology—efforts that are grounded in the recognition that despite its usefulness for understanding descent with modification, Darwin's theory was not written in archaeological terms. Hence, any attempts to extend its role beyond that of simple metaphor must pay attention to the differences between a strictly genetic process and a genetic/cultural one. If evolution is defined minimally as descent with modification, then the evolutionary process is a historical one. Thus, any attempts to understand that process necessarily involve posing questions that are historical in nature. The primary goal of evolutionary archaeology is twofold: first, to build cultural lineages and second, to construct explanations for those lineages having the shape that they do. Both steps employ concepts—lineage, transmission, natural selection, and heritability—that are embedded within evolutionary theory. Two evolution-based approaches that have seen growing application in archaeology are niche construction theory and phylogenetic reconstruction. Papers in the symposium examine select aspects of both and offer case examples of how the approaches have contributed to a better understanding of historical questions.

WE 4:20 PM

Phylogenetic Analysis in Archaeology

MICHAEL J. O'BRIEN (UNIVERSITY OF MISSOURI, OBRIENM@MISSOURI.EDU)

Phylogeny refers to the genealogical history of any group of things, be they organisms, manuscripts, languages, or anything else that changes over time by means of an ancestor passing on material to an offspring. Phylogeny should be an important issue in both anthropology and archaeology because of their focus on history—that is, on questions about how and why people and their cultural trappings change in certain ways over time. These are evolutionary questions, just as in biology questions about organismal change over time are evolutionary. Not surprisingly, some of the classificatory methods that have been devised to examine historical (evolutionary) questions in biology—in particular, cladistics—have significant value for the study of cultural phenomena. The transference of methods from biology to anthropology is based on a growing recognition that artifacts, language, and other aspects of culture are phenotypic features in the same way that shells, nests, and bones are phenotypic in the organismal world.

WE 4:40 PM

Phylogenetic Analysis of Paleoindian Projectile Points from Eastern North America

MATTHEW T. BOULANGER (UNIVERSITY OF MISSOURI, BOULANGERM@MISSOURI.EDU), MICHAEL J. O'BRIEN

Since their initial discovery in association with remains of extinct megafauna in the early twentieth century, fluted bifaces have been considered diagnostic tools of the earliest inhabitants of North America. However, it remains unclear how various fluted-point forms relate to each other; whether the continent-wide occurrence of the earliest fluted-point forms represents a singular cultural expression; and if differences in point shape represent adaptations to regional environments. In eastern North America, although there is considerably more morphological variation among fluted points than there is in the Plains and Southwest, there is a concordant lack of chronological information pertaining to the evolution of fluted points. In creating sequences of projectile-point forms for the Paleoindian period, researchers have relied on chronological data from other regions and on models of stylistic evolution of projectile points. One means of circumventing this problem is to use morphometric and phylogenetic analysis to evaluate fluted-point forms from eastern North America. Preliminary results suggest that there is both temporal and spatial patterning of fluted-point classes and that much of the variation has to do with modifications to hafting elements.

WE 5:00 PM

Paleoindian Cultural Transmission in Eastern North America

MICHAEL J. O'BRIEN (UNIVERSITY OF MISSOURI, OBRIENM@MISSOURI.EDU), MATTHEW T. BOULANGER

Beyond issues of chronology, phylogenetic analysis allows us to track changes in tool

design, here the shape and form of Paleoindian projectiles from eastern North America, and to begin to understand the processes by which design information was transmitted across the cultural landscape. For example, in a fast-moving and fast-growing population subject to the widespread environmental changes of the North American late Pleistocene landscape, conformist-bias transmission could have been a highly effective strategy for social learning because under circumstances where ecological conditions change is, say, on a generational scale, the mean trait value often is optimal. However, if ecological conditions change faster, evolution might favor individual trial-and-error learning. Another powerful tool for understanding cultural transmission is geometric morphometrics (GM). Taken together, phylogenetic analysis and GM underscore that cultural drift played a highly significant role in the cultural evolution of the Paleoindian East. When taken in aggregate, recent studies employing these methods have implications for the increasing North American projectile-point diversification and shrinking 'style' zones throughout the Holocene. They also demonstrate conclusively that the initial origins of this vast technological diversity can now be traced for the first time to cultural drift during the initial colonization process itself, ca. 13,300 calendar years BP.

WE 5:20 PM

Urbanism and Human Evolution: Human Niche Construction and the Archaeology of Early Cities

PHILIP A.F. LEFLAR (UNIVERSITY OF MISSOURI, PALXTF@MAIL.MISSOURI.EDU),
TODD L. VANPOOL

Niche construction theory (NCT) broadens the view of evolution from a narrow focus on genes, or even individual species, toward an understanding of the complex interactions between species and their environment. NCT does not view adaptation as a one-way process in which species are affected by their environment, but rather as a feedback system in which the behavior of individuals and species shape the environment and thereby shape the selective pressures to which they are subject. Humans are masterful niche constructors/environmental engineers and much of their success is due to the feedback between human behavior and environment. Urbanization marks a significant change in the human environment. Cities represented a novel niche incorporating a number of important environmental and behavioral pressures that shaped and were shaped by human behavior. This paper compares the urban environments of early Uruk (4th millennium B.C.) in southern Iraq and Medio Period Paquimé (~1200 to 1450 A.D.) in northern Chihuahua. We find that human populations actively constructed these environments, creating new selective pressures including problems of resource access and distribution, intra- and inter-community conflict, health/sanitation, and increased cultural transmission and innovation that in turn led to further modification of the human selective environment.

SYMPOSIUM: EVOLUTIONARY APPROACHES TO NEEDS, IDENTITY AND CULTURE

CHAIR: JORGE YAMAMOTO

WEDNESDAY, MAY 27, 4:20 PM–5:40 PM, S110

Studies about needs, identity, work and culture are presented and discussed in terms of evolutionary theory. Samples from Andean rural villages, urban Latin American, and European cities are included. The four studies follow an emic qualitative and quantitative approach. The factor structure of needs or identity in each specific cultural context, and their relation to subjective well-being, labour, and culture is presented.

WE 4:20 PM

Factor Structure of Needs in Rural-Born Andean Mining Workers

RUBY ROJAS (PSYCHOLOGY DEPARTMENT, PUCP, RROJAS@ANTAMINA.COM)

There is wide evidence that mainstream theories of needs have strong biases from western culture and these theories do not fit in developing countries. There are no studies that analyse this issue in the labor context in Andean miners. 30 open ended interviews were conducted to identify emic categories of labor needs. These categories were used to develop items of a psychometric needs scale. 269 participants completed the scale. Participants of the qualitative (N=30) and quantitative (N=269) studies were miners born in rural Andean communities. Confirmatory factor analysis identify three factors: Work and prosperity, Family welfare and Family formation and progress. Results are discussed in terms of evolution, needs and development. This approach brings a new perspectives in the understanding the organizational behavior of mining workers.

WE 4:40 PM

Evolution, Needs structure, and Work in Latin America

MAURICIO ALOSILLA-VELAZCO (B Y P BIENESTAR Y PRODUCTIVIDAD, MALOSILLA@BYPBIENESTARYPRODUCTIVIDAD.COM), JORGE YAMAMOTO

Human resources theories and methods are strongly influenced by western culture. Present work analyses the relation of needs and job considering cultural variables in a sample of Peru and Argentina. Factor analysis of both samples results are discussed in terms of Latin American Culture, differences with established western theories and similitude with evolutionary perspectives.

WE 5:00 PM

Subjective well-being, culture and evolution. A cross-cultural comparison between Germany and Peru

ADRIANA GARFIAS (CONECTA RESEARCH - PUCP, ADRIANA.GARFIAS@PUCP.PE)

World value surveys that includes subjective well-being measures systematically found that Latin America and the Caribbean is the happiest region in the World. Cultural imposed needs is considered a key factor for happiness. The purpose of present study is to compare the needs in a German and a Latin American sample. The needs categories obtained in a content analysis of 42 open-ended questionnaires are compared with previous studies conducted in Latin America and the Caribbean using the same emic subjective well-being open ended protocol. Previous studies have suggested that the distance between evolutionary needs and culture explains the low subjective well-being level in developed countries. Present study results suggest that, at least in Germany, evolutionary needs could be present, but the lifestyle daily dynamics can be different compared to the social and family ancestral life. Implications for the understanding of cultural differences in happiness and its applications to social policy are discussed.

WE 5:20 PM

Social identity factors in Peru. The paradox between collectivism and corruption?

JORGE YAMAMOTO (PONTIFICIA UNIVERSIDAD CATOLICA DEL PERU,
JYAMAMO@PUCP.EDU.PE)

Latin America is considered a high subjective well-being region in world happiness surveys. Previous studies suggest that this happiness levels are related to strong family and friends networks, and trade-offs of this subjective well-being could be related to the low level of civic behavior. In a nationwide representative Peruvian sample (N=2200), confirmatory factor analysis yields two negatively correlated identity factors: Respect and Social entropy (gossip, envy, and selfishness). Less formal education, and to live outside of Lima (Peru capital) is related to the increase of respect and the reduction of social entropy. Results are discussed in terms of adaptations to an environment characterized by (1) high levels of family and friend networks, and low levels of social integration, (2) low levels of control of cheaters, and (3) a process that started with social exclusion and ended in social entropy.

THURSDAY, MAY 28

SESSION: TESTOSTERONE AND ITS CORRELATES

CHAIR: STEVEN W. GANGESTAD

THURSDAY, MAY 28, 9:30 AM-10:50 AM, WRENCH AUDITORIUM

TH 9:30 AM

Women's, but not men's, testosterone modulates the reward value of infant cutenessAMANDA C. HAHN (UNIVERSITY OF GLASGOW, AMANDA.HAHN@GLASGOW.AC.UK),
CLAIRE FISHER, MICHAL KANDRIK, LISA M. DEBRUINE, BENEDICT C. JONES

Infant facial cuteness plays an important role in adult-child interactions, motivating caregiving behavior. While many studies have investigated hormone-linked responses to adult facial characteristics, hormone-linked responses to infant facial cues have received considerably less attention. Here we used a lever-press task to investigate the effects of cuteness on the reward value of infant faces in a sample of men and women. Each participant completed this task and provided a saliva sample in five weekly test sessions. Cuteness had a strong positive effect on the reward value of infant faces in women, but not men, replicating previous research. Multilevel analyses also showed a positive within-subject effect of women's, but not men's, testosterone level on the reward value of infant facial cuteness. This effect of women's testosterone on the reward value of infant cuteness was independent of the possible effects of other hormones (e.g., estradiol and progesterone) and was independent of changes in women's ability to identify cute infants. Together, these results demonstrate that hormone-linked changes in women's responses to facial cues are not specific to adult faces and suggest that testosterone affects behavior towards infant faces differently in men and women.

TH 9:50 AM

Interest in children negatively predicts testosterone responses to sexual visual stimuli among heterosexual young menSAMUELE ZILIOLI (WAYNE STATE UNIVERSITY, SAM.ZILIOLI@GMAIL.COM), DAVIDE
PONZI, ANDREA HENRY, KONRAD KUBICKI, NORA NICKELS, CLAIRE M. WILSON,
DARIO MAESTRIPIERI

Men's testosterone may be an important physiological mechanism mediating motivational and behavioral aspects of the mating/parenting trade-off during their life histories (e.g., sexual maturity, first reproduction), but also in terms of stable differences between mating-oriented and parenting-oriented individuals. In this study we tested the hypothesis that self-reported interest in children is inversely related to testosterone reactivity to cues of short-term mating among heterosexual young men. Among 100 study participants, self-reported interest in babies was related to a composite measure of slow life history, the mini-K questionnaire, and negatively related to testosterone responses to a video with erotic content. Interest in babies was not associated with baseline testosterone levels or with testosterone reactivity to nonsexual social stimuli (i.e., Trier Social Stress Test). These results represent the first evidence that differential testosterone reactivity to sexual stimuli may be an important aspect of individual differences in life history strategies among human males.

TH 10:10 AM

Men's Oxytocin and Testosterone Responses to Thinking about Their Romantic Relationships: Associations with Own and Partner Relationship InvolvementSTEVEN W. GANGESTAD (UNIVERSITY OF NEW MEXICO, SGANGEST@UNM.EDU),
NICHOLAS M. GREBE, MELISSA EMERY THOMPSON

Scholars conjecture that the peptide hormone oxytocin (OT), which affects maternal behavior during lactation, was coopted to serve a role in pair-bonding. But in what way? Previously, Grebe et al. (HBES 2014) asked partnered women to think about ways their partners supported them, or wished their partners offered support, and measured the salivary OT response during this task. Multiple regression analyses found that women's OT response was positively predicted by their own emotional involvement in their relationship, but negatively predicted by their partner's, suggesting that OT motivates the development and maintenance of valued but vulnerable relationships. In the current analyses, we extend these findings to men, and explore correlates of testosterone (T) responses too. We find that men's OT response is predicted by this same discrepancy between own and partner relationship involvement; no sex moderation emerges. Both T and cortisol responses covary positively with OT responses, but do not account for OT's associations. Baseline levels of OT and T also positively covary, and we explore their unique associations with relationship-related thoughts (e.g., recent sexual attraction to partners and other women). Findings speak to emerging literature regarding the specific roles OT and T play in human pair-bonding.

TH 10:30 AM

Facial masculinity, attraction, and formidability in a small-scale Amazonian populationGIOVANNI A. MAGGINETTI (CALIFORNIA STATE UNIVERSITY, FULLERTON,
GIOVANNIMAGGINETTI@YAHOO.COM), ELIZABETH G. PILLSWORTH, JOHN Q.
PATTON, AARON GOETZ

Previous research has shown that women prefer more masculinized male faces when fertile and when evaluating men as short-term mating partners (e.g. Little, Jones, & DeBruine, 2008). This pattern has been interpreted as evidence that facial masculinity might function as a cue to genetic quality in a potential mating partner, and in particular as a possible 'costly signal,' advertising a man's superior immune functioning. A recent meta-analysis, however, found little evidence for the immunocompetence hypothesis (Scott, et al., 2012), and data from a cross-cultural study found that facial masculinity preference were actually negatively correlated with disease prevalence (Scott et al 2014). An alternative hypothesis is that facial masculinity is more directly related to intrasexual competition (Carrier and Morgan 2015); and indeed both men and women can accurately assess male upper body strength by viewing faces alone (Sell et al 2009). The present study examines

correlations between facial masculinity (as rated by unfamiliar individuals and as measured using standard facial metrics) and strength, formidability, health, and reproductive success in a population of men from an indigenous community in Amazonian Ecuador. Women's preferences for these faces will also be assessed. Implications for interpreting women's facial preferences will be discussed.

SYMPOSIUM: PARENTAL INVESTMENT AND REPRODUCTIVE VARIABILITY ACROSS SOCIETIES

CHAIR: JOHN P. ZIKER

THURSDAY, MAY 28, 9:30 AM–10:50 AM, PARKER AUDITORIUM

Variability in parental investment (PI) is a core research theme in evolutionary analyses of human behavior, as variation in PI affects fitness-related outcomes, notably variation in reproduction. This session includes four case studies of human parenting behavior, especially important considering the strategies that evolve in response to varying resource distributions, production strategies, and mating strategies found across human societies. Modern economic development affects productive and reproductive strategies and results in various demographic transitions, but the selective importance of variability in parental investment and reproduction remains. David Lawson and co-authors investigate the effects of diversifying livelihoods (comparing pastoralists, farmers and business-owners), household wealth and child characteristics on school enrollment in rural Tanzania. Ryan Schacht examines male-biased sex ratios and expectations from mating market theory to explain why men are more likely to marry, be part of a family and be sexually committed to a single partner when women are rare in US states. Rosemary L. Hopcroft examines parental financial and non-financial investments on sex- and status-biased educational attainment patterns in the U.S. John Ziker and David Nolin investigate the effects of the post-Soviet economic transition on fertility transition and variation in parental investments in a hunting-fishing community in Siberia. These papers draw attention to current research on the relationship between economic system and parenting strategies across a variety of social-historical contexts.

TH 9:30 AM

Rural Livelihoods and Biased Parental Investment in Child Education in Northern Tanzania

DAVID W. LAWSON (LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, DAVID.LAWSON@LSHTM.AC.UK), SOPHIE HEDGES, MONIQUE BORGERHOFF MULDER, SUSAN JAMES

Evolutionary and economic models argue that economic development incentivizes low-fertility, high-investment parental strategies, particularly for wealthy individuals. However, most research focuses on fertility reduction rather than shifting parental investment. Prior studies also yield contrasting conclusions regarding

economic development's influence on investment biases. Greater wealth within rural communities has been associated with magnified biases by birth order and gender. Yet, post-demographic transition populations are characterized by norms of relatively equal treatment. Using data from 19 Tanzanian villages, we investigate the effects of diversifying livelihoods, wealth and child characteristics on school enrollment. Wealthier households invested more in education, but not when wealth was measured as herd size. Pastoralist children were the least likely to attend school, likely reflecting low perceived pay-offs and elevated opportunity costs due to labour demands of livestock herding. Adult education shows a history of favoring males, but contemporary patterns indicate a marginal female advantage, particularly among wealthy families. Wealthier families also preferentially educated early borns. We discuss observed gender and birth order biases in light of evolutionary theories of parental investment and the wider literature. We caution that global trends of equalized treatment of children with economic development may mask socioeconomic variation in parental investment within rural communities.

TH 9:50 AM

Patterns of family formation in response to the sex ratio

RYAN SCHACHT (UNIVERSITY OF UTAH, R.SCHACHT@UTAH.EDU), KAREN L. KRAMER

The negative social outcomes of male-biased sex ratios are of mounting contemporary concern. Sex ratio researchers commonly rely on the mathematical claim that male-biased sex ratios leave many men unable to find a mate and marry. This male abundance, particularly of risk-prone unmarried males, elevates male-male mating competition, destabilizes pairbonds, and disrupts family formation. While intuitively appealing, this approach is poorly supported by empirical evidence. A contrasting framework, mating market theory, instead expects male behavior to be responsive to context and that men's willingness to settle down will be conditional on partner availability. Specifically, men will be more willing to settle down and commit to a family when the sex ratio is male-biased and women are a rare and valued resource. Here we adjudicate between these competing theoretical frameworks and their predictions by testing the relationship between the sex ratio and common measures of family formation using state-level US census data. We find that, counter to conventional concerns of male-biased sex ratios and in line with expectations from mating market theory, when women are rare and the sex ratio is male-biased, men are more likely to marry, be part of a family and be sexually committed to a single partner.

TH 10:10 AM

Mechanisms for a Trivers-Willard Effect in Educational Attainment in the U.S.

ROSEMARY L. HOPCROFT (UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE,

RLHOPCRO@UNCC.EDU), DAVID O. MARTIN

This paper seeks to uncover the mechanisms by which the sons of high status men obtain higher levels of education than the daughters, and the daughters of low status men obtain higher levels of education than the sons. Data are from the High School and Beyond Study by the U.S. National Center for Education Statistics. Results suggest that parental financial investments help produce this Trivers-Willard effect: the sons of high status men are more likely than daughters to be sent to private school, are less likely to be employed extensively in high school, and are less likely to save money from their job for college; while the daughters of low status men are more likely than sons to be sent to private schools, less likely to be employed extensively in high school, and are less likely to save money from their job for college. These investments pay off, as the sons of high status men earn higher academic GPAs than do the daughters, while the daughters of low status men earn higher academic GPAs than do the sons. In turn, academic GPA in high school helps explain the Trivers-Willard effect in educational attainment. Parental non-financial investment (as measured by student academic expectations as sophomores in high school) also helps explain why the sons of high status men obtain higher degrees than the daughters. Together, these two factors: student's academic GPA in high school and his/her expectations of educational attainment, fully explain the Trivers-Willard effect in educational attainment in the U.S.

TH 10:30 AM

Reproductive decision making in Ust'-Avam, Siberia: Fertility decline as a response to economic uncertainty

JOHN P. ZIKER (BOISE STATE UNIVERSITY, JZIKER@BOISESTATE.EDU), DAVID A. NOLIN

Like many former Soviet and Eastern European countries, the Dolgan and Nganasan community of Ust'-Avam, Siberia, experienced a rapid decline in fertility following the collapse of the Soviet Union in 1991. The collapse of the Soviet planned economy brought abrupt and catastrophic economic changes to the community, including mass layoffs, rapidly increasing costs for non-local goods, transportation, and spare parts, and a reorientation to a mixed-cash subsistence economy. Fertility declined abruptly in response to this economic upheaval: over the ten-year span from 1993–2003, the implied Total Fertility Rate declined from about 5 to just over 1 child per woman (compared to a decline of about 1 child per woman in post-Soviet countries). By comparing age at first birth and inter-birth intervals over this period, we look more closely at the proximate mechanisms driving this decline in fertility in this population and relate our findings to responses to risk and uncertainty in this rapidly changing local socioeconomic context.

SYMPOSIUM: COALITIONS AND ALLIANCES: RESEARCHERS UNITING AROUND A COMMON GOAL

CHAIR: DAVID PIETRASZEWSKI

THURSDAY, MAY 28, 9:30 AM–10:50 AM, STOTLER 1

Understanding groups—multi-agent cooperation and antagonism—has been a goal of the social sciences for decades. But progress has been hampered by disciplinary isolation. Thanks to the evolutionary social sciences, this is now changing. By adopting an evolutionary approach and distinguishing between behavior and the evolved adaptations which produce behavior, researchers who study disparate group phenomena in disparate fields, such as developmental psychology, behavioral ecology, cognitive psychology, political science, and so on, now share a common goal: Using behavior to infer the evolved design of coalitional adaptations. This symposium represents some of the newest work emerging from this common enterprise. The first talk examines if individual differences in bargaining power, including alliance strength, predict individual differences in aggression in a large Swiss sample of adolescents (Sell). The second talk examines how men's and women's food sharing is impacted by alliance considerations sharing in a small-scale forager-horticultural society (Patton and Bowser). The third talk examines how coalitional adaptations keep track of multiple shifting alliances using an experimental memory task (Pietraszewski). The fourth talk examines the effects of differing levels of coalitional engagement with modern political parties, both naturally-occurring and also experimentally-induced, in both US and Danish samples (Delton, Robertson, and Petersen). These talks demonstrate how different research methods and study populations become mutually-informative when researchers share the common goal of describing the design of evolved adaptations.

TH 9:30 AM

Bargaining power and adolescent aggressiveness: the role of fighting ability, coalitional strength and mate value

AARON SELL (GRIFFITH UNIVERSITY, A.SELL@GRIFFITH.EDU.AU)

Basic models of animal conflict show that animals with more bargaining power can expect a larger share of resources and more frequently deploy aggression when challenged. The recalibrational theory of anger applies these models to humans and predicts that individual differences in anger-based aggression result—in part from different levels of bargaining power. Bargaining power in humans comes from multiple sources including formidability (e.g. personal fighting ability as well as coalitional strength) and cooperative value (e.g. mate value, prestige). Seven core hypotheses derived from this theory were tested on a large sample of Swiss adolescents (15-17 years old). Three components of bargaining power were measured in males and females: fighting ability, coalitional strength, and sexual value. Fighting ability and sexual value reliably predicted aggression, aggressive attitudes, and delinquent behavior in both boys and girls. The effect of fighting ability on aggression was predictably larger and more robust in males. Coalitional strength also reliably

predicted these variables in boys but less consistently in girls. Regression analyses showed that the effect of each component of bargaining power was independent and survived numerous controls. Results support the prediction that individual differences in agonistic behavior result from individual differences in bargaining power.

TH 9:50 PM

Meat, Manioc and the Male Warrior Hypothesis: A Comparison of Men's and Women's Food Sharing Networks in a Horticultural Foraging Community in the Ecuadorian Amazon

JOHN Q. PATTON (CALIFORNIA STATE UNIVERSITY, FULLERTON, JOHNPATTON@EXCHANGE.FULLERTON.EDU), BRENDA J. BOWSER

This talk examines sex differences in food-sharing networks in Conambo, a community of matrilineal horticultural foragers in the Ecuadorian Amazon. Men and women acquire and distribute distinct sets of food resources. Men hunt and distribute meat and women garden and control the distribution of garden resources. Food-sharing networks are examined for sex differences in network structures implied by the male warrior hypothesis, that the men's network will exhibit greater hierarchy and centrality. We also expect that men will exhibit greater bias favoring in-group men in the community than women do toward in-group women. These expectations were not met. Women's networks exhibit more hierarchy and centrality, and women exhibit the same degree of in-group bias as men. We argue that these results may reflect sex differences in kinship structures. Women have significantly more same-sex co-residential kin and therefore greater inclusive fitness influences on their cooperation with other women, which is reflected in greater indices of control in their sharing networks favoring kinswomen. This implies that some of the sex differences predicted by the male warrior hypothesis are not fixed but exhibit phenotypic plasticity that reflects strategic decision-making, taking inclusive fitness into account as well as potential status benefits from coalitional behavior.

TH 10:10 AM

Promiscuous encoding and selective retrieval: A solution to a fundamental adaptive problem for coalitional psychology

DAVID PIETRASZEWSKI (MAX PLANCK INSTITUTE FOR HUMAN DEVELOPMENT, PIETRASZEWSKI@MPIB-BERLIN.MPG.DE)

Tracking coalitional alliances in order to predict others' behavior is a difficult information-processing challenge. Coalitions are dynamic. New alliances emerge. Old alliances dissolve. Also, the world consists of not just one but multiple nested coalitional alliances, and different alliances can be relevant in different contexts. How does the mind deal with this complexity? This talk reviews a recent series of laboratory studies that are beginning to discover how. Evidence suggests that

cognitive adaptations err on the side of collecting any and all cues that have correlated with and thus predicted coalitional behaviors in the past, even if these are not currently organizing people's behavior (promiscuous encoding). An additional process then keeps real-time track of how relevant or useful any one of these encoded cues is likely to be within a particular context, and up-regulates processing of relevant cues and inhibits processing of non-relevant cues (selective retrieval). This up-regulation and inhibition appears to occur independently for each cue, such that the mind has no trouble tracking and updating the status of multiple, simultaneous cues independently from one another. These recent discoveries provide some early glimpses into how human coalitional psychology works at a computational level.

TH 10:30 AM

Coalitional psychology can explain enduring puzzles about political participation

ANDREW W. DELTON (STONY BROOK UNIVERSITY, ANDREW.DELTON@STONYBROOK.EDU), TESS ROBERTSON, MICHAEL BANG PETERSEN

Direct political action by citizens in mass societies is irrational because it is costly and yet cannot meaningfully affect political outcomes. Even more puzzling is why citizens ever try to get out the vote: If direct actions are ineffective, filtering them through others is even more so. We propose that a partial solution to this mystery is that at least some citizens approach politics with a coalitional mindset—a mindset evolved for the small-scale social world of our ancestors. When a coalitional mindset is activated, politics is treated as a contest between coalitions. Past research suggests that people with a coalitional mindset will be more likely to motivate others' action through emotions such as anger and gratitude. We apply this to politics. First, we use a nationally representative US sample and test whether party members (a proxy for coalitional mindset) are more likely than independents to express anger and gratitude as a means to enjoin others to action. Next, we use a Danish student sample and instead of measuring coalitional mindset, we experimentally manipulate it. In both studies we find identical effects: People with coalitional mindsets are more likely to express both anger and gratitude to motivate others' political action.

SESSION: INFIDELITY CUES

CHAIR: DAVID A. FREDERICK

THURSDAY, MAY 28, 9:30 AM–10:50 PM, S110

TH 9:30 AM

Solving the Problem of Partner Infidelity: Individual Mate Retention, Coalitional Mate Retention, and In-Pair Copulation Frequency

NICOLE BARBARO (OAKLAND UNIVERSITY, BARBARO@PITT.EDU), MICHAEL N.

PHAM, TODD K. SHACKELFORD

Humans deploy various strategies to solve adaptive problems associated with partner infidelity, such as cuckoldry (for men), and loss of partner-provisioned resources (for women). We investigated the relationships between individual mate retention, coalitional mate retention (mate retention with assistance from allies), and in-pair copulation frequency, to identify whether these strategies are used concurrently to thwart partner infidelity. Participants ($n = 387$; 176 women) in a committed, heterosexual relationship reported how often they (1) perform individual mate retention, (2) request coalitional mate retention, and (3) had sexual intercourse with their partner. Results indicate that women who more frequently performed individual mate retention tactics also reported greater in-pair copulation frequency. Men who more frequently request coalitional mate retention tactics from their male and female friends also reported greater in-pair copulation frequency. This research is the first to investigate the relationship between women's mate retention strategies and in-pair copulation frequency, and suggests that women use these strategies concurrently. Moreover, this research is the first to examine coalitional mate retention in relation to other mate retention strategies. The results add to the broader literature on mate retention, and suggest avenues for future research on the strategies humans use to thwart partner infidelity.

TH 9:50 AM

Feeling Hurt Over Sexual versus Emotional Infidelity: Results from a Census-Representative Sample of Heterosexual, Gay, Lesbian, and Bisexual Adults

DAVID A. FREDERICK (CHAPMAN UNIVERSITY, ENDERFLIES1@AOL.COM), JUSTIN R. GARCIA, AMANDA N. GESSELMAN, HELEN E. FISHER

One hypothesis derived from evolutionary psychology is that men are more upset than women by sexual infidelity and women are more upset than men by emotional infidelity. The proposed explanation is rooted in sex differences in parental certainty and obligate parental investment. Most studies, however, have relied on relatively small college or community samples of white heterosexual participants. A recent study of 63,894 participants found support for the expected sex difference among heterosexual participants, but not non-heterosexual participants (Frederick & Fales, 2014). The current study used an online panel to recruit a census-representative sample of U.S. single men and women. A subset of participants ($N = 4307$) completed a forced-choice jealousy measure where they were asked "In your opinion, which type of infidelity hurts more" and could indicate "emotional cheating (a non-physical relationship)," "physical cheating," or "both hurt equally." Heterosexual men were more likely than heterosexual women to be most hurt by sexual infidelity (26% vs. 12%), and less likely to say both hurt equally (69% vs. 82%), while few people of either gender said that emotional cheating was most hurtful (6% vs. 5%). Findings both confirm and challenge existing paradigms.

TH 10:10 AM

Mate Retention Discrepancy and Mate Value Discrepancy in Long-Term RelationshipsYael Sela (Oakland University, ysele@oakland.edu), Justin Mogilski, Todd K. Shackelford

This series of studies is the first to examine the relationship between self-perceived mate retention (MR) discrepancy and self-perceived mate value (MV) discrepancy. Across three studies, participants in long-term, sexual, heterosexual relationships described the frequency with which they, and their partner, perform MR behaviors, and their own, and their partner's, MV. Study 1 (827 undergraduates and community members, each in a committed relationship) and Study 2 (40 married couples) indicated that men who perceive themselves as more desirable than their partner perform several MR tactics less frequently than her (e.g., Resource Display), and that women who perceive that they could find another partner as good as their partner more easily than their partner could perform several MR tactics more frequently than him (e.g., Threaten Infidelity). Study 3 (191 newlyweds) documented sex differences such that husbands who perceive themselves as having more social status skills (but not other MV domains) than their wife perform several MR tactics more frequently than her (e.g., Emphasize Love and Caring). However, wives who perceive themselves as more physically attractive than their husband perform several MR tactics less frequently than him (e.g., Sexual Inducements). These studies highlight the importance of assessing individuals' perceptions of discrepancies.

TH 10:30 AM

The Competitive Thriftiness Hypothesis: Sex Differences in the Use of Frugality as a Costly Signal of Conscientiousness, Intelligence, Self-Control, and an Aversion to Short-Term Mating and InfidelityPatrick J. Nebl (Bowling Green State University, pjnebl@bgsu.edu), Anne K. Gordon

According to the competitive thriftiness hypothesis, which we introduce here, women brag about getting bargains to signal that they possess a number of underlying traits that males value in long-term mates and females value in same-sex friends. These desirable traits are conscientiousness, intelligence, self-control, relative chastity, a proclivity toward long-term mating, and an aversion to short-term mating and infidelity. Male and female college students ($n = 377$) completed surveys that measured their thriftiness-related attitudes and behavior and each of the aforementioned traits. We predicted and found significant, positive correlations between self-reported thriftiness and conscientiousness, two discrete measures of intellect, a domain-specific operationalization of self-control, long-term mating orientation, and anticipatory guilt regarding infidelity. We predicted and found significant, negative correlations between self-reported thriftiness and short-term mating orientation and number of foreseeable sex partners. Each of these

correlational relationships was observed in the sample as a whole. This suggests that thriftiness is linked with these traits within both men and women. However, other results indicate that females are more likely than males to display thriftiness and brag about getting good deals. Males, on the other hand, are more concerned than females with appearing cheap and are more likely to display conspicuous consumption.

SYMPOSIUM: EVOLUTION OF LEARNING AND PLASTICITY

CHAIR: WILLEM E. FRANKENHUIS

THURSDAY, MAY 28, 11:10 AM–12:30 PM, WRENCH AUDITORIUM

All behaviors are produced by mechanisms, which result from development. Therefore, natural selection can only shape behavior by modifying development. This basic insight raises important questions: How does natural selection shape developmental mechanisms depending on ecology? When does selection favor plasticity vs. fixed developmental trajectories? And when does selection favor learning over innate knowledge? This symposium consists of four talks discussing recent theoretical and empirical advances on these topics. The talks present novel theory about the evolution of open vs. closed reaction norms in the context of empirical data about children's learning about dangerous animals, artifacts, and foods in two distinct cultures (Clark Barrett), novel theory about plasticity itself as a trait that develops over time based on environmental inputs (Marco Del Giudice), and about the adaptive value of sensitive periods in development (Willem Frankenhuis), as well as novel empirical studies about infants' prepared learning about plants (Annie Wertz). In general, development is a pivot between evolution, ecology, and phenotypes; as such, it is central to all evolutionary approaches to human behavior. This symposium offers a venue for scholars working from different perspectives to exchange ideas about a common theme: the evolution of mechanisms that tailor behavior to local environmental conditions.

TH 11:10 AM

Open reaction norms, flexibility, and novelty in human evolution

H. CLARK BARRETT (UCLA, HCLARKBARRETT@GMAIL.COM)

Biology and culture are typically thought of as distinct influences on human psychological development. In psychology, culture and socialization, acting on domain-general mechanisms, are often thought to be the main drivers of development. In biology, on the other hand, plasticity is often conceptualized as a biological trait that can be shaped by the evolutionary process, and is modeled using the concept of a reaction norm. Here, I suggest that human acculturation processes can be conceptualized by modifying the traditional biological concept of a reaction norm to include 'open' reaction norms that have evolved to handle content and situations that are in some dimensions evolutionary novel, including culturally transmitted

information. I present a theoretical framework for open reaction norms as a bridge between work in evolutionary psychology, developmental psychology, and culture-gene coevolution theory, and illustrate this approach with recent empirical work on cultural learning of danger in children from two populations, urban Los Angeles and the Shuar of Ecuador. This work shows that a danger learning bias is present across cultures, with the strongest effect for animals and weaker effects for foods and artifacts, in the same order in both populations. However, there were also culture-specific variations, including an absence of a danger learning bias for artifacts among the Shuar. Possible explanations for these cross-cultural similarities and differences will be discussed.

TH 11:30 AM

Some reflections on plasticity as a developing trait

MARCO DEL GIUDICE (UNIVERSITY OF NEW MEXICO, MARCODG@UNM.EDU)

Individual differences in plasticity have been classically framed as genotype-by-environment interactions, whereby different genotypes show different reaction norms in response to environmental conditions. However, research has shown that early experience can be a critical factor in shaping an individual's plasticity to later environmental factors. In other words, plasticity itself can be investigated as a developing trait that reflects the combined action of an individual's genes and previous interactions with the environment. In this talk I explore some implications of the idea that the early environment modulates long-term plasticity. I review key literature on the proximate mechanisms that mediate plasticity, and discuss the possibility that some traits (such as physiological reactivity to stress) may work as generalized mediators of plasticity by increasing the sensitivity of multiple phenotypes across developmental contexts. I then tackle the problem of the evolution of reaction norms for plasticity, consider potential implications for research on parental effects, and conclude by suggesting that plasticity itself may become a target of evolutionary conflict between parents and offspring. In total, I argue that the idea of plasticity as a developing trait offers a rich source of questions and insights in the evolutionary study of development.

TH 11:50 AM

The evolution of specialized learning mechanisms

ANNIE E. WERTZ (MAX PLANCK INSTITUTE FOR HUMAN DEVELOPMENT, WERTZ@MPIB-BERLIN.MPG.DE)

Learning accounts are frequently presented as separate from and antithetical to proposals of evolved cognitive architecture. However, there are many cases in which it is not possible or beneficial to pre-specify all of the necessary information in cognitive architecture over the course of phylogeny. In such cases evolution instead builds learning mechanisms to acquire information over the course of ontogeny. In this talk I will discuss an example of an ancestral problem for which the predicted solution is a

learning mechanism: the acquisition of information about plants. Humans use plants in many different ways (e.g., for food, artifact construction, and chemical properties). Yet plant species vary widely across human environments. Further, plant species are engaged in a multitude of relationships with different organisms that act as predators or mutually beneficial partners. Plant designs reflect the tradeoffs posed by these relationships and therefore plant species do not reliably signal human-relevant properties. As a consequence, humans must learn the necessary information about the specific plant species they encounter over the course of development. Here I present evidence from a series of empirical studies suggesting that human infants possess learning mechanisms specialized for negotiating this intricate task.

TH 12:10 PM

The evolution of sensitive windows in a model of incremental development

WILLEM E. FRANKENHUIS (RADBOD UNIVERSITY NIJMEGEN, WFRANKENHUIS@GMAIL.COM), KARTHIK PANCHANATHAN

Sensitive windows are widespread in nature. Despite a recent focus on neural-physiological explanation, few formal models have examined the evolutionary selection pressures that result in developmental mechanisms that produce sensitive windows. Here, we present such a model. We model development as a specialization process during which individuals incrementally adapt to local environmental conditions, while collecting a constant stream of cost-free, imperfect cues to the environmental state. We compute optimal developmental programs across a range of ecological conditions and use these programs to simulate developmental trajectories and obtain distributions of mature phenotypes. We highlight four main results. First, matching the empirical record, sensitive windows often result from experience or from a combination of age and experience, but rarely from age alone. Second, individual differences in sensitive windows emerge as a result of stochastic sampling: individuals who sample more consistent cue sets lose their plasticity at faster rates. Third, in some cases, experience during a sensitive window shapes phenotypes only at a later life stage (sleeper effects). Fourth, individuals might persevere along developmental trajectories despite accumulating evidence suggesting the alternate trajectory is more likely to match the ecology.

SESSION: SEXUAL RESPONSE

CHAIR: EDWARD MORRISON

THURSDAY, MAY 28, 11:10 AM–12:30 PM, PARKER AUDITORIUM

TH 11:10 AM

Feeling hot hot hot: using facial thermography to explore sex differences in sexual arousal

EDWARD MORRISON (UNIVERSITY OF PORTSMOUTH, ED.MORRISON@PORT.AC.UK),

HAYLEY MERCER, STEPHANOS IOANNOU

Human sexual arousal can be measured through genital physiological methods such as plethysmography, non-genital methods such as pupil dilation or brain scanning, and subjective methods such as questionnaires. Results typically show that men's physiological arousal matches their subjective responses, whereas the pattern for women is less consistent. Facial thermography measures skin temperature caused by blood flow due to sympathetic nervous activity, but has not yet been applied to sexual arousal. We compared facial thermography, pupil dilation, and subjective responses of 15 men and 15 women who watched neutral videos and a sexual video. Both sexes showed increased facial temperature and pupil dilation in response to the sexual stimulus, with greater pupil dilation in women. Higher self-reported arousal was related to smaller temperature changes in both sexes, but to increased pupil dilation in women and decreased dilation in men. There was no relationship between changes in pupil size and changes in facial temperature. These findings suggest that facial thermographic responses may index sexual arousal and/or embarrassment, but differently than pupil dilation. Facial thermography allows for non-invasive investigations of arousal, and suggests that genital tools may not be the only source of detecting subtle sexual arousal cues.

TH 11:30 AM

Human sperm competition: A repeated-measures experiment showing evidence of ejaculate adjustment

MICHAEL N. PHAM (OAKLAND UNIVERSITY, MNPHAM@OAKLAND.EDU), TODD K. SHACKELFORD, VIRGIL ZEIGLER-HILL

Previous research reports that men at greater sperm competition risk produce higher-quality ejaculates. The current research is the first to replicate these findings using a repeated-measures experiment. We used an automated semen analysis machine to analyze masturbatory ejaculates from 30 partnered men. Each participant provided two ejaculates produced under different conditions. In the partner infidelity (i.e., sperm competition) condition, participants masturbated while imagining the first copulation with their partner after she confessed that she had committed infidelity. In the control condition, they masturbated while imagining the first copulation with their partner after she confessed that she had lost some of the couple's money while gambling. We found preliminary support for the hypothesis that men at greater sperm competition risk produce higher quality ejaculates. Specifically, men in the partner-infidelity condition produced higher-quality ejaculates: greater numbers of total sperm, more morphologically normal sperm, more motile sperm, and greater semen volume. Although all the results are in the hypothesized direction, some did not reach conventional levels of statistical significance which was most likely attributable to the small sample size. Data collection is ongoing. The current research is the first repeated-measures experiment showing human ejaculate adjustment that is consistent with sperm competition theory.

TH 11:50 AM

Partner Attractiveness Moderates the Relationship between Number of Sexual Rivals and In-Pair Copulation Frequency in Humans (*Homo sapiens*)

TODD K. SHACKELFORD (OAKLAND UNIVERSITY, SHACKELF@OAKLAND.EDU),
MICHAEL N. PHAM, CHRISTOPHER J. HOLDEN, VIRGIL ZEIGLER-HILL, ANNA
HUMMEL, STACY L. MEMERING

Non-human males attend to the number of potential sexual rivals in the local environment to assess sperm competition risk. Males of these species often perform more frequent in-pair copulations to increase the likelihood of success in sperm competition. Here we extend this research to humans, *Homo sapiens*. We secured self-report data from 393 men in a committed, sexual, heterosexual relationship. The results indicate that men whose in-pair partner has more male coworkers and friends (i.e., potential sexual rivals) also perform more frequent in-pair copulations, but only among men who perceive their partner to be particularly attractive relative to assessments of partners by other men in the sample. This research is the first to empirically investigate the number of potential male rivals in the local environment as a cue to sperm competition risk in humans. Discussion addresses limitations of the current research and highlights directions for future research.

TH 12:10 PM

Women prefer larger penises in short-term mating: Results from selection among 3D-printed models

GEOFFREY MILLER (UNIVERSITY OF NEW MEXICO, GFMILLER@UNM.EDU), NICOLE
PRAUSE, JAYMIE PARK, SHANNON LEUNG

Cryptic female choice for male genitalia is common across species, and may have shaped the unusual length and girth of the human penis. Previous research on women's penis size preferences relied on verbal descriptions or 2D flaccid images. We used a Makerbot 2.0 3D printer to produce 33 erect penis models differing systematically in length and girth (population mean \pm 3 SD). California women (N = 75, mean age 25) used eyes and hands to select models representing the average American size, the smallest and largest they'd ever experienced, and the ideal size they would prefer for a "one night stand" or a "serious boyfriend". Reliability of size judgments was high in immediate and delayed recall tasks. Women's average size estimates matched previously reported average penis sizes; the range of lengths and girths experienced was broad; women preferred slightly longer and girthier penises for short-term than long-term mating; and women preferred slightly larger than average penises for both relationship types. Also, three times as many women had ended relationships due to a partner's penis size being too small as being too large. Consistent with cryptic female choice theory, results confirm some ongoing female choice for penis size in modern humans.

SYMPOSIUM: COGNITION AND TRANSMISSION: EMPIRICAL EVIDENCE ON THE
ROLE OF INTELLIGENCE AND SOCIALITY IN HUMAN ADAPTATION

CHAIR: MICHELLE ANN KLINE

THURSDAY, MAY 28, 11:10 AM–12:30 PM, STOTLER 1

How have humans managed to invade and persist in a variety of ecological systems across the globe? These questions motivate a broad range of research questions in the study of evolution and human behavior. Two schools of thought provide theoretical insights for empirical investigation. First, the idea that humans evolved in a cognitive niche—surviving and reproducing based on intelligence, ingenuity, and innovation. Second, the idea that humans evolved in a cultural niche—evolving psychological and behavioral adaptations that enables faithful cultural transmission, making cumulative cultural evolution possible. In this session we present empirical work that treats the human cognitive and cultural niches as complimentary. Rapaport will address this in comparative perspective, discussing human and non-human animals' cognitive capacities for teaching, and how this can inform our study of human social learning. Kline will provide evidence on teaching and imitation in non-Western societies, and will argue that faithful cultural transmission and problem-solving capacities are both necessary for human adaptation. Legare will discuss the multifunctionality of imitation, and propose an ontological account of how children flexibly use imitation and innovation as dual engines of cultural learning. Derex will present on the roles of human intelligence and sociality in cumulative cultural evolution, and discuss its implications for descriptions of ancestral human populations.

TH 11:10 AM

Social learning in nonhuman animals

LISA G. RAPAPORT (CLEMSON UNIVERSITY, LRAPAPO@CLEMSON.EDU)

The human learning strategy is both social in the extreme and involves a diversity of learning mechanisms. For example, when confronted with a new situation, human children quickly focus their attention on likely demonstrators, watching as these individuals go about their normal activities. The information gained can range from attaching significance to a place or thing to revealing the correct sequence of actions required to reach a goal. When a child takes on a challenging new skill, though, quite often caregivers or peers play a facilitating role, that is, they teach. Among most other animals, including nonhuman primates, social learning typically is restricted to the more self-motivated forms. Teaching occurs only sparsely across nonhuman species. Current evidence suggests, moreover, that nonhuman demonstrators usually rely on simple rules of thumb, such as pupil age, to drive the behavior, rather than the complex cognitive back-and-forth assessments between demonstrator and pupil often incorporated in human teaching interactions. However, a few recent studies suggest that some nonhumans actually may target their teaching efforts on the specific skill deficits of their pupils or on pupils that lag behind in their age-appropriate skills. I will discuss these cases and suggest directions for future research that could help to

shed light on the evolution of the cognitive processes common in human teaching.

TH 11:30 AM

An Odd Couple: The Cultural and Cognitive Niches

MICHELLE ANN KLINE (ARIZONA STATE UNIVERSITY,
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Humans employ both innovation and faithful social learning, for the acquisition of locally adaptive, yet globally variable behavior. In formal mathematical models, social learning is simplified as ‘copying,’ and variation as ‘individual learning.’ These simplifications are necessary, but must be made on the basis of empirical evidence. This talk focuses on specific mechanisms of cultural transmission, using cross-cultural data to inform an understanding of how variation that arises through ingenuity, mistakes, and innovations may be pruned during transmission via teaching and selective imitation. Quantitative observational and interview evidence on teaching in Fiji supports the assertion that teaching behavior has evolved to facilitate learning in others. Experimental evidence from fieldwork in Fiji and Peru demonstrates that ‘overimitation’ is observed cross-culturally to some degree, but that its developmental trajectory varies at each site. A follow-up study reveals that the faithfulness of overimitation diminishes with time, suggesting that overimitation does not result in durable cultural learning. I will discuss the implications of these results for the study of faithful cultural transmission and sources of innovation. Finally, I will argue that this requires integrating the cultural and cognitive niche perspectives, and will improve our understanding of the coevolution of human genes and culture.

TH 11:50 AM

The ontogeny of cultural learning

CRISTINE H. LEGARE (UNIVERSITY OF TEXAS AT AUSTIN,
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Humans are a social species and much of what we know we learn from others. To be effective and efficient learners, children must be selective about when to innovate, when to imitate, and to what degree. In a systematic program of interdisciplinary, mixed-methodological, and cross-cultural research, my objective is to develop an ontological account of how children flexibly use imitation and innovation as dual engines of cultural learning. Imitation is multifunctional; it is used to learn both instrumental skills and cultural conventions such as rituals. I propose that the psychological system supporting the acquisition of instrumental skills and cultural conventions is driven by two modes of interpretation: an instrumental stance (i.e., interpretation based on physical causation) and a ritual stance (i.e., interpretation based on social convention). What distinguishes instrumental from conventional practices often cannot be determined directly from the action alone but requires interpretation by the learner based on social cues and contextual information. I will

present evidence for the kinds of information children use to guide flexible imitation. I will also discuss cross-cultural research in the U.S. and Vanuatu (a Melanesian archipelago) on the interplay of imitation and innovation in early childhood. Cultures vary along a number of dimensions that impact how imitation and innovation are socialized. Examining cultural variation in child socialization has the unique potential to inform the development of new theoretical perspectives on cultural learning.

TH 12:10 PM

The foundations of human cumulative culture

MAXIME DEREK (ARIZONA STATE UNIVERSITY, MAXIME.DEREK@GMAIL.COM)

The remarkable ecological and demographic success of humanity is largely attributed to our capacity for cumulative culture. To explain this accumulation process, theoretical models and empirical studies of cultural evolution pointed two factors, accurate social learning mechanisms and large population size, while typically neglecting the role of human intelligence. Here, we used a combinatorial computer-based task to compare the achievements of populations of algorithms generating random cultural variation with those of human individual and social learners. Human volunteers participated in one of four social learning treatments in which we varied information accessibility, population size and population connectivity. This experimental design allowed us to investigate the relative importance of intelligence, social learning mechanisms and social structure in the cultural accumulation process. Our results provide a detailed picture of what ancestral human populations should have looked like, in order to exhibit cumulative culture.

SESSION: COGNITION

CHAIR: RUSSELL E. JACKSON

THURSDAY, MAY 28, 11:10 AM–12:30 PM, S110

TH 11:10 AM

A comparison of how children and chimpanzees solve a pure coordination problem

SHONA DUGUID (MAX PLANCK INSTITUTE FOR EVOLUTIONARY ANTHROPOLOGY, SHONA_DUGUID@EVA.MPG.DE), EMILY WYMAN, SEBASTIAN GRUENEISEN, MICHAEL TOMASELLO

One of the challenges of cooperation is to coordinate decisions with others. Recently, theoretical accounts have proposed that humans have evolved unique skills for coordinating decisions and actions with others for mutual benefit. We tested this hypothesis using a comparative approach by presenting pairs of 4 year old children and pairs of chimpanzees, with a very simple coordination problem. To succeed

partners were required to choose the same one of four options. If successful they each received the same reward, so there were no conflicts of interest. Furthermore, the rewards associated with each option were identical, thus preferences for a particular option could not play a role. To investigate the flexibility of coordination we paired each individual with multiple partners. Our results showed that both species were able to achieve successful coordination, but there were marked differences in the way they did so. Children, using either communication or a leader-follower strategy, coordinated quickly and flexibly, adjusting easily to new partners. In contrast, chimpanzees converged on a single solution over time and starting again with each new partner, suggesting a lack of understanding of the coordination process. These results provide evidence for a divergence in the coordination skills of these species.

TH 11:30 AM

Evolved Navigation Theory and Cross-Cultural Visual Illusions

RUSSELL E. JACKSON (UNIVERSITY OF IDAHO, RJACKSON@UIDAHO.EDU)

Cross-cultural data often fail to replicate visual illusions proposed under mainstream social science theories. Few evolutionary hypotheses of visual illusions exist, even fewer of which have been tested across cultures, despite the innate cross-cultural applicability of evolutionary theory. The aim of the current study was to test the predictions of Evolved Navigation Theory outside of the North American samples previously tested. Research assistants tested individuals of the Ixil Maya in the Guatemalan highlands for the presence of the descent illusion proposed under Evolved Navigation Theory. Data suggest that individuals among the Ixil Maya experience the descent illusion to the same degree that individuals in North American samples experience the illusion. The purportedly universal qualities of visual processing illustrated by mainstream illusions are rarely universal. Evolutionary theories likely provide the key to cross-cultural comparisons, even within the basic functions of the visual system.

TH 11:50 AM

Precautionary Thought and Behaviour: Zulu rituals as case study

MICHAL FUX (UNIVERSITY OF SOUTH AFRICA, FUX.MICHAL@GMAIL.COM), JOEL MORT, E. THOMAS LAWSON

Inspired by human behavioral ecology literature, which shows an influence of local hazards (e.g. disease prevalence) on mate choice, we set off to test the idea that they should also influence attitudes towards cultural/religious rituals. A cross cultural study of Zulu communities in SA tested people's inferences about the outcome of failing to perform each of the central Zulu life-stage rituals in order to identify the nature of the presence of precautionary themes in Zulu rituals and whether environment has an effect on them. Across populations, results revealed an affinity between certain threat-domains and specific Zulu rituals: birth and early age rituals

evoked the Contamination/Contagion domain, women's maturity rituals evoked the Decline in Resources domain, marital rituals evoked a mixture of Decline in Resources and Loss of Status domains, and death rituals evoked the Predation/Assault domain. The results suggest, rather than location-based differences, a relationship between life history theory and the precautionary theoretical background of this research. Mainly, that cultural transmission could be shaped and constrained by the workings of cognitive precautionary mechanisms coupled with the activation of life-stage-relevant hazard preoccupation leading to the persistence of certain rituals and the selection of rituals through time.

TH 12:10 PM

The evolution of cognition and hand use in primates: an interdisciplinary perspective

ALEX DUNKEL (MAKILAHY@GMAIL.COM)

Although hand use for extractive foraging has been the focus of the 'sensorimotor intelligence hypothesis', other fundamental aspects of hand use have been less explored. This study shows that simians exhibit a variable propensity for the manual manipulation of inanimate, non-food objects whereas strepsirrhine primates do not. Despite this, strepsirrhines appear to understand the concept of a tool and are capable to using them with training. Cognitively, tools are an extension of the body, making their use a proprioceptive act. This suggests that strepsirrhines are pre-adapted for proprioceptive object manipulation and tool use, but do not innately express these cognitive abilities. To support this, Bayesian decision theory pertaining to sensorimotor control suggests that brains use proprioception and exteroception to generate adaptive behavior. The evolution of the parietal cortex has revolutionized hand use in simians, and these same regions of the brain that facilitate tool use also assist with the understanding of intentionality in social situations. Therefore a fundamental change in hand use among the earliest simians may have facilitated the evolution of tool use and complex social interactions. The paleontological, anatomical, cognitive, ethological, and neurological roots of these abilities are explored to explain this behavioral divide between simians and 'prosimians'.

SESSION: COOPERATION

CHAIR: LEE CRONK

THURSDAY, MAY 28, 3:30 PM-4:50 PM, WRENCH AUDITORIUM

TH 3:30 PM

How social selection helps to solve the selfish gene crisis

RANDOLPH M. NESSE (ARIZONA STATE UNIVERSITY, NESSE@ASU.EDU)

When George Williams pointed out the limits of group selection in 1966 he set off a

crisis at the intersection of biology and moral philosophy. *The Selfish Gene* brought the problem to wide attention and aroused controversy that continues. Kin selection offers a substantial solution, as do cultural group selection and models of mechanisms for maintaining mutually beneficial exchanges. However, my experiences with my patients convinced me that something was missing. Instead of constantly plotting how they could trick others into giving more than they would get, they lay awake nights worried that they might have slightly offended someone. When I went back and read papers by Mary Jane West-Eberhard on social selection for the third time, I finally understood the mechanism she proposed that can shape prosocial tendencies. Individuals with traits that make them preferred as social partners get better partners, and that increases reproductive success. Just as runaway sexual selection shapes extreme traits, runaway competition for social partners can shape extreme prosocial traits. This is not an alternative to other factors shaping prosocial traits, but it offers an explanation for aspects of human prosociality that are otherwise hard to understand. It also offers a perspective on human social life that can help to protect the field of evolution and human behavior from prejudice arising from its presumed cynicism about human nature.

TH 3:50 PM

Need-based transfers in cooperative systems

ATHENA AKTIPIS (ARIZONA STATE UNIVERSITY, AKTIPIS@ASU.EDU), AMY BODDY, LEE CRONK

Across cooperative systems, sharing often takes place based on the need of the recipient rather than on strict account-keeping rules. Results from fieldwork, computational modeling and laboratory experiments are elucidating the conditions under which need-based transfers are a viable alternative to account-keeping and the mechanisms that instantiate need-based transfer rules. In addition to the role that need-based transfers play in helping us understand cooperation among non-kin, they may also play a central role in cooperation among relatives including parental investment. Need-based transfers are likely to occur in systems in which individuals have interdependent fitness, for example due to shared genes or other forms of shared fate. When cheating occurs in need-based transfer systems (i.e., asking when not in need or not giving if able) this can lead to a break down of higher-level function even among genetic kin. Here we describe the applications of need-based transfers in a variety of cooperative systems and how cheating manifests in many of these systems. This includes food sharing (and monopolization), parental investment (and maternal-fetal conflict), and multicellular cooperation (and cancer). We also discuss the limitations of need-based transfers as a general explanation for the evolution of cooperation.

TH 4:10 PM

Generous by nature: Risk, need, and the evolution of human cooperation

LEE CRONK (RUTGERS UNIVERSITY, LCRONK@ANTHROPOLOGY.RUTGERS.EDU),
MATTHEW M. GERVAIS, ATHENA AKTIPIS,

The ethnographic record is rich with examples of systems of need-based aid. Such systems serve to pool risk and may be a hallmark of hominin occupation of volatile and marginal environments. The Human Generosity Project is a multi-year, transdisciplinary effort to better understand such systems. In addition to computer models and laboratory experiments, the Human Generosity Project involves fieldwork at seven field sites around the world with a variety of subsistence modes: Hadza hunter-gatherers; Maasai, Mongolian, and Karimojong pastoralists; Ik horticulturalists; Fijian fisher/farmers; and American ranchers. At each site we are collecting data on perceived and actual risks from such things as droughts, cyclones, and injuries; qualitative and quantitative data on risk-pooling and resource transfers; and performance in risk-pooling games. These data will illuminate the interaction of evolved psychology and cultural evolution in allowing humans to adapt to a range of environments characterized by different risk profiles. Our research protocol is open, public, and flexible, creating the possibility for data collection at additional sites and other new collaborations. We are also extending the logic of need-based transfers to inform a variety of related problems including effective disaster response, resource management, and hominin evolution.

TH 4:30 PM

Social structure and co-operation in human populations

RUTH MACE (UCL, R.MACE@UCL.AC.UK), JIAJIA WU, TING JI, QIAOQIAO HE, YI TAO

Large-scale co-operation in human populations remains an evolutionary puzzle. Some models have predicted that low dispersal (viscous populations) will influence local relatedness and generate co-operation, however, other models predict that a high density of kin can increase local competition. Sex-biased dispersal patterns also influence the predictions of who is co-operative to whom within populations; and extra-pair mating may have an effect on cooperation between males. Using economic games to measure cooperation, we test the hypothesis that social structure influences altruistic behaviour in a diversity of Sino-Tibetan populations in 36 villages in southwestern China, where the local kinship norms are either for females to disperse at marriage or to stay in their natal household throughout life. These unusual societies, in which dispersal for marriage does not normally occur, provide an opportunity to test whether dispersal is associated with large-scale cooperation. We find that social organisation does influence levels of donations in both public goods and dictator games; people are less cooperative in communities where dispersal by both sexes is low. This study shows that local dispersal norms influence co-operative behaviour in real world human populations, and supports the view that dispersal for marriage between different communities played an important role in the evolution of large-scale cooperation in human society.

SESSION: FLEXIBLE SEXUAL STRATEGIES
CHAIR: VIVIANA A. WEEKES-SHACKELFORD
THURSDAY, MAY 28, 3:30 PM–4:50 PM, PARKER AUDITORIUM

TH 3:30 PM

Same-Sex Sexual Behavior in Self-Identified Heterosexual Women: Testing the Allomothering Hypothesis

SARAH RADTKE (RYERSON UNIVERSITY, MARSVEG77@HOTMAIL.COM)

The study argues that sexual fluidity is an evolved predisposition in heterosexual women, and it evolved because of allomothering—helping each other’s offspring survive—and providing assistance with survival of females themselves. The allomothering hypothesis will be presented as an answer to why many heterosexual women have a tendency to engage in fleeting same-sex sexual behavior. A new scale was developed to test the allomothering hypothesis. Results show that self-identified heterosexual women who had sex with another woman would leave their offspring with that female if need be, and rated the woman that they had sex with as having the traits of a good mother. The more a woman enjoyed sex with another female, the more likely she is to rate that woman as a good mother and as someone she would trust to raise offspring.

TH 3:50 PM

Female mating psychology after having children

VIVIANA A. WEEKES-SHACKELFORD (OAKLAND UNIVERSITY, VIVIANAWS@GMAIL.COM), MARIA JOVANOVSKI, ZACHARY WILLOCKX, TODD K. SHACKELFORD

Caring for children produced within a previous relationship while searching for a new partner is likely to have been a recurrent social feature of human evolutionary history, presenting adaptive problems that differed from those accompanying the mate searching of those without children. It is therefore expected that human mating psychology may reveal sex-differentiated responses that are sensitive to the presence of a child from a previous relationship. Empirical evidence for sex differences in mating psychology has been widely documented. The current study explores sex differences and similarities in mating and sexual psychology after having children. Several hundred participants with children completed an online survey about their dating behaviors and about the characteristics desired in a romantic partner. Results of the current study (a) replicate previous research on sex differences in mating psychology and (b) extends previous research by exploring sex differences and similarities in mating and sexual psychology after having children. Discussion highlights limitations of the current research and addresses other potential variables that might account for variation in sexual psychological changes.

TH 4:10 PM

Does Childhood Family Structure Influence Romantic and Sexual Outcomes Across the Adult Life Course?

JUSTIN R. GARCIA (INDIANA UNIVERSITY, JUSRGARC@INDIANA.EDU), AMANDA N. GESSELMAN, PAULA SHEPPARD, REBECCA SEAR, NICOLE M. CAMERON, HELEN E. FISHER

In industrialized societies, childhood family structure has been shown to be influential in shaping childhood development. Nuclear family composition has been associated with the development and timing of reproductive life history strategies, with father absence associated with an accelerated life history—particularly for women. However, most of this research has focused on landmarks in adolescence and young adulthood including pubertal maturation and sexual debut. Little is known about whether accelerated life history strategies remain stable throughout the adult life course. In a U.S. nationally representative sample of 5,805 single adults (women=2,830; men=2,975) all 21 years of age and older, participants responded to questions of childhood family structure and recent romantic and sexual outcomes. For both men and women, father absence was associated with a wide range of more permissive sociosexual outcomes, possibly indicating that sexual life history strategies remain stable throughout the adult life course.

TH 4:30 PM

An investment model of sociosexuality, relationship satisfaction, and commitment: Evidence from dating, engaged, and newlywed couples

GREGORY D. WEBSTER (UNIVERSITY OF FLORIDA, GDWEBS@UFL.EDU), JEAN-PHILIPPE LAURENCEAU, C. VERONICA SMITH, AMANDA L. MAHAFFEY, ANGELA D. BRYAN, AMY B. BRUNELL

Sociosexual orientation is a key individual difference in evolutionary psychology that describes people's propensity to endorse and pursue restricted or unrestricted sexual strategies (e.g., seeking few or many sexual partners; Simpson & Gangestad, 1991). Using an investment model (Rusbult, 1980, 1983) of sociosexual attitudes, we examined sociosexual attitudes' association with relationship outcomes using actor-partner interdependence models (APIMs) of over 400 dating, engaged, and newlywed couples. Men's sociosexual attitudes negatively related to both men's (actor effect) and women's (partner effect) relationship satisfaction. This actor effect persisted after controlling for men's and women's relationship commitment, and was stronger (more negative) among dating couples (vs. engaged or newlywed couples) and couples with shorter relationship durations. Moderated-mediation APIMs suggested that (a) both actor-effect satisfaction-commitment associations were more positive in couples dating for 6 months and (b) men's relationship satisfaction mediated the link between men's sociosexual attitudes and men's relationship commitment, but only in couples dating for 6 months. Sociosexuality's role in the investment model, and the investment model's role in a broader evolutionary psychology of romantic

relationships, is discussed.

SESSION: ALLOPARENTING

CHAIR: DEBRA S. JUDGE

THURSDAY, MAY 28, 3:30 PM–4:50 PM, STOTLER 1

TH 3:30 PM

Child fostering in rural Timor-Leste: Patterns of sending and receiving children among related households and children's physical growth.

DEBRA S. JUDGE (UNIVERSITY OF WESTERN AUSTRALIA,
DEBRA.JUDGE@UWA.EDU.AU), PYONE M. THU, KATHY A. SANDERS

Child fosterage is widely practiced in subsistence economies. The redistribution of children may result in benefits to donor households (reduction of competition for natal family resources), in receiving households (labor or other inputs from the fostered child), and/or to the child itself. We have previously shown that fostered children in the mountain community of Ossu (Timor-Leste) suffer no growth penalty relative to biological children in fostering households and exceed the growth of children in households with only biological children. Herein we look at the fostering in Ossu, a community with patrilineal familial identification traditions and Natarbora, a south coastal plains community with a tradition of matrilineal family identification. We look at the emic systems of familial identification, the levels and patterns of fostering children, and an examination of growth indicators for children relative to the familial pattern of fostering. 30-50% of all households participate in fostering. Between 12 and 20% of children sampled in any one year were not living with a biological parent. In both sites, children were more likely to be sent to their mother's family and more likely to be biologically related to the woman of the receiving family. Foster relationships had little association with growth.

TH 3:50 PM

Grandparents and child health in Guatemala: opposite effects of paternal grandmothers and maternal grandfathers

PAULA SHEPPARD (LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE,
PAULA.SHEPPARD@LSHTM.AC.UK), REBECCA SEAR

Previous research has found that the presence of grandparents, particularly grandmothers, is often associated with higher child survival. Little research has explored the potential mechanisms which drive these effects. We use data from rural Guatemala (2,892 mothers and 3,370 children) to test whether grandparents are associated with improvements in child health, here proxied by height; and to determine whether the provision of different types of support (advice and financial) from grandparents is associated with child health. We further stratify our sample by

age (0-12 months; 1-5 years) to identify whether these associations are seen in both infants and older children. We found evidence for a beneficial influence of paternal grandmothers: maternal contact with, and financial support from, paternal grandmothers, was positively associated with height in older children. Conversely, receiving financial assistance from maternal grandfathers was associated with decreased stature in older children; which we suggest may reflect needs-based investment. We found no evidence that maternal grandmothers or paternal grandfathers were associated with child height; and no evidence for grandparental influence on infants. These findings differ from previous literature that finds stronger roles for maternal grandmothers, and little influence of grandfathers, on child health outcomes.

TH 4:10 PM

Who supports breastfeeding mothers? A look at kin investment in the US

JAYME CISCO (UNIVERSITY OF MISSOURI, JNCTF7@MAIL.MISSOURI.EDU)

Kin in industrial countries provide varying amounts and types of support to reproducing women, but few studies have investigated what effects this investment has on children, particularly in low-risk contexts. Breastfeeding duration is known to impact fertility, as well as child and maternal health. As such, kin can influence the fertility of their relatives by providing breastfeeding encouragement and information, help with breastfeeding problems, emotional support, and childcare. In industrial societies, evaluating the effect of kin support on fertility is complicated by neolocal residence and wide geographic dispersion of kin networks. This study seeks to investigate the types of contributions various kin provide to breastfeeding mothers and their children and how this investment impacts fertility, as measured by breastfeeding duration and age at first birth. This study also seeks to understand how kin support is affected by geographic dispersion and emotional closeness. In 2015, 602 mothers residing across the United States were surveyed regarding their breastfeeding histories and support networks. Event history analysis is used to evaluate the effect of support on breastfeeding duration, while additional statistical analyses are used to determine investment differences between kin. Results will be discussed.

TH 4:30 PM

Maintenance of kin connections: matrilineally biased visiting patterns in a patrilineal and patrilocal society

GRETCHEN PERRY (UNIVERSITY OF MISSOURI, GCPXB2@MAIL.MISSOURI.EDU)

Human beings are often considered cooperative breeders and cross cultural research shows a bias toward maternal relatives, particularly maternal grandmothers, being central figures in alloparental caregiving. My most recent research has focused on who parents receive various forms of alloparental support from in Matlab,

Bangladesh. Visiting patterns shed light on how families maintain relationships with potential alloparental caregivers. The patrilineal and patrilocal social structure of Matlab provides an opportunity to explore whether the matrilineal bias in relationship maintenance and alloparenting persists here as well. I analyze and compare visiting patterns in two-parent families and four kinds of one-parent families: where fathers are absent due to migrant labor, where mothers are deceased, where fathers are deceased, and where parents are estranged or divorced. Across all five family types, primary caregivers visit with children's matrilineal relatives more often than the social norms would suggest. Visits with the child's matrilineal relatives occur more frequently than with equivalent patrilineal relatives and this is increasingly true with longer travel times. Factors potentially associated with the matrilineal bias (such as age, relatedness, travel time, marital status and income), and how they vary across family types, are discussed.

SYMPOSIUM: THE EVOLUTION OF HUMAN VOCAL BEHAVIOR: COMPARATIVE, CULTURAL, DEVELOPMENTAL, AND NEUROSCIENCE PERSPECTIVES

CHAIR: GREG BRYANT

THURSDAY, MAY 28, 3:30 PM–4:50 PM, S110

A complete explanation of any animal behavior must address the proximate questions concerning its development and underlying mechanisms, as well as the ultimate questions of its adaptation and phylogeny. Current research on human and nonhuman vocalizations provides an excellent example of interdisciplinary efforts addressing these different levels of analysis. Researchers from a variety of disciplines are converging on an important distinction in the evolution of human vocal production. Humans have evolved laryngeal motor control that differentiates speech articulation from vocal emotions. This dual pathway model is supported by research from neuroimaging, developmental and comparative psychology, and evolutionary psychology. This symposium brings together scholars approaching this issue from multiple perspectives detailing research that addresses different aspects of this complex emerging area. Our symposium includes four talks: 1) Marcus Perlman will present research on an enculturated gorilla that has phylogenetic implications for understanding volitional control of articulators in human speech. 2) Kim Oller and Ulrike Griebel will describe the development of spontaneous vocalizations in human infants and what it means for theories of hominin vocal evolution. 3) Greg Bryant will present research of the perception of adult human laughter across disparate cultures that reveals how spontaneous emotional vocalizations differ from volitionally produced speech sounds, and 4) Carolyn McGettigan and Nadine Lavan will present neuroimaging work investigating the processing of spontaneous and volitional human laughter. Taken together, these diverse research areas speak to different levels of analysis important for the complete understanding of the evolution of human vocal behavior.

TH 3:30 PM

Vocal control in the great apes

MARCUS PERLMAN (UNIVERSITY OF WISCONSIN-MADISON, MPERLMAN@WISC.EDU)

Many theories of how humans evolved the ability to speak have assumed that the great apes are extremely limited in their ability to 1) voluntarily control their vocalization, and 2) learn novel vocalizations that are not part of their species typical repertoire. However, there is now considerable evidence of vocal control and learning in all great ape species, both in natural environments and especially with human enculturation. Here I present video and analysis of the vocal repertoire of an enculturated 43-year-old western lowland gorilla Koko, who has lived closely with humans since 6 months of age. Koko exercises clear voluntary control over the frequent performance of nine learned vocal and breathing related behaviors, which variably involve coordination of her breathing, larynx, and supralaryngeal articulators like the tongue and lips. Taken together, the current body of evidence indicates that great apes possess some inclination for cultural learning of behaviors involving vocalization and breath control. Thus, contrary to traditional assumptions, it is not the case that humans evolved their vocal virtuosity entirely from scratch. Rather, the capacity for flexible vocal control and learning had already gained some traction in our great ape ancestors.

TH 3:50 PM

Vocal development in the human infant and in our closest primate relativesD. KIMBROUGH OLLER (UNIVERSITY OF MEMPHIS, KOLLER@MEMPHIS.EDU),
ULRIKE GRIEBEL

The human infant appears to be unique among apes in showing copious spontaneous vocalization. This early volubility has been posited to constitute a foundation upon which all development of vocal language depends. The idea is that early vocal exploration produces self-organized categories of "protophones," sounds that are not speech but that, like speech, can be produced independent of any particular emotional state. In fact any state from positive to neutral to negative can occur with any of the protophones. And perhaps even more important, the protophones can be used in face-to-face vocal exchanges with caregivers, a pattern of interaction that has long been thought to provide a basis for bonding between human parents and infants. All these features of early vocal development, fully in place by three months of age, appear to be essentially absent in non-human apes. We will review relevant literature and present an argument that the occurrence of these features suggests positive selection on spontaneous vocalization in the hominin line at least as early as the point of hominin bipedalism, and perhaps earlier. Further we will argue that the appearance of spontaneous vocalization represented the first major communicative split between hominins and their ape relatives.

TH 4:10 PM

The perception of spontaneous laughter across disparate culturesGREG BRYANT (UNIVERSITY OF CALIFORNIA, LOS ANGELES,
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Laughter is a universal vocal signal ubiquitous in human social interaction and homologous to play vocalizations across several primate species. Here I will briefly describe two different lines of research on the perception of laughter across disparate cultures. One series of ongoing experiments examines the perception of spontaneous versus volitional laughter. Volitional laughter is thought to be produced by the speech system, and as such has particular inevitable and perceivable acoustic features. Specifically, we explored relationships between sound features of laughs and judgments of how 'real' they sounded, as well as a study examining the connection between spontaneous human laughter and nonhuman animal vocalizations. These same stimuli have now been run with participants from 7 societies providing consistent results showing that people are able to reliably detect spontaneous laughs independent of language and culture. In another series of studies, participants across 24 societies reliably identified affiliative partners from extremely brief, decontextualized recordings of conversational co-laughter. Several acoustic dimensions contributed to people's judgments of affiliation, and these results did not vary substantially across population samples. Overall, laughter is an important social vocalization with deep evolutionary roots, unique acoustic features, and a variety of possible communicative functions, both within and between groups.

TH 4:30 PM

Laughing, on the inside: Using magnetic resonance imaging of the brain and vocal tract to investigate the perception and production of human laughter signalsCAROLYN MCGETTIGAN (UNIVERSITY OF LONDON,
CAROLYN.MCGETTIGAN@RHUL.AC.UK), NADINE LAVAN

We present a series of studies investigating the processing of spontaneous and volitional human laughter signals, from the mechanics of production and the acoustics of the resultant signal, to the behavioral and neural correlates of perception. Using functional MRI of the brain during passive listening to laughter, we have shown selective activation of frontal regions implicated in mentalizing during the passive perception of volitional ("posed") laughter. In contrast, spontaneous laughter preferentially engaged responses in primary and secondary auditory cortex. However, further analyses indicate some commonalities across spontaneous and volitional laughter in the acoustic cues that modulate the affective judgments of laughter and the passive neural responses to hearing exemplars of varying arousal and valence. This indicates that talkers can, to some extent, simulate socially meaningful information for the listener in volitional laughter. Nonetheless, it is known that aspects of authentic laughter expressions are "hard to fake"; we are now using

real-time anatomical MRI of the vocal tract to directly measure the physiological bases for this.

SYMPOSIUM: WHY ARE MEN MORE MOBILE? MATING BENEFITS AND PARENTING COSTS

CHAIR: LAYNE VASHRO

THURSDAY, MAY 28, 5:10 PM–6:10 PM, WRENCH AUDITORIUM

Men travel farther than women across a broad spectrum of environmental and subsistence contexts. Evolutionary psychologists link this pattern to prominent sex differences in spatial ability and navigation. The shared reasoning across several distinct theories is that selection acted differently on men's and women's navigation and the supporting cognitive tools. Where these theories differ is in the proposed adaptive function of men's greater travel. Did long-distance travel pay in mating success? Hunting success? Warfare? Or, should we ignore men and focus on the benefits paid to women's risk aversion? This symposium looks at the underlying emotions, stated intentions, and demographic patterning of men's and women's mobility to begin discriminating between the many possible ultimate explanations for this important cluster of sex differences.

TH 5:10 PM

Sex differences in range size: When is travel worth the risk?

ELIZABETH CASHDAN (UNIVERSITY OF UTAH, ECASHDAN@GMAIL.COM), KYLE GAGNON, ERICA BARHORST, LACE PADILLA, JEANINE STEFANUCCI, SARAH CREEM-REGEHR

Travel over large distances and novel terrain can bring rich rewards, but can also be dangerous. Those risks and rewards are likely to fall on men and women differently, with consequences for both travel distances and the ways in which men and women navigate. While large ranges may confer fitness benefits on males, the physical risks of travel carry a greater fitness penalty for women, since child survival depends more heavily on mothers than fathers. Our aim in this study is to see whether sex differences in harm avoidance underlie sex differences in range size, and how these shape differences in spatial confidence and wayfinding. In a sample of Utah undergraduates, we found that women were more harm-avoidant than men, and that harm avoidance partially mediated the relationship between sex and range size. Large ranges, in turn, were associated with a style of navigation conducive to travel in novel areas and with a better sense of direction. These results indicate that sex differences in navigation are related to (and may be shaped by) women's smaller ranges, and that minimizing physical harm may be one of the selection pressures underlying this difference.

TH 5:30 PM

Sex Differences in Travel Reflect Shifting Reproductive Priorities among Tsimane Forager-Horticulturalists

STEVEN GAULIN (UNIVERSITY OF CALIFORNIA, SANTA BARBARA, GAULIN@ANTH.UCSB.EDU), EMILY J. MINER, MICHAEL GURVEN

In vertebrates where females expend more parental effort and males consequently have higher potential reproductive rates, males often travel more widely than females as a component of their greater mating effort. We used in-depth interviews about travel activity during childhood, adolescence and adulthood, combined with extensive household-demographic and GPS data, to explore the timing and concomitants of inter-village travel in a population of Amazonian hunter-horticulturalists. For maximum comparability with the (small) literature on human ranging and the (much larger) literature on the ranging behavior of non-human vertebrates, we used four different measures, three of which suggested that there was no overall sex difference in lifetime range size. However, two significant effects were observed: Males traveled more widely than females during adolescence (the key period of mate selection); and adult female travel was negatively related to the number of dependent children, while adult male travel showed no similar contingency. Both of these effects are consistent with the idea that male and female ranging behavior reflects different facultatively modulated strategies that match their respective emphases on mating and parenting effort.

TH 5:50 PM

The Search for Additional Mating Opportunities Helps Explain Larger Ranges of Twa Men

LAYNE VASHRO (UNIVERSITY OF UTAH, LAYNE.VASHRO@ANTHRO.UTAH.EDU)

Men occupy larger ranges than women in many societies. Researchers argue that at least some of men's additional travel is explained by the relative fitness advantage of increased mating opportunities. This study among the Twa of northwestern Namibia looks at the stated reason for trips away from the home region with the goal of understanding the function of travel and how it varies across sex and age. The results show that men travel considerably more than women at all ages, and much of the difference is explained by trips explicitly made in order to visit established lovers or solicit new ones. In addition, men's travel increases with age, at least until a point where physical infirmity likely explains the drop-off. In this society, men's social status and mate value increases in a similar fashion. This correlation in travel and expected mate value is consistent with men expanding their range when it is most likely to result in additional mating opportunities.

SYMPOSIUM: DEEP RATIONALITY IN WOMEN'S BEHAVIOR: EVIDENCE THAT FEMALE PHYSIOLOGY AND BEHAVIOR IS COMPLEX AND STRATEGIC

CHAIR: MARTIE G. HASELTON AND JAIMIE ARONA KREMS
THURSDAY, MAY 28, 5:10 PM–6:10 PM, PARKER AUDITORIUM

Lay stereotypes about gender typically assert that women are driven by emotion (and men by logic). This symposium examines deep rationality in women's behavior, particularly in women's behavior across—and in response to—the ovulatory cycle. In challenging long-held societal (and, in some cases, scientific) views of the irrationality of female behavior, the three talks highlight the sophisticated and functional ways women strategically navigate their social worlds towards typically adaptive ends. Specifically, the speakers report findings from three labs demonstrating (1) that women's appearance evinces robust, but subtle, changes at high versus low fertility, (2) that women with desirable mates engage strategic, potentially adaptive responses towards high-fertility women, whose increased attractiveness (and attraction) to desirable men render them possibly dangerous mate poachers, and (3) that paired women's hormonally-driven deployment of sexual behavior during non-conceptive cycle phases may function to aid highly invested women in eliciting investment from their romantic partners. Together, these talks underscore the potentially adaptive nature of changes in women's appearance and in women's intrasexual and intersexual behaviors, thereby showcasing the often-overlooked ways in which women's physiology and sociality are complex, strategic, and deeply rational.

TH 5:10 PM

Are women more attractive near ovulation?

KELLY GILDERSLEEVE (UNIVERSITY OF CALIFORNIA, LOS ANGELES,
KELLYGILDERSLEEVE@GMAIL.COM), MARTIE G. HASELTON

Across diverse mammalian species, mating behavior changes across the ovulatory cycle. Biologically, the fleeting window approaching ovulation is the only time when sex can result in conception. Socially, high fertility typically is accompanied by an increase in female attractiveness, sexual receptiveness, and, sometimes, active solicitation of certain males for sex. For several decades, the question of whether the ovulatory cycle plays a similar role in human mating has been debated and controversial. Moreover, published effect sizes have ranged from null to large. We conducted a meta-analysis of over 50 published and unpublished studies to evaluate the magnitude and robustness of these effects. Analyses revealed small but statistically significant increases from low to high fertility in women's attractiveness, attractiveness-enhancing behaviors (e.g., wearing more revealing clothing), and flirtatiousness. Thus, extant evidence supports the conclusion that women are subtly more attractive near ovulation, both because of physical changes that are largely outside of their control and because of changes in their behavior that might function to enhance their attractiveness to certain others. These findings have implications for understanding ultimate and proximate mechanisms underlying everyday variation in human attraction, sexuality, and relationships, and showcase another way in which female behavior is strategic.

TH 5:30 PM

Women selectively and strategically guard their (desirable) mates from ovulating womenJAIMIE ARONA KREMS (ARIZONA STATE UNIVERSITY, JAIMIE.KREMS@ASU.EDU),
REBECCA NEEL, STEVEN L. NEUBERG, DAVID PUTS, DOUGLAS T. KENRICK

Women's friendships are emotionally intense, incredibly close, and hugely supportive—but not solely cooperative. Even friends compete with one another not only to attain desirable mates but also to retain them. Thus, adaptationist theories of mate guarding assert that individuals might choose their friends with an eye towards whom they can trust not to poach their long-term mates. Which women should be avoided? At high-fertility, women are both more attractive to and more attracted to "sexy" men, making ovulating women potentially dangerous threats to (some) women's mate retention goals. Four experiments (N = 484) demonstrate that the committed partners of desirable men deem ovulating (but not non-ovulating) women to be less trustworthy, and, in turn, social distance them—both from themselves and their partners. This avoidance is sensitive to the mate value of their partners, the attractiveness of other women (i.e., only attractive ovulating women evoked women's target-directed mate guarding), and the social context (i.e., this avoidance only occurred when that high mate value of their partners was salient). These findings demonstrate that, like men, women can also behave in potentially adaptive ways toward ovulating women and, more broadly, provide further evidence for deep rationality in women's sociality.

TH 5:50 PM

Extended sexuality in human females: Further evidence of effects of luteal phase and hormonal contraceptionNICHOLAS M. GREBE (UNIVERSITY OF NEW MEXICO, GREBE@UNM.EDU), TROND
VIGGO GRØNTVEDT, LEIF EDWARD OTTESEN KENNAIR, STEVEN W. GANGESTAD

We propose that women possess unique mating adaptations in both fertile and non-fertile phases. Women's extended sexuality—sex that occurs during non-conceptive phases—might have evolved to elicit pair-bond investment. One recent study found that women in relationships, but only during the luteal phase, reported initiating sex more often when their partner's investment lagged behind their own, consistent with this proposed function of extended sexuality. We present findings from two samples of Norwegian women (Ns = 372 and 150). Within the first sample (but not the second), normally ovulating women show a pattern also consistent with the aforementioned function: women's frequency of sexual intercourse with their partner—during the luteal phase only—was positively predicted by self-reported loyalty/faithfulness in the relationship. In both samples, however, estimated bioactive levels of synthetic hormones delivered to women on hormonal contraceptives moderated the association between loyalty/faithfulness and intercourse frequency: estradiol levels reduced the association, whereas progestin enhanced the association.

This moderation by synthetic hormone levels mirrors the pattern of effects observed in normally-ovulating women. These findings thus support claims for a possible function of extended sexuality, speak to hypothesized hormonal mechanisms affecting it, and reveal yet another form of deeply rational female behavior.

SYMPOSIUM: A TOUR UP SHIT'S CREEK AND TIPS FOR BUILDING YOURSELF A PADDLE

CHAIR: ALICE DREGER

THURSDAY, MAY 28, 5:10 PM–6:10 PM, STOTLER 1

This session will examine why and how contemporary scientists in evolutionary anthropology and psychology get in political trouble over their work, and will provide advice about what they can do when they find themselves in trouble. The two speakers come from different areas of expertise but share common concerns about free inquiry and the accurate representation of science in the media. Alice Dreger is an historian of medicine and science and the author of *Galileo's Middle Finger: Heretics, Activists, and the Search for Justice in Science*. She will provide to the session a series of short case studies and generalized observations about contemporary scientists who have found themselves in hot water over their research into human identity. Amy Alkon is a mainstream writer who applies the findings of evolutionary psychology to provide effective behavioral advice; her most recent book is *Good Manners for Nice People Who Sometimes Say F*ck*. She will provide to the session scientifically-rich, practical advice about how to manage in the midst of a media storm over one's work. The presenters will speak for the first 30 minutes of the session and then will engage with the audience for another 30 minutes in an interactive discussion about these issues. The goal is to help scientists avoid unnecessary trouble and to help them understand how to manage when they do get in trouble.

TH 5:10 PM

A Tour Up Shit's Creek

ALICE DREGER (NORTHWESTERN UNIVERSITY, ALICEDREGER@GMAIL.COM)

As noted in the session abstract, Alice Dreger is an historian of medicine and science and the author of *Galileo's Middle Finger: Heretics, Activists, and the Search for Justice in Science*. She will provide to the session a series of short case studies and generalized observations about contemporary scientists who have found themselves in hot water over their research into human identity.

TH 5:30 PM

Tips For Building Yourself a Paddle

AMY ALKON (FLAME777@AOL.COM)

As noted in the abstract for the session, Amy Alkon is a mainstream writer who applies the findings of evolutionary psychology to provide effective behavioral advice; her most recent book is *Good Manners for Nice People Who Sometimes Say F*ck*. She will provide to the session scientifically-rich, practical advice about how to manage in the midst of a media storm over one's work.

SYMPOSIUM: RESPONSE TO ENVIRONMENTAL AND SOCIAL STRESS

CHAIR: JORGE YAMAMOTO

THURSDAY, MAY 28, 5:10 PM–6:10 PM, S110

The symposium's purpose is to present three cases of extreme stressful conditions, and individual and social responses. The first presentation describes a case of extreme environmental stress: a solo climb without oxygen to the Annapurna, the mountain of the highest summit-death ratio among the highest mountains in the world; biomarkers (cortisol and alpha amylase) and self-report measures during the successful attack to the summit are presented and discussed. The second presentation report results of open-ended interviews in teenager mothers in extreme poverty. Results indicate that for some participants, maternity was a decision related to successfully reduce emotional harsh conditions but not without trade-offs. A final presentation describes the preliminary results of a long-term research project that aims to understand the psychosocial conditions related to the emergence of an unusual high level of problem behaviour in adolescents in the Andean city of Juliaca.

TH 5:10 PM

Into the Death Zone: copying stress in the world most dangerous mountain

FRANCISCO MOROTE (BYP BIENESTAR Y PRODUCTIVIDAD,
F_M1944@HOTMAIL.COM), JORGE YAMAMOTO

Loneliness, risk of death and lack of control are main sources of stress in humans. A solo climb without oxygen in the Annapurna, the mountain with the highest rate of death among the highest peaks in the world constitutes a condition that concentrates these characteristics. Perceived stress, cortisol and alpha amylase measures (stress reliable biomarkers) during the final attack to the mountain are presented. Results suggest that a genetic predisposition, epigenetic activation, and proper training and technique lead to successful stress copying in the most extreme environmental conditions.

TH 5:30 PM

Well-being in teenage mothers in extreme poverty: problem or adaption?

PATRICIA ALARCON (ASOCIACIÓN TALLER DE LOS NIÑOS - PUCP,
PATRICIAALARCONP@GMAIL.COM)

Teenage pregnancy is commonly seen as a problem. However, this view is not necessarily coherent with the point of view of the teenage mothers. The present study aims to describe the self-perception of well-being after pregnancy in adolescent mothers in extreme poverty. 30 interviews with open-ended questions on self-reported happiness after pregnancy were performed. The results found that a group of teenage mothers decided to have the baby, and report increased subjective well-being compared to pre-pregnancy period. For some groups of teenage mothers that live in extreme poverty condition, maternity can be understood as an adaptive response to family and emotional stress but not without trade-offs.

TH 5:50 PM

Explaining the high rate of adolescent problem behavior in the Andean city of Juliaca

ENRIQUE PERALTA (CENTRO DE PROMOCIÓN URBANO RURAL DE JULIACA - PUCP, ENRIQUE.PERALTA@PUCP.EDU.PE), LILY CEDRON, TEOFILO RIVERA

Juliaca is an Andean urban region characterized by a high level of adolescent problem behavior. A long-term research conducted by an NGO, and a Research Group aims to understand the variables and process behind the emergence of adolescent problem behavior. 500 teenagers in Juliaca completed a battery that explores behavior problems, subjective well-being, risk factors, protection factors and psychological mediators. The presentation has the purpose of summarize and discuss the preliminary descriptive results.

FRIDAY, MAY 29

SESSION: IMPLICIT STATISTICAL INFERENCE

CHAIR: ANDREAS WILKE

FRIDAY, MAY 29, 9:30 AM–10:50 AM, WRENCH AUDITORIUM

FR 9:30 AM

Hot hand bias in rhesus monkeys

ANDREAS WILKE (CLARKSON UNIVERSITY, AWILKE@CLARKSON.EDU), TOMMY C. BLANCHARD, BENJAMIN Y. HAYDEN

Human decision-makers often exhibit the hot-hand phenomenon, a tendency to perceive positive serial autocorrelations in independent sequential events. We hypothesize that this bias reflects a strong and stable tendency among primates (including humans) to perceive positive autocorrelations in temporal sequences, that

this bias is an adaptation to clumpy foraging environments, and that it may even be ecologically rational. Several studies support this idea in humans, but a stronger test would be to determine whether non-human primates also exhibit a hot hand bias. Here we report behavior of three monkeys performing a novel gambling task in which correlation between sequential gambles (i.e., temporal clumpiness) is systematically manipulated. We find that monkeys have better performance (meaning, more optimal behavior) for clumped (positively correlated) than for dispersed (negatively correlated) distributions. These results identify and quantify a new bias in monkeys' risky decisions, support accounts that specifically incorporate cognitive biases into risky choice, and support the suggestion that the hot-hand phenomenon is an evolutionary ancient bias.

FR 9:50 AM

Revealing information parsing preferences in the mind, using statistical reasoning tasks

GARY L. BRASE (KANSAS STATE UNIVERSITY, GBRASE@KSU.EDU)

Many cognitive tasks require the parsing of information into smaller, discrete units in order to enable effective information processing. This parsing can, broadly speaking, be done along either situationally ad hoc dimensions or done preferentially along ecologically and evolutionarily relevant dimensions. The present research systematically evaluates these two possibilities within a statistical reasoning context. After replicating prior results that appear to support the hypothesis that item parsing is equipotential, based on subtle linguistic cues, this result was found to be in large part due to confounds in the nature of the task rather than the partitioning manipulations. Additionally, a frequency presentation of the same task not only eliminated the earlier confounds but also improved performance directly and as predicted by the evolutionary hypothesis. Subsequent attempts to reintroduce a biasing partition frame and a process study of participants' task representation also both failed to support the ad hoc parsing hypothesis. These results favor an evolutionary, ecological rationality perspective and the associated frequency and individuation hypotheses regarding statistical reasoning (i.e., a privileged status for frequency representations to guide parsing of objects, events, and locations into easily countable units).

FR 10:10 AM

Value Attribution Related to Scarcity in Chimpanzees (*Pan Troglodytes*) and Children

MARIA JOHN (MAX-PLANCK-INSTITUTE FOR EVOLUTIONARY ANTHROPOLOGY, MARIA_JOHN@EVA.MPG.DE), FEDERICO ROSSANO, ALICIA P. MELIS, MICHAEL TOMASELLO

To investigate the phylogenetic and ontogenetic roots of the preference for scarce

goods, we performed a study with chimpanzees as well as 4- and 6-year-old children. We hypothesized that when an object is novel to a subject and no other intrinsic information about the good is available, scarce objects will be valued higher than abundant ones and as such should be chosen first. In contrast, when confronted with familiar objects, we assume that the amount available will not affect the subject's preferences when the subject is only enabled to choose one item at the time. The results of our study suggest that in chimpanzees, scarcity does not increase the value of a novel object nor does it affect their preferences in relation to familiar objects. In young human children, our results suggest that they behave like chimpanzees in that scarcity does not affect their preferences independently of familiarity with an object. However, an effect of scarcity in their attribution of higher value to novel objects can be observed in 6-year-old children and is mainly driven by the male participants. These results indicate that the application of the scarcity bias is something uniquely human and is likely learned and culturally transmitted.

FR 10:30 AM

The nonsocial and social evolution of causal construal: An adaptationist approach

JOHN TOOBY (UNIVERSITY OF CALIFORNIA, SANTA BARBARA,
TOOBY@ANTH.UCSB.EDU), LEDA COSMIDES

Although our brains represent causality as objective, Hume and Kant were nonetheless able to recognize that causality is a way of interpreting events. Intuitively, humans in all cultures (except the Hopi; Whorf 1936) typically attribute an effect to a cause. Yet if one analyzes any example of causality within a macroscopic scientific framework, it becomes clear that events are better explained using nexus causality, in which an effect is tracked back to a multitudinous network of prior interactions. Even more computationally taxing, one could include as causes the absence of any of the possible but counterfactual conditions which, had they occurred, would have led to a different outcome (omissions, failure to take a precaution). But nexus causality is prohibitively expensive computationally, and an adaptationist approach suggests that instead, spontaneous, intuitive forms of causal construal will have forms evolutionarily tailored to the recurrent demands of different task domains. Indeed, social causal attribution appears to have been shaped by diverse evolutionary games (e.g., bargaining, blaming, leadership, deterrence, paranoia, rival elimination, coordination). Strikingly, because signals of group identity and coordination are enhanced by the improbability that nongroup members will send the signal, group ideologies may shift towards increasingly implausible causal attributions (witchcraft, trutherism).

SESSION: PUNISHMENT AND COOPERATION

CHAIR: ADAM SPARKS

FRIDAY, MAY 29, 9:30 AM–10:50 AM, PARKER AUDITORIUM

FR 9:30 AM

Adjustment of Sanctioning Effort among Punishers in Public Goods Games

SANGIN KIM (UNIVERSITY OF CALIFORNIA, SANTA BARBARA,
SANGIN@UMAIL.UCSB.EDU), JOHN TOOBY, LEDA COSMIDES

The existence of altruistic punishment, the sanctioning of uncooperative group members at one's own cost, is a puzzle because punishment is considered a public good, which should not be provided by a self-interested, rational actor. This puzzle revolves around second-order free riding, a situation where non-punishers benefit from punishers' sanctioning effort and an increased level of group cooperation. Thus, the question, "Why do people altruistically punish?" is actually asking, "Why are people seemingly indifferent towards this second-order disadvantage and not second-order free ride themselves?" This question presumes an empirical claim that I call the 'second-order indifference' hypothesis. I will report the results of a direct test of this hypothesis with a series of public goods games. In these games, potential punishers were given options to adjust their sanctioning effort with respect to their own place in the sanctioning expenditure ranks. I will discuss the patterns of adjustment choices by punishers, especially those with a greater commitment to sanctioning, and how these patterns shed a new light on the evolution and adaptation of human punishment.

FR 9:50 AM

Robustness of linkage strategy which leads to mutual cooperation

MISATO INABA (HOKKAIDO UNIVERSITY, MINABA@LYNX.LET.HOKUDAI.AC.JP),
NOBUYUKI TAKAHASHI

Since social dilemmas (SDs) are often embedded in other social exchange (SE), excluding SD defectors from other SE relationships functions as a costless selective incentive. Recently such 'linkage' (Aoki, 2001) has been considered as a promising solution to resolve SDs. Panchanathan & Boyd (2004) performed mathematical modelling and revealed that a linkage strategy (LS: cooperates in SD and engages in the standing strategy in SE based on the targets' behaviors in both SD and SE) was an ESS against AllC, AllD, and a non-linkage strategy (DNL: defects in SD and engages in the standing strategy in SE based on targets' behaviors in SE). However, they did not include the more promising non-linkage strategy which behaves in the same manner as DNL except it cooperates in SD (CNL). It seemed likely that CNL could invade a population of LS, and that eventually CNL's invasion would invite a DNL invasion. Our results of agent-based simulation showed that LS was not an ESS against CNL in the same parameters as Panchanathan & Boyd (2004). However, it

was an ESS when implementation errors occur in SD. Therefore, further investigation is needed to conclude that linkage is a plausible solution to SDs.

FR 10:10 AM

Empty threats maintain public goods contributions, but not for long: the limited effect of another false cue

ADAM SPARKS (UNIVERSITY OF GUELPH, ADSPAR@GMAIL.COM), PAT BARCLAY

We have previously shown that a false cue of observation—a ‘watching eyes’ image—has similar effects on cooperation as genuine observation, but not for long. Here we show that the same learning pattern applies to a more complex social cue: expression of disapproval from social partners. Such disapproval has been shown to enhance cooperation, but investigations of this phenomenon have focussed on mechanism far more than function. Expressing disapproval functions as an implicit threat that costly punishment is forthcoming, which in turn may change the behaviour of the receiver such that punishment is unnecessary. This functional perspective generates predictions about the development of mechanisms that respond to disapproval, which we test in a 40-round public goods game experiment. We find similar contributions among groups who could use costly punishment and groups who could use a channel to communicate disapproval without any targeted costly punishment. But, crucially, the contributions are similar only in early rounds. Cooperation collapses in the long run when only disapproval is available; the disapproval channel becomes ineffective as people learn that the threat is empty. These results have implication for the development of social behavior and can inform real world efforts to maintain public goods.

FR 10:30 AM

Punishment of ‘Norm Violators’ in Three Punishment Games

TOSHIO YAMAGISHI (HITOTSUBASHI UNIVERSITY, YAMAGISHITOSHIO@GMAIL.COM), YANG LI

Non-student participants (N=564) participated in a series of economic game experiments including three punishment games—Ultimatum Game (UG), Second-Party Punishment Game (SPG), and Third-Party Punishment Game (TPG)—and other economic games. Based on cooperative choices in various non-punishment games, we first constructed the overall-cooperation index of each player. The overall cooperation level was found to be positively related with the punishment level in the TPG, suggesting that punishment conducted in the TPG is driven by the same motivation behind the participants’ cooperative choices—i.e., pro-social preferences. A weaker relationship between the overall cooperation and punishment was found in the SPG. Low cooperators did not punish in these games. However, some of the low cooperators rejected unfair offers in the UG. It was further found that about half of the UG rejecters did not punish in other games. These ‘pure

UG rejecters' who did not punish norm violators in the other games were as low as non-punishers (who did not punish or reject in any games) on their overall cooperation level. The pure rejecters were also found to be predominantly SVO pro-selfs. Their rejection of unfair offers was thus shown to be distinct from the one behind the TPG.

SYMPOSIUM: MECHANISMS OF ASSORTMENT AND COORDINATION WITHIN AND BETWEEN GROUPS

CHAIR: THOMAS FLAMSON AND ANNE C. PISOR

FRIDAY, MAY 29, 9:30 AM–10:50 AM, STOTLER 1

A major focus of evolutionary approaches to the development and maintenance of social structures has been the diverse array of cognitive and behavioral mechanisms people rely on to assort into groups for coordinating collective activities. In particular, the complexity and variation of human behavior present a wide range of dimensions for signaling individual features and for choosing interaction partners. This symposium will explore four new ways of approaching coordination and the evolution of group structure, utilizing both formal models and ethnographic research, and paying special attention to the problems people face in engaging in signaling and assortment in a noisy world with variable pay-offs to coordination within and between groups. Thomas Flamson will present a model of the evolution of covert signals of individual variation, such as humor. Paul Smaldino will explore the importance of social identity in facilitating context-dependent collective action in large-scale societies. John Bunce will examine the role of markers and copying preferences in maintaining ethnic boundaries via a model inspired by ethnographic research in Amazonian Peru. Anne Pisor will present data on the use of partner choice and group choice by horticulturalists in the Bolivian Amazon in times of resource scarcity. By exploring assortment both within and between groups, this symposium will illuminate the interrelation of emergent group structure at the two scales.

FR 9:30 AM

Not Quite Burning Bridges: Overt vs. Covert Signals for Within-Group Assortment

THOMAS FLAMSON (UNIVERSITY OF CALIFORNIA, DAVIS, TFLAMSON@UCDAVIS.EDU), PAUL E. SMALDINO, RICHARD MCELREATH

The value of producing signals to facilitate assortment for coordination is widely recognized. In between-group contexts, this can be reliably achieved through the use of overt signals, such as ethnic markers. Given the fluid nature of social life, however, assortment within local groups presents different problems. In particular, the set of valuable interaction partners will vary with context. In some cases, such as frequent or long-term coordination, one is best served by assorting with a small set of compatible partners who afford efficient mind-reading. In other contexts, however, different assortment outcomes may be desired, such as larger-scale cooperation in

communal defense, acquiring differently-skilled partners for gains in trade, or recruiting aid in dire situations. In these cases the ‘all or nothing’ nature of overt signals can prevent successful coordination with dissimilar local group members, and within-group assortment would be enhanced by relying on covert signals that do not ‘burn bridges’ with those potential partners as a by-product of signaling similarity with more compatible ones. We will present a formal model of covert within-group signaling, derived from the encryption theory of humor, and show the conditions under which it can outperform overt signaling.

FR 9:50 AM

The Evolving Multidimensionality of Social Identity

PAUL E. SMALDINO (UNIVERSITY OF CALIFORNIA, DAVIS,
PAUL.SMALDINO@GMAIL.COM)

I will discuss the function of social identity in facilitating cooperative group formation, and how the nature of that function changes with the structure of social organization. In the small-scale societies of early Homo sapiens, most potential partners were known either directly or by reliable reputation, and the role of social identity was likely minimal. Since the rise of agriculture and hierarchical societies, social landscapes have grown increasingly varied as social organization has placed new demands on individuals, offered new ways to identify oneself, and required more interactions with strangers. Here, I will draw attention to the evolving role of social identity in facilitating coordination between potential cooperative partners. I will propose that social identity facilitates assortment for successful coordination in large-scale societies, and that the multidimensional, context-dependent nature of social identity is crucial for successful coordination when individuals have to cooperate in different contexts. This proposal will be supported by formal modeling.

FR 10:10 AM

An Evolutionary Model of Ethnic Boundaries and the Persistence of Indigenous Culture

JOHN A. BUNCE (UNIVERSITY OF CALIFORNIA, DAVIS, JABUNCE@UCDAVIS.EDU),
RICHARD MCELREATH

Many minority ethnic groups interact with larger culturally-distinct groups. Inter-ethnic interaction sometimes leads to the replacement of minority cultural characteristics by those of a majority culture. Such cultural characteristics include norms for behavior and easily-observable markers of group membership. But replacement does not always occur, and we lack a mechanistic understanding of why replacement happens to some minority groups but not others. Inspired by ethnographic work at an indigenous-Mestizo ethnic boundary in Amazonian Peru, we develop a mathematical model to examine changing distributions of norms and markers at a minority-majority ethnic boundary. We examine the joint dynamics of (1)

markers, such as language and dress, that may be difficult to copy, (2) preferences for interacting with similar individuals, and (3) learning from the successful. From this model, and others like it, we aim to provide insight into the process of cultural change at ethnic boundaries and suggest strategies for cultural sustainability, when this is desired by ethnic minorities.

FR 10:30 AM

Group choice vs. partner choice: Different assortment strategies in the face of resource shortfalls? New economic games and data from three populations of Amazonian horticulturalists

ANNE C. PISOR (UNIVERSITY OF CALIFORNIA, SANTA BARBARA, PISOR@UMAIL.UCSB.EDU)

Anthropologists and social psychologists have postulated that both social partnerships and group affiliations serve to buffer resource shortages, but until now, partner and group choice have been addressed by largely separate literatures. Do actors seek new social partners and group affiliations under the same magnitude of resource shortfalls? Is assortment into new groups and partnerships modulated by an actor's life history and existing social network? Using two novel economic games, I collected data on investment in groups and individuals among three populations of horticulturalists in the Bolivian Amazon. I predicted that actors suffering intermediate levels of shortfall would be most likely to invest in out-groups, though not necessarily at the expense of in-group investment, and that actors with less reliable existing social networks and lower mortality risk would invest more in out-groups and out-group individuals. Results suggest that actors with low subjective SES and the best recent health were more likely to invest in out-groups. Those with low subjective SES, low exposure to extrinsic mortality, and less reliable existing social connections were more likely to invest in individual out-group members. I will discuss future directions for exploring whether group choice and partner choice represent the same adaptation or separate adaptations.

SYMPOSIUM: INCORPORATING TRADITIONS AND ETHNOGRAPHIC EVIDENCE INTO EVOLUTIONARY EXPLANATIONS OF HUMAN SOCIAL BEHAVIOR, WITH REFERENCE TO STORIES, ART AND RITUAL

CHAIR: RYAN O. BEGLEY

FRIDAY, MAY 29, 9:30 AM–10:50 AM, S110

While scholars adopting evolutionary approaches to stories/storytelling produce much in treating relatively modern works of Western literature, too little attention has been paid to the environment in which these behaviors are proposed to have evolved. Essential to an ultimate explanation of a behavior is understanding the context of its origin and subsequent selection; it is the oral folklore of relatively traditional peoples that most closely approximates the content and social context of those stories first told

and retold by human ancestors and thus might hold the key to why the stories we tell today exist. The ethnographic record reveals widespread evidence of traditional stories that, with art and ritual, have been transmitted from ancestor to descendant over many generations. Such data has profound implications for the study of human behavior within an evolutionary theoretical framework. Through acknowledging traditions as inheritable phenotypes subject to natural selection and incorporating the long-term consequences of traditions as descendant-leaving strategies into conventional evolutionary explanations, we can gain a more accurate understanding of persistence and change in the course of human history and into the present day. With the support of ethnographic evidence, the speakers at this symposium argue that traditions, in general, and traditional storytelling, in particular, were a means through which ancestors were able to influence descendants to identify an increasingly widening web of co-descendants and to learn the rules for their cooperative interaction and sociopolitical organization, in such a way that left the tradition-transmitting, storytelling descendants that anthropologists would come to document.

FR 9:30 AM

Can Science Lead us to a Definition of Art?

KATHRYN COE (INDIANA UNIVERSITY-PURDUE UNIVERSITY INDIANAPOLIS,
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For approximately two thousand years, scholars have attempted to define and explain a behavior, referred to as ‘art,’ that humans have been practicing for tens of thousands of years. Yet a definition has been so elusive that art historian Thomas Munro (1949) was inspired to claim that the arts “are too intangible and changing to be defined or classified” (p. 5). By contrast, I will describe the ways in which an understanding of the scientific method and a recognition of the importance of objective definitions might help us shed light on art as found through time and cross-culturally. This will involve a critical evaluation of philosopher Denis Dutton’s (2006) twelve-property cluster theory of art, not with respect to how well it fits with current thinking in aesthetics, but rather in terms of its scientific strength and its usefulness for examining art cross-culturally.

FR 9:50 AM

Serbian Gypsy Witch Narratives

JELENA ČVOROVIĆ (SERBIAN ACADEMY OF SCIENCES AND ARTS,
CVRVC@YAHOO.COM)

Storytelling is a key traditional trait of Serbian Gypsies, conveyed along kin generations, influencing the behavior of all who listen. Like many people around the world, Gypsies have used oral traditions as a source of knowledge and information on the history of their ancestors, proper kin behavior, economic life, relationships with

other peoples, and many aspects of the everyday world. This paper discusses the narration of Serbian Gypsy women who have lost at least one child to “the deadly doings of witches”. A salient characteristic of the Serbian Gypsies’ demography is an unusually high percentage of infant and child mortality. The narratives about witches among Gypsies serve to communicate the mother’s innocence before the local community, as a means of justification of the unfortunate event. The mother’s kinship group’s endorsement of such talk includes the communicative acceptance of the supernatural accusation or claim. Because the actual evidence is irrelevant, by such acceptance the kinship group uniquely communicates its willingness to support and cooperate with the narrator. The narratives thus seem to be aimed at encouraging particular social behavior: cooperation among kin.

FR 10:10 AM

Comanche Stories of Social Behavior and Sacrifice

GERALD BETTY (DEL MAR COLLEGE, G_BETTY1@YAHOO.COM)

Historical Comanche Indians of the southern Great Plains have numerous stories featuring themes of social behavior and sacrifice. These stories emphasize the benefits of social behavior and the adverse consequences of contrasting selfish behavior. Take, for instance, a story recorded by Waldo Wedel that recounts a Comanche family leaving the company of their kinsmen due to a woman’s grief over a deceased daughter, with subsequent events leading to tragedy as enemy Tonkawa Indians killed the majority of the exiled family, as well as other Comanches, at an incident sometime later (Kavanaugh, 2008, pp. 277–278). Traditional stories such as these stress the importance of extending cooperation towards close and distant kinsmen alike. They also underscore the negative consequences of a lack of kinship behavior and cooperation. I will discuss the evolutionary effect that traditional stories like these had on Comanche Indians. As traditions that are subject to natural selection, I will argue such stories represent a continuous influence of ancestors on later generations of Comanches. Having influence on their own frequency in later generations, these stories contributed to a successful Comanche ancestral descendant-leaving strategy.

FR 10:30 AM

Traditions and Natural Selection

LYLE B. STEADMAN (ARIZONA STATE UNIVERSITY, LYLE.STEADMAN@ASU.EDU)

According to Karl Popper, the origin of a scientific hypothesis is irrelevant. For example, a century and a half ago when German chemist, August Kekule, came up with his hypothesis that the benzene molecule had a ring structure, he was roundly criticized because he said his idea came to him during a dream of a snake eating its tail. Later, when he turned out to be correct, his students won Nobel prizes. This showed that what is crucial in a scientific hypothesis, which initially may be only

intriguing, is that it be falsifiable. Similarly, Alfred Wegener's proposition that South America split from Africa was rejected as absurd for more than a half century. In the spirit of challenging dogma, I propose that culture is best explained not as the outcome of some social group—which is never explicitly identified—but by past Darwinian selection working on traditions: the learned, copied behavior transmitted from individual ancestors (who started that behavior) to their descendants. When a tradition helps individuals leave descendants, it tends to increase in frequency; when it does not, it tends to die out. Darwin's natural selection applies to all inheritable traits, and since traditions are correctly thought of as inheritable, the frequency of traditions has been influenced by natural selection. Following this logic, I propose here that it is the effect of certain traditions that has led to them to endure and to increase in frequency: enduring mating relationships ("marriage"), the division of labor, the use of kin terms and clan names, and stone axe-making dating back more than two million years.

SYMPOSIUM: EVOLUTIONARY INSIGHTS INTO 'MALADAPTIVE' FERTILITY:
CONSTRAINTS, CONFLICT AND COOPERATION

CHAIR: GERT STULP

FRIDAY, MAY 29, 11:10 AM–12:30 PM, WRENCH AUDITORIUM

The low fertility rates of contemporary populations are often used as a prime example of maladaptive behaviour, and as support for an argument against the application of evolutionary theory to contemporary human populations. This symposium brings together theoretical and empirical work, by the NESCent Working Group: Integrating Evolutionary Models of Human Fertility Change, that shows that measuring (aspects of) fertility is highly valuable and informative about the causes of potential maladaptive behaviour. Talk 1 presents several theoretical models underlying the observation that men have higher fertility preferences than women, and shows that men should not necessarily prefer higher fertility than their mates. Psychological motivations and cultural constraints that result in maladaptive behaviour may better account for observed sex differences. Talk 2 continues on the issue of conflict (and cooperation) over fertility within families, using empirical data from several populations. The pro- and anti-natal effects of family on fertility are examined in high- and low-fertility settings. Talk 3 presents a review and novel empirical research addressing the relationship between wealth and fertility, considered to be the 'fundamental problem of sociobiology', and discusses how this relationship can inform on the adaptiveness of modern fertility behaviour. In the last talk, data on the effects of social networks on contraceptive use will be presented, showing that the behaviour of friends and family is more influential than an individual's own characteristics when it comes to contraceptive use. This suggests that social learning affects fertility decline and may lead to maladaptive behaviour.

FR 11:10 AM

What do men want?: Can men really benefit from higher fertility than what

is optimal for women?

CRISTINA MOYA (UNIVERSITY OF BRITISH COLUMBIA, CMOYA@PSYCH.UBC.CA),
KRISTIN SNOBKOWSKI, REBECCA SEAR

Several empirical observations suggest that when women have more power over their reproductive decision-making fertility rates decline. Evolutionary theorists have been quick to interpret these findings as adaptive female responses that are often not fully expressed because of sexual conflicts of interest with males for whom higher fertility is adaptive. While the research findings do suggest interesting sex differences, we argue that the common adaptationist interpretations invoking differential costs to reproduction and paternity uncertainty are flawed or make ambiguous unstated assumptions. We use simple models to illustrate that 1) either men or women can prefer a faster reproductive pace in a relationship, 2) there should be less conflict of interest over reproductive pace in lifelong polygynous marriages than serially monogamous ones and 3) that if conflicts are resolved in favor of individual men's preferences, population-level fertility would suffer, making this dynamic an unlikely explanation of the demographic transition. Instead, evolutionary accounts that consider psychological motivations and cultural constraints that encourage behavior that deviates from what is individually optimal may better account for apparent sex differences in reproductive decision-making.

FR 11:30 AM

Cooperation and conflict in the human family: a cross-cultural investigation of how family influences fertility

REBECCA SEAR (LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE,
REBECCA.SEAR@LSHTM.AC.UK), CRISTINA MOYA, SUSIE SCHAFFNIT, KRISTIN
SNOBKOWSKI

Evolutionary theory predicts that the family will be the scene of both cooperation—since family members have shared genetic interests—and conflict—since the interests of family members are not always perfectly aligned, particularly under conditions of resource stress. Here we present a cross-cultural investigation of how cooperation and conflict within the family may affect fertility. We first present a review of existing studies which have correlated the presence of kin with fertility. This demonstrates that the presence of family often increases, but sometimes decreases, measures of fertility. Parents-in-law tend to be particularly likely to increase fertility, while parents sometimes show “anti-natal” effects, particularly by delaying their offspring's age at first birth. We then present evidence from analyses of individual datasets, to demonstrate that these correlations are plausibly causal effects driven by cooperation and conflict between family members, using data from Indonesia, the UK and a comparative analysis of 20 small-scale subsistence societies.

FR 11:50 AM

Wealth, fertility, and adaptive behaviour: the fundamental problem of sociobiology revisited

GERT STULP (LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, GERT.STULP@LSHTM.AC.UK), LOUISE BARRETT

The lack of association between wealth and fertility is used as one of the central arguments against applying an evolutionary perspective to human behaviour in contemporary populations. Here we suggest that any such conclusion may be premature, because the nature of the data and analyses to support this idea cannot establish any causal influence. Furthermore, we argue that the notion of wealth is multi-faceted and cannot be fully captured by commonly used indices such as net income and that reproductive decision-making reflects a complex interplay between individual and societal factors. We apply these ideas in our analyses of The National Longitudinal Survey of Youth, 1979 cohort (US; 1979-2010). We assess how transitions into marriage and birth, in relation to male, female, and household wealth influence reproductive success. The relationship between wealth and fertility is more likely to be positive than negative but depends on sex, partnership and parity. We furthermore show that typically used cross-sectional analyses do not always correspond to longitudinal analyses. On the basis of our literature review and results, we discuss the extent to which the nature of the relationship between wealth and reproductive outcomes can inform us about the adaptiveness of modern fertility behaviour.

FR 12:10 PM

Social network and community level influences on contraceptive use: evidence from rural Poland

HEIDI COLLERAN (INSTITUTE FOR ADVANCED STUDY IN TOULOUSE, HEIDI.COLLERAN@IAST.FR), RUTH MACE

The diffusion of 'modern' contraceptives—as a proxy for the spread of low fertility norms—has long interested researchers wishing to understand global fertility decline. A fundamental question is how local cultural norms and other peoples' behaviour influence women's probability of contraceptive use, independent of socioeconomic and life history characteristics. Few studies have combined individual, social network and community level data to simultaneously capture multiple levels of influence. Fewer still have tested if the same predictors matter for different contraceptive types. Here we use new data from 22 high-fertility communities in Poland to compare predictors of the use of: (i) any contraceptives—a proxy for the decision to control fertility—with (ii) 'artificial' contraceptives—a subset of more culturally taboo methods. The behaviour of friends and family is more influential than are women's own characteristics, and community level characteristics additionally influence contraceptive use. Having highly educated neighbours accelerates contraceptive use overall, but not artificial contraceptive use. Having highly religious neighbours slows

artificial contraceptive use, but not contraceptive use overall. The results highlight different dimensions of sociocultural influence on contraceptive diffusion, and suggest that these may matter more than individual characteristics. A comparative multilevel framework is needed to understand these dynamics.

SESSION: FEMALE HORMONES

CHAIR: MARTIE G. HASELTON

FRIDAY, MAY 29, 11:10 AM–12:30 PM, PARKER AUDITORIUM

FR 11:10 AM

A longitudinal analysis of women's salivary testosterone and intrasexual competitiveness

BENEDICT C. JONES (UNIVERSITY OF GLASGOW, BEN.JONES@GLASGOW.AC.UK),
AMANDA C. HAHN, CLAIRE FISHER, KELLY COBEY, LISA M. DEBRUINE

Research on within-subject changes in women's intrasexual competitiveness has generally focused on possible relationships between intrasexual competitiveness and estimates of conception risk. While this approach is useful for testing predictions about the ultimate function of changes in women's intrasexual competitiveness, it offers little insight into the proximate mechanisms through which such changes occur. To investigate this issue, we carried out a longitudinal study of the hormonal correlates of within-subject changes in intrasexual competitiveness in a large sample of heterosexual women (N=136). Each woman provided saliva samples and completed an intrasexual competitiveness questionnaire in five weekly test sessions. Multilevel modeling of these data revealed a significant, positive within-subject effect of testosterone on intrasexual competitiveness, indicating that women reported greater intrasexual competitiveness when testosterone was high. By contrast, there were no significant effects of estradiol, progesterone, estradiol-to-progesterone ratio, or cortisol. This is the first study to demonstrate correlated changes in measured testosterone levels and women's reported intrasexual competitiveness, implicating testosterone level in the regulation of women's intrasexual competitiveness.

FR 11:30 AM

Women's preference for attractive makeup tracks changes in their salivary testosterone

CLAIRE FISHER (UNIVERSITY OF GLASGOW, CLAIRE.FISHER@GLASGOW.AC.UK),
AMANDA C. HAHN, LISA M. DEBRUINE, BENEDICT C. JONES

Previous research suggests that women's motivation to appear attractive is increased around ovulation. However, the specific hormonal correlates of within-woman changes in motivation to appear attractive have not been investigated. To address this issue, we used a longitudinal design and a data-driven visual preference task to show that

women's preference for attractive makeup increases when their salivary testosterone levels are high. The relationship between changes in testosterone and preference for attractive makeup was independent of the possible effects of estradiol, progesterone, and estradiol-to-progesterone ratio. These results suggest that testosterone may contribute to changes in women's motivation to wear attractive makeup and, potentially, their motivation to appear attractive in general. Our results are also consistent with recent models of the role of testosterone in social behavior, which propose that testosterone increases the probability of behaviors that could function to support the acquisition of mates.

FR 11:50 AM

Ovarian hormones predict within-cycle fluctuations in women's food intake

JAMES R. RONEY (UNIVERSITY OF CALIFORNIA AT SANTA BARBARA, RONEY@PSYCH.UCSB.EDU), ZACHARY L. SIMMONS

Sex hormones may modulate the relative ranking of alternative motivational and behavioral priorities. In many nonhuman species, hormone profiles associated with fecund regions of the estrous cycle inhibit feeding and foraging behaviors but promote greater sexual receptivity. Past research likewise supports reduced food intake when women are near ovulation, but little is known regarding the endocrine regulation of these effects. Here, we collected daily saliva samples for hormone assay and daily measures of food intake in a sample of naturally cycling women. Results replicated the peri-ovulatory nadir in food intake and demonstrated negative and positive effects of estradiol and progesterone, respectively, on reports of amount eaten. In addition, estradiol and progesterone statistically mediated the negative effect of fertile window timing on food intake. The patterns for food intake were essentially mirror images of those previously reported for sexual motivation (i.e. greater sexual motivation in the fertile window with positive effects of estradiol but negative effects of progesterone) in this same sample of women. As such, these findings provide some of the most direct evidence to date that sex hormones may regulate tradeoffs between alternative motivational priorities specifically in humans.

FR 12:10 PM

Are Ovulation Cycle Shifts in Humans Robust? Evidence from P-Curves

MARTIE G. HASELTON (UNIVERSITY OF CALIFORNIA, LOS ANGELES, HASELTON@UCLA.EDU), STEVEN W. GANGESTAD, KELLY GILDERSLEEVE, NICHOLAS M. GREBE

Most mammalian females experience estrus, a special phase of female sexuality characterized by changes in sexual activity and attractiveness to males. A veritable explosion of recent work has tested the idea that human females also experience an estrous-like state. This work has documented many purported 'cycle shifts' in women's mate preferences and men's responses to women. However, these findings

are controversial, with critics claiming that findings in this literature are merely false positives. For example, it is possible that findings could be due to publication bias or 'p-hacking,' whereby researchers try out multiple analyses and report only those that 'work.' To address this, we present frequency distributions of p-values (p-curves). With one exception, all p-curves we constructed were significantly right skewed, with more p-values close to 0 than just under .05. This pattern is a signature of real effects and inconsistent with publication bias or p-hacking. The exception is the shift in women's preference for facial masculinity, for which the p-curve was inconclusive (neither right nor left skewed). We also present simulations showing that extreme p-hacking is unlikely to generate right skew in the absence of true effects, thereby reinforcing the evidential value of many findings in this literature.

SESSION: RISK

CHAIR: X.T. WANG

FRIDAY, MAY 29, 11:10 AM–12:30 PM, STOTLER 1

FR 11:10 AM

Informational cues for risk differentiate between risk-attitudes in ten evolutionary domains

JANA B. JARECKI (MAX-PLANCK-INSTITUTE FOR HUMAN DEVELOPMENT, JARECKI@MPIB-BERLIN.MPG.DE), ANDREAS WILKE

The domain-specificity of human behavior is a cornerstone of evolutionary psychology, but studies investigating the actual underlying information processing are rare. The study of information processing, on the other hand, is a core content of cognitive psychology, where studies comparing different domains are rare. This project integrates these two approaches in the context of human risk-taking behavior. We measured risk-attitudes using a novel evolutionary risk questionnaire and the informational cues that cause people to engage in risks using a process-tracing methodology. The domains included between-group competition, within-group competition, status/power, environmental exploration, food acquisition, food selection, kinship, parent-offspring conflict, mate attraction, and mate retention. We found that (a) domain-differences in risk-attitudes were stable, replicating earlier findings obtained from student populations now with a diverse Amazon MTurk sample; (b) the cues that respondents used for risk assessment differentiated between risk-seeking vs. risk-avoiding attitudes, and this differentiation held within domains, for the respective cues; (c) the total number of cues retrieved did not differ across domains, but was greater for cues in favor of taking risks compared to cues for not taking risks.

FR 11:30 AM

Sex differences in economic risk preferences in hunter-gatherers

IAN SMITH (THE PENN LABORATORY FOR EXPERIMENTAL EVOLUTIONARY

PSYCHOLOGY, IAN.SMITH@TEMPLE.EDU), COREN L. APICELLA, FRANK MARLOWE, VICTORIA TOBOLSKY

Men generally earn more money than women and maintain positions of higher status. It has been suggested that some of these economic and social disparities may, in part, reflect evolved sex differences in preferences for risk taking. Likewise, an argument has been made that variation in risk preference, both between and within sexes, may be proximately mediated by prenatal androgen exposure (2D:4D). Here we report on sex differences in risk preferences and their relation to 2D:4D in the Hadza, an evolutionarily relevant population of hunter-gatherers. Data on 2D:4D was collected during three field visits (1998, 2001, 2006). Two incentivized economic games designed to measure risk preferences were played, one in 2010 (N=233) and the other in 2013 (N=108). The first game involved a choice between a certain amount of maize and 50:50 chance of doubling the maize or losing it all. A significantly greater proportion of men chose to take the gamble. Similarly, the second study found that men gamble a greater share of honey for a chance to double it. These sex differences are robust to the inclusion of a number of demographic variables, including age, education, and degree of market integration. In contrast, 2D:4D does not predict risk taking.

FR 11:50 AM

Effects of different forms of violence on Brazilian adolescents' risky behaviors: violent victimization vs sense of endangerment

DANDARA DE OLIVEIRA RAMOS (STATE UNIVERSITY OF RIO DE JANEIRO, DANDARARAMOS2@GMAIL.COM), PAULO NADANOVSKY

Among the variety of experimental models and theoretical approaches that have been already tested, evolutionary psychology stands out by highlighting the effects of environmental risk on young people's patterns of risky behaviors. In this work, based on insights from future discounting and life history theory, our aim was to explore the effects of different forms of violence (violent victimization versus sense of endangerment) on adolescent's reproductive strategies, alcohol and drug use. We also tested a latent factor as the combination of these three indicators as an index of fast life history strategy. With data from the 2012 Brazilian National School-Based Survey of Adolescents' Health (n=109104, ages 10–19 years), we found that violent victimization has a stronger effect on the latent factor of life history strategy than the sense of endangerment (Cohen's $q = 0.16$), and that it affects girls' behaviors more intensely. The same pattern of effects was found for reproductive strategies, but for alcohol and drug use there was no significant difference of the type of violence. Violent victimization and exposure to violence in adolescence appear to increase the probability of risky behaviors and we discuss the differential impact of these forms as they relate to distinct dimensions of life history traits.

FR 12:10 PM

Partitioning Genetic and Environmental Contributions to Domain-Specific Risk Taking: A Twin Study and Meta-Analyses

X.T. WANG (UNIVERSITY OF SOUTH DAKOTA, XTWANG@USD.EDU), RUI ZHENG, YAN-HUA XUAN, CHINA SHU LI

We search for genetic and environmental contributions to human domain-specific risk taking. Throughout hominid evolution, our ancestors have encountered some recurrent risks which demanded for specific adaptations. In everyday life, we cope with both evolutionarily typical and novel risks. Risk taking thus involves tradeoffs between different kinds of risks. Using exploratory and confirmatory factor analysis, we first developed a risk-taking scale with seven domains (i.e., cooperation/competition, recreational risk, safety control, reproduction, moral risk, financial risk, and gambling). Second, we conducted a twin study partitioning the relative influence of nature and nurture upon risk propensity in each task domain. Third, we conducted separate meta-analyses of the published twin studies of risk taking in the seven domains. Overall, the results of the three studies support the notion of domain-specific risk taking. Risk taking in different domains was largely independent, with limited genetic correlations where financial risk taking reduced moral risk taking and increased recreational risk-taking. The heritability scores from the meta-analyses varied from 29 to 54%. Shared-environmental effects were minimal except in the domain of morality. These results provide a map of gene-environment influence on risk taking with different degrees of heritability in seven task domains.

SESSION: FAIRNESS, TRUST, AND COOPERATION

CHAIR: DANIEL J. KRUGER

FRIDAY, MAY 29, 11:10 AM–12:30 PM, S110

FR 11:10 AM

The impartiality account of fairness

ALEX SHAW (UNIVERSITY OF CHICAGO, ALEX.W.SHAW@GMAIL.COM), SHOHAM CHOSHEN-HILLEL, EUGENE CARUSO

The impartiality account of fairness argues that fairness concerns are aimed at avoiding the appearance of partiality in order to avoid condemnation from others for forming or strengthening alliances. On this account, people do not dislike unequal pay for equal work per se (as many authors argue), but they instead object to the partiality that is signaled by such inequity. We present three lines of experimental evidence that fairness is about avoiding the appearance of partiality rather than the appearance of inequity (i.e. merely disliking when others are paid unequally for equal work). First, we demonstrate that children and adults readily create inequity when they are provided with an impartial procedure. Second, children and adults create inequity and think it is fair to do so when the resulting inequity puts the self at a

relative disadvantage because in this case one is being, if anything, partial against the self. Finally, in some circumstances, adults are reluctant to give a larger reward to a harder working recipient when this recipient is a close friend (as opposed to a stranger) because they are concerned that others may construe such giving as partial. These results provide support to the impartiality account of fairness.

FR 11:30 AM

Checking the Evolutionary Mechanism of Personal Trust in Two Communities From Oaxaca, Mexico

CRISTINA ACEDO-CARMONA (UNIVERSITY OF THE BALEARIC ISLANDS, CACEDO33@HOTMAIL.COM), ANTONI GOMILA

The study we present here is a part of field work carried out in Oaxaca. From an evolutionary approach, personal trust is a powerful mechanism that can ensure long-term reciprocal cooperation and group cohesion. Trust activates unconscious emotional bonds towards trustees, which leads to cooperation. In order to check this mechanism in different situations, we studied two Oaxacan communities through questionnaires, prisoner's dilemmas and network analysis. The game was repeated in two conditions: the participant was said to play with either a member from his trust circle, or with any other group member. It was in fact played with the researcher, who followed randomly one of two possible strategies with half of participants: always cooperate, or imitate the other player's behavior. The hypothesis was that, regardless of the strategy adopted, high levels of personal trust would cause high levels of cooperation in the two conditions. Results show that the group with more trusted members in their trust circles shows greater group cohesion and cooperation towards any other group member, even in the strategy of imitation. It is concluded that the psychology of personal trust is a very powerful mechanism to ensure cooperation and group cohesion, even in more demanding situations.

FR 11:50 AM

Using (and misusing) cooperation heuristics

CAROLYN DECLERCK (UNIVERSITY OF ANTWERP, CAROLYN.DECLERCK@UANTWERPEN.BE), CHRISTOPHE BOONE

Research on how to solve the cooperation problem in social dilemmas has tended to emphasize either the importance of incentives that align self- and collective interests, or the role of shared social identity and the moderating influence of trust. Using a neuroeconomic approach, we propose that both incentive-based and trust-based cooperation are facilitated by heuristic processes that were shaped throughout evolution to serve two fundamental human motives: self-interest, and group-inclusion. At the proximate level, this paradoxical human nature—to be both selfish and compassionate—is the result of a brain wired to accommodate two, fast and efficient, routes to cooperation. We present data showing that (1) which heuristic

will predominate depends on social values. By drawing attention to either cooperative incentives or trust-signals, values activate different brain regions and bias decision-making towards or away from cooperation; (2) the neurotransmitter oxytocin facilitates trust-based heuristic processing, but only with familiar others who belong to our in-group. Hence trust-based cooperation tends to be parochial, which suggests that over-applying cooperation heuristics in environments in which they were not designed to operate (i.e., large and diffuse societies instead of the small isolated groups of the Pleistocene) may have undesirable consequences.

FR 12:10 PM

Advancing the understanding of attitudes towards police with a life history framework

DANIEL J. KRUGER (UNIVERSITY OF MICHIGAN, KRUGER@UMICH.EDU), JOSEPH L. NEDELEC, MORITZ KÖSTER, RACHEL RIPARDO

Interest in biosocial criminology is growing, and adoption of Evolutionary Life History Theory (LHT) may accelerate progress towards an integrative evolutionarily informed human science. Understanding how the public views the police has both substantial academic value and practical importance. Most current work on police attitudes is based on Tyler's process-based model of policing, focusing on procedural justice (perceptions that the police are fair and trustworthy), and examining the influence of basic demographic factors such as race/ethnicity. We developed additional domains of police attitudes based on a LHT framework for functional social dynamics; police roles in maintaining social stability, using their power for status competition, and antagonistic relations with (exploitation of) community residents. We examined these domains and procedural justice with a US undergraduate sample (N = 340, M age = 19, 53% female). All domains exhibited the expected relationships with life history (Mini-K). Perceptions that police maintain social stability and use their power to exploit community members were the only uniquely significant predictors of crime reporting intentions. We replicated this pattern of results with a German community sample (N = 462, M age = 25, 61% female). We are currently collecting data for a second replication in Brazil.

SYMPOSIUM: CONTEXTUAL AND ULTIMATE FACTORS UNDERLYING NON-KIN COOPERATION

CHAIR: PAT BARCLAY

FRIDAY, MAY 29, 2:00 PM–3:20 PM, WRENCH AUDITORIUM

Much evolutionary research investigates why humans cooperate with others when doing so incurs apparent costs. Such research investigates both the nature of the cooperative sentiments (proximate causes) and the selective pressures that would cause the evolution of such sentiments (ultimate functions). Here we gather four talks investigating the contextual and ultimate factors that influence non-kin cooperation,

drawing researchers from multiple continents. Emilia Yamamoto and colleagues demonstrate how Brazilian children vary their cooperation in response to contextual factors such as the type of resource or the perceived cooperativeness of others. Toko Kiyonari and colleagues demonstrate how Japanese participants' experiences in one situation can generalize to subsequent interactions with different incentive structures, causing people to then be more cooperative than is actually in their interest. Max Krasnow shows how group-beneficial punishment is best explained as a result of individually-beneficial adaptations, namely those for acquiring a reputation to deter exploitation. Pat Barclay and Jessica Barker apply this concept of reputation, especially competition over relative reputation, in order to induce US participants to compete to do more to protect the environment. Together, these talks represent a building from the proximate mechanisms underlying cooperation to the ultimate function of cooperative sentiments, and even to applications to real-world problems.

FR 2:00 PM

Proximate influences on children's cooperation

MARIA EMILIA YAMAMOTO (UNIVERSIDADE FEDERAL DO RIO GRANDE DO NORTE, BRAZIL, EMILIA.YAMAMOTO@GMAIL.COM), WALLISEN TADASHI HATTORI, PHIÉTICA RODRIGUES DA SILVA, NATALIA CRACIUN BOCCARDI, ANUSKA IRENE ALENCAR

The investigation of proximate causes for cooperation and generosity allow us to understand the mechanisms that motivate cooperation and to promote those behaviors. Many studies have shown the influence of group size, age, verbal feedback and vigilance. In this study we investigated two less examined variables affecting cooperation in children: the perception of the group's generosity in a commons dilemma and the kind of resources available in a public goods game. In the first case, 142 5–11 year old children from public schools had access to a common resource (candy bars) that could be exploited according to sustainability rules. The sustainability of the group, measured by the number of days it took to deplete the resource, correlated to adherence to rules on day one. In the second case, we compared the use of candy bars or stickers as the resource in a public goods game played by 251 5–11 year old public school children. Children were significantly more generous in the stickers condition, maintaining the same mean donations throughout 8 sessions, while in the candy condition mean donations plummeted. Our results suggest that context variables are an important source of variation in cooperative behavior and should be further investigated.

FR 2:20 PM

Rational collaboration can induce voluntary cooperation in a social dilemma

TOKO KIYONARI (AOYAMA GAKUIN UNIVERSITY, JAPAN, KIYONARI@SI.AOYAMA.AC.JP), HIROYUKI HASEGAWA, AKARI KUNIMASA, YUKAKO INOUE

The Stag Hunt Game (SHG) is a type of coordination game in which there is no incentive for each player to unilaterally defect insofar as he/she expects that the other player chooses to cooperate. Here we show that having an experience of playing the SHG induces people to cooperate even in a social dilemma (SD) situation where each player has an incentive to unilaterally defect. All participants first played a repeated one-shot PDG or SHG (between-subject factor) 10 times, each time with a randomly and anonymously matched group member, drawn out of a group of participants. Then, they played an n-person SD game that included all of the participants in the group. Our results show that the cooperation rate in the SD game was much higher in the SHG (71%) than in the PDG condition (43%). Furthermore, they evaluated their group members more positively in the SHG than did in the PDG. Our participants obviously misattributed their incentive-based collaborative choices to their own and their partners' cooperative intentions and trustworthiness.

FR 2:40 PM

Looking under the hood of third party punishment reveals design for personal benefit

MAX KRASNOW (HARVARD UNIVERSITY, KRASNOW@FAS.HARVARD.EDU)

Decades of research and lay sociology agree: our social nature seems designed for a world with intergroup competition. We instinctively carve of the world into an “us” and “them” where we treat “us” well and (often) “them” poorly. With “us” we extend trust and cultivate cooperative institutions. With “them” we withhold trust and often seek to exploit weakness. In principle, such behavior can emerge from selection acting at the individual or group level. But, when groups are involved, it is frequently assumed that group selection is the obvious choice. Here we find evidence that should cause us to question this assumption. Replicating past work using the third party punishment game in a group context (Bernhard, Fehr & Fischbacher, 2006 Nature), but adding a measure of cooperative disposition estimation, we find that people don't punish to defend their group or their group's norms per se, but rather punish when they infer that the person who treated another poorly would treat them poorly too. That is, punishment in competitive group contexts, even in anonymous and one-shot conditions designed to remove personal interest, still seems to result from a psychology of personal deterrence or bargaining.

FR 3:00 PM

“Greener than thou”: partner choice creates competition to save the environment

PAT BARCLAY (UNIVERSITY OF GUELPH, BARCLAYP@UOGUELPH.CA), JESSICA BARKER

The power of reputation to support cooperation goes beyond a simple “cooperate more when observed”: biological markets theory predicts that when partner choice is

present, people will compete to be more cooperative (or more committed to a cause) than their competitors. Recently, evolutionary researchers have shown how to harness reputation to protect the environment or fight climate change. Here we test if partner choice will cause people to actively compete over saving the environment. Participants received money which they could keep or donate to the Sierra Club, a well-known environmental charity. Additional participants (“observers”) played a one-round continuous Prisoner’s Dilemma (PD) with donors in one of three conditions: a) PD with a randomly-selected donor whose environmental donation was unknown to them; b) PD with a randomly-selected donor whose environmental donation they observed; c) PD with their choice of donors whom they could choose based on observed environmental donations. Results: donations were higher when observed than when anonymous, but were highest when there was competition to be chosen as a partner ($a < b < c$). By stimulating competitive helping, we can increase people’s support for environmental causes.

SESSION: BEHAVIORAL ENDOCRINOLOGY

CHAIR: TESS ROBERTSON

FRIDAY, MAY 29, 2:00 PM–3:20 PM, PARKER AUDITORIUM

FR 2:00 PM

HPA and Personality: Don’t control away sex differences

M. CATHERINE DESOTO (UNIVERSITY OF NORTHERN IOWA, CATHY.DESOTO@UNI.EDU), ROBERT T. HITLAN, MANUEL SALINAS, BROOKE HOLLENBERG, OLIVIA RIGDON

It has been assumed a relationship ought to exist between cortisol and the trait neuroticism. However, existing research documents an unclear and contradictory pattern. The current study tested whether males and females have a fundamentally different relationship between HPA activation and neuroticism. All 183 participants were tested midday. Saliva samples for cortisol were collected three times across a 90 minute period. Neuroticism was measured via the NEO-FFI. For men, neuroticism was positively correlated with cortisol level ($r = .31$). For women it was negatively correlated. The negative correlation between neuroticism and cortisol level remained when oral contraceptive use was controlled, and the statistical significance actually increased (partial $r = -0.24$). This suggests a slight suppressor effect, explainable by prior research on correlates of oral contraceptive use. Of interest, prior research has shown social stress versus pharmacological challenge result in different patterns of sex differences in cortisol release—which are associated with different pathways to hypothalamic activation. These findings may offer an explanation for the discrepant results that have been reported in the existing literature.

FR 2:20 PM

Do women find men with autistic-like traits attractive as long-term mating partners and why?

DARIO MAESTRIPIERI (THE UNIVERSITY OF CHICAGO, DARIO@UCHICAGO.EDU),
DAVIDE PONZI, ANDREA HENRY, NORA NICKELS, KONRAD KUBICKI, CLAIRE M.
WILSON

Autistic-like traits are distributed along a continuum in the population and are characterized by reduced social/communicative skills, narrow interests, and heightened attention to patterns and details. We tested the hypothesis that autistic-like traits reflect slow life history strategies and are associated with restricted socio-sexuality, including lower short-term mating orientation and lower number of sexual partners among heterosexual male students. We also investigated the role of stress and sex hormones as potential mechanisms mediating the association between autistic-like traits and sociosexuality. Individuals with more autistic-like traits reported lower short-term mating orientation and lower previous sexual experience. Autistic-like traits were associated with greater cortisol secretion during a Trier Social Stress Test (TSST) and greater testosterone and cortisol reactivity to a video with explicit erotic content. Cortisol secretion during the TSST was negatively correlated with short-term mating orientation. A mediation analysis indicated that cortisol reactivity to socially stressful stimuli may be one of the physiological mechanisms linking autistic-like traits and sociosexuality. Our findings are consistent with the hypotheses that autistic-like traits reflect slow life history strategies and that women may find men with autistic-like traits attractive as long-term mating partners.

FR 2:40 PM

Cortisol and the evolved design of anger and guilt

TESS ROBERTSON (STONY BROOK UNIVERSITY,
THERESA.ROBERTSON@STONYBROOK.EDU), ANDREW W. DELTON, LEDA COSMIDES,
JOHN TOOBY

Evolution has crafted a variety of emotions for solving specific problems. In addition to the feeling state, emotions motivate specific behaviors. For example, anger causes bargaining for better treatment; guilt causes improving one's treatment of others. Our goal here was to conduct an initial investigation of a hormonal correlate—cortisol—that might underlie this complex, evolved design. To do this, we created a complex social environment in the lab where participants first interacted face to face in a group, then engaged in several group tasks through their computers. The complexity of the social environment created scope for participants to behave in ways that would produce guilt and anger. We found that higher cortisol after this complex interaction predicted feeling more guilt and predicted choosing more conciliatory behaviors like working harder on behalf of the group. Cortisol did not, however, predict anger or any behaviors associated with anger. Thus, cortisol appears

specifically linked with the activation of guilt rather than just any social emotion, including a negative emotion.

FR 3:00 PM

Your (evolved) brain on porn: sociosexuality and attachment styles predict individual differences in HPA response to visual erotic stimuli

VICTOR KENJI M. SHIRAMIZU (FEDERAL UNIVERSITY OF RIO GRANDE DO NORTE, BRAZIL, VICTORSHIRAMIZU@GMAIL.COM), HÉLDERES PEREGRINO ALVES DA SILVA, FÍVIA DE ARAÚJO LOPES, MARIA BERNARDETE CORDEIRO DE SOUSA

The interplay between psychological and physiological variables in the regulation of sexual arousal is still poorly understood. Studies on HPA response to erotic material show a modal pattern of decreasing cortisol. However, some individuals show atypical cortisol increases, which might interfere with arousal and desire. No data exist on what individual variables may predict atypical HPA responding. From an evolutionary standpoint, both sociosexuality and attachment styles are potential candidates. This study investigated individual differences in HPA response to visual erotic stimuli in 57 men (28 gay, 29 straight). Participants watched two videos (neutral and erotic) and provided two saliva samples at a 30-minute interval. 72% of participants showed the typical response (cortisol decrease), while 28% showed an atypical response (cortisol increase). Logistic regression showed that restricted sociosexuality predicted atypical HPA responding in both straight and gay men. Attachment anxiety was also a significant predictor of atypical responding, but only in straight men. Intriguingly, attachment and sociosexuality were correlated in straight but not gay men, raising questions about standard theories of individual differences in attachment. These findings provide evidences that physiological responses to erotic stimuli can be predicted based on personality variables, and suggest many questions for future research.

SYMPOSIUM: WHEN TO START, WHEN TO STOP?: INSIGHTS FROM LIFE HISTORY THEORY ON FERTILITY DECISIONS

CHAIR: LISA MCALLISTER

FRIDAY, MAY 29, 2:00 PM–3:20 PM, STOTLER 1

This symposium brings together theoretical and empirical work, by the NESCent Working Group “Integrating Evolutionary Models of Human Fertility Change,” highlighting the application of Life History Theory (LHT) to understanding reproductive preferences and timing. LHT posits that environmental harshness influences reproductive timing to achieve optimal fitness for that environment, that much of this is set before maturity, and encourages individuals toward faster or slower life history strategies. We examine several current assumptions about LHT in the human literature, and argue for a better understanding of how environmental harshness influences human behaviour and what is being optimized. Talk 1 presents

a model questioning the relationship between fitness and the utility function, a way of representing the proximate preferences that shape an individual's decisions. Support is given for variation in human reproductive behaviour being better understood by the inclusion of status in the human utility function. Talk 2 addresses the relationship between environmental harshness and reproductive timing; and showcases the power of experimental methods for determining causation and underlying psychological mechanisms. Talk 3, using longitudinal data from rural Bangladesh, tests the idea that reproductive timing is indicative of childhood environmental harshness by determining whether the time from marriage to first birth is associated with childhood nutritional status. Talk 4 shows that many women stop reproducing years before menopause, suggesting that stopping behaviour rather than menopause is the more profound evolutionary puzzle. Demographic data on age at last birth is reviewed and a LHT focus to human stopping behaviour given.

FR 2:00 PM

Is status part of the human utility function? Implications for understanding variation in fertility

MARY SHENK (UNIVERSITY OF MISSOURI, SHENKM@MISSOURI.EDU), PAUL HOOPER

Utility functions represent the value of satisfying an individual's set of needs and/or wants. The classical economic approach takes the preferences defining a utility function as given, an exogenous aspect of the individual. Evolutionary researchers have argued that utility functions should be replaced with fitness functions, since natural selection designs organisms to maximize fitness. Recent research into the mechanisms underlying human fertility, however, suggests that direct fitness functions are inadequate for understanding the wide variation in human reproductive behavior. Expanding on the logic of Robson & Samuelson's (2011) framework for the evolution of preferences, we present a new theoretical and mathematical model of the relationships between fitness and utility underlying reproductive decisions. We argue that evolved human utility functions depend on both the well-being and social status of self and close kin, and explicate the evolutionary conditions under which these factors are likely to have become part of the human utility function. While this utility function would have approximated a fitness function in conditions common during human evolutionary history, novel environments in industrialized societies change the calculus of reproductive decisions causing declines in both fertility and fitness.

FR 2:20 PM

Mortality and Family Planning: using experimental methods to find a causative link between mortality and reproductive preferences

LISA MCALLISTER (UNIVERSITY OF CALIFORNIA, SANTA BARBARA, LISAMCALLISTER@UMAIL.UCSB.EDU), KATHERINE HANSON SOBRASKE, DYLAN TWEED, ADRIAN V. JAECCI, SANDRA VIRGO, MARY SHENK

Humans, compared to other animals, have a unique degree of control over their fertility. However, evolved reproductive drives and the associated psychological mechanisms that motivate fertility behavior persist. Identifying the casual links among external and internal cues and fertility behavior is important to understanding demographic transition, and in family planning policy. Here we provide an overview of theories of psychological mechanisms of fertility. Most work in this area is methodologically limited to showing only correlations of environmental, social and economic factors to fertility decisions. We propose, and support with a meta-analysis, the use of experimental methods to differentiate causal factors from correlates. We end by presenting our preliminary experimental research. We cue variation in life expectancy to compare its effects on explicit and implicit components of reproductive preferences in a large U.S.A. based online population.

FR 2:40 PM

Test of first birth interval as a surrogate measure of women's nutritional status

ILONA NENKO (JAGIELLONIAN UNIVERSITY MEDICAL COLLEGE, POLAND, ILONA.NENKO@UJ.EDU.PL), MARY C. TOWNER, MARY SHENK

The time from marriage to first birth—the first birth interval (FBI)—can be used as a surrogate measure of nutritional status when direct data are lacking. This has been shown in two pre-industrial populations, in which (i) women from a higher socioeconomic group had shorter FBIs, (ii) higher food availability was associated with shorter FBIs, and (iii) women with short FBIs had more costly reproductive histories (i.e. higher number of children, higher proportion of children who survived to adulthood, and longer reproductive span). However, we are still lacking a confirmation of FBI as a measure of nutritional status in a contemporary population, which would strengthen its utility for researchers who lack direct information on nutritional status. This project uses existing longitudinal fertility data from rural Bangladesh collected by ICDDR,B to investigate the association between age at menarche, height and weight before marriage, and length of FBI. Moreover, we examine the association between length of FBI and the first baby's nutritional status (birth weight, mid-upper arm circumference). We predict that women with earlier ages at menarche will have shorter FBIs, as well as women with higher height and weight. Shorter FBIs should be associated with better child nutritional status.

FR 3:00 PM

How Relevant is Menopause to Human Fertility Behavior? A Life History Approach to Age at Last Birth in Rural Bangladesh

MARY C. TOWNER (OKLAHOMA STATE UNVIERSITY, MARY.TOWNER@OKSTATE.EDU), ILONA NENKO, SAVANNAH E. WALTON

Evolutionary biologists have long-considered menopause to be a fundamental puzzle

in understanding human fertility behavior, since after menopause, women are no longer physiologically capable of direct reproduction. Menopause typically occurs between 45–55 years of age, but across cultures and history, many women stop reproducing many years before menopause. For example, in a sample of rural Bangladeshi women, age at last birth preceded age at menopause by an average of 11 years, even during a period of high fertility. Thus, the more profound evolutionary puzzle than menopause may be stopping behavior, which can also be viewed in the context of reproductive strategies. To this end, and unlike age at first reproduction or even birth spacing, a woman nearing the end of her reproductive cycle is able to reflect upon the offspring she already has—their numbers and phenotypic qualities, including sexes. Stopping behavior is thus an important part of an overarching life history strategy. This talk reviews existing demographic data on age at last birth, particularly as it relates to fertility change, and brings a much-needed life history focus to human stopping behavior.

SESSION: PERSON PERCEPTION

CHAIR: NADINE LAVAN

FRIDAY, MAY 29, 2:00 PM–3:20 PM, S110

FR 2:00 PM

The Communicative Function of Sad Facial Expressions

LAWRENCE IAN REED (SKIDMORE COLLEGE, LREED1@SKIDMORE.EDU), PETER DESCIOLI

Previous research shows that some facial expressions of emotion serve a communicative function by signaling private feelings and action tendencies. Further, some expressions such as smiles and angry faces affect receivers by increasing the credibility of accompanying verbal statements. We test whether sad expressions increase the credibility of claims of loss in order to solicit aid from conspecifics. We report three studies in which participants receive a request from a confederate asking the participant to share an endowment of money. The confederate's request is made in a video showing them with a neutral or sad expression. Participants decide how much money to send the confederate. We examine how expressions affect the amount of money sent under conditions of uncertain receiver loss (Study 1), certain receiver loss (Study 2), and uncertain receiver lack of gain (Study 3). We find that participants give more money to sad compared to neutral receivers only when there is an uncertain receiver loss, not for certain loss or uncertain lack of gain. These results support the hypothesis that sad expressions function to boost the credibility of claims of loss.

FR 2:20 PM

Who's laughing now? Authenticity of non-verbal emotional expressions modulates the perception of emotion category and person identity in the

human voice

NADINE LAVAN (UNIVERSITY OF LONDON, NADINE.LAVAN.2013@RHUL.AC.UK),
CAROLYN MCGETTIGAN

Authenticity in emotional vocalizations is signaled by the introduction of hard-to-fake properties in the vocal output. In laughter and crying, these properties are considered to include extremely high pitch and non-linearities such as glottal whistles and noisy exhalations (Ruch & Ekman, 2001). In a series of studies, we show that the presence of hard-to-fake properties has detrimental effects on listeners' ability to decode basic indexical speaker characteristics (e.g. speaker sex) and other socially-relevant information from voices—features we are able to extract readily from neutral vocal signals (Belin, Fecteau, & Bedard, 2004; Juslin & Laukka, 2003). Our data show that the perceived category boundary between authentic laughter and crying is blurred by acoustic ambiguities arising from high emotional arousal (Lavan & Lima et al., 2014) and that accuracy of speaker sex identification from these same vocalisations, is impaired compared with neutral vowels. Further, performance in a simple speaker discrimination task is strikingly low when listeners have to compare hard-to-fake signals with vocalisations produced in modal voice (Lavan et al., submitted). Thus, authentic, hard-to-fake signals can partly obscure otherwise useful diagnostic features encoded in the voice, bearing implications for accounts presenting the voice as an 'auditory face' (Belin & Campanella, 2007).

FR 2:40 PM

Reaching Out or Pulling Away? The Effect of Pain on Cooperativeness is Modulated by Early Life History

LENE AARØE (AARHUS UNIVERSITY, LENEAAAROE@PS.AU.DK), MICHAEL BANG
PETERSEN

Studies show that individuals become more cooperative when in pain. Over human evolutionary history, other people have provided comfort in need and cooperative responses to pain could reflect a psychology designed to reach out to social allies. However, while conspecifics constitute a source of support, conspecifics also constitute a major threat to fitness—especially when the individual is vulnerable. How does the mind trade-off the costs and benefits of reaching out to others when in severe need? Recently, studies of life history have shown that people forecast the trustworthiness of others on the basis of early childhood experiences. Individuals from harsh childhood environments are more likely to view others as exploitative than individuals from benign childhood environments. This entails the prediction that only individuals from benign childhood environments will reach out under pain. Individuals from harsh childhood environments will, in contrast, pull away from others. We test this argument in an innovative laboratory study using ice water to experimentally induce pain and an economic game to measure cooperative behavior. Pain is found to increase cooperation but this effect is entirely driven by individuals from benign childhood environments. In contrast, individuals from harsh childhood environments

become less cooperative under pain.

SYMPOSIUM: ADAPTATIONIST PERSPECTIVES ON HUMAN PERSONALITY:
EXPLAINING THE ORIGINS OF INDIVIDUAL AND CROSS-CULTURAL DIFFERENCES
CHAIR: AARON W. LUKASZEWSKI
FRIDAY, MAY 30, 3:40 PM–5:00 PM, WRENCH AUDITORIUM

The proposal that humans share a universal psychological architecture is sometimes seen as being undermined by the existence of personality variation between individuals or across cultures. However, such variation is often theoretically predicted by models that view personality as the variable output of facultative adaptations designed to calibrate behavioral phenotypes to cues available in ontogeny. Herein we present the findings of multiple research programs that have applied this adaptationist perspective to elucidate the calibrators of diverse aspects of personality variation in humans, including socially antagonistic attitudes, endorsement of the ‘code of honor,’ emotional dispositions, prosocial leadership orientation, and covariation among the ‘Big Five’ trait dimensions. Collectively, we present data from multiple populations, from Amazonian forager-horticulturalists to citizens of industrialized societies on every continent. Taken together, our findings demonstrate the power of an adaptationist approach to explaining the origins of inter-individual and cross-cultural variation in human personality.

FR 3:40 PM

The logic of variation in social antagonism

DANIEL SZNYCER (UNIVERSITY OF CALIFORNIA, SANTA BARBARA,
DSZNYCER1@GMAIL.COM), JOHN TOOBY, LEDA COSMIDES

The psychologies for antagonism and predatory social behavior have received less attention than the psychology of altruism, perhaps because they represent less of an evolutionary puzzle. Nonetheless, they remain a fundamental feature of human nature. Antagonism and competition are basic aspects of natural selection. Even when resources are effectively unlimited selection favors higher rates of replication. This would have shaped a psychological orientation that sees the world, and acts in it, in terms of social antagonism: My neighbor’s gain is my loss, and their loss is my gain. This antagonistic orientation should be attenuated by various relational, environmental, somatic, and life-history circumstances. Nonetheless, the antagonistic orientation should be discernible when incoming information signals payoffs for competitiveness. If the social antagonism hypothesis is true, then perceiving that social interactions are zero-sum should lead to lower levels of compassion (helping another raises their welfare while lowering yours), and to higher levels of envy (another’s success is bad), schadenfreude (another’s failure is good), vengefulness (being slighted is particularly bad), shame (personal failure is bad), and pride (personal success is an opportunity to claim respect). Data from American and Indian

participants support these predictions both at the individual and national levels.

FR 4:00 PM

Individual differences in endorsement of the code of honor: A life history perspective

ERIC J. PEDERSEN (UNIVERSITY OF MIAMI, EPEDERSEN@PSY.MIAMI.EDU), DANIEL E. FORSTER, MICHAEL E. MCCULLOUGH

The code of honor, which is characterized by a preoccupation with reputation and willingness to take retaliatory action, has been used extensively to explain individual and cultural differences in peoples' tendencies to behave aggressively. We hypothesize that variation in endorsement of the code of honor reflects, in part, adaptive responses to variation in cues during childhood that life will be harsh, unstable, and short. This is, we propose that individuals who endorse the code of honor do so as part of a fast life history strategy in response to harsh environmental conditions. Here we show that childhood exposure to family neglect, conflict, and violence, and to neighborhood crime, are positively associated with endorsement of the code of honor. Additionally, results from two laboratory experiments suggest that endorsement of the code of honor predicts (a) exploitation of cooperators, (b) retaliation against exploiters, and (c) anger and envy in response to unfair monetary interactions. Taken together, these results suggest that variation in endorsement of the code of honor may reflect the adaptive calibration of social strategies to local social-ecological conditions.

FR 4:20 PM

Adaptive personality calibration in a human society: Effects of embodied capital on prosocial leadership orientation

CHRISTOPHER R. VON RUEDEN (UNIVERSITY OF RICHMOND, CVONRUED@RICHMOND.EDU), AARON W. LUKASZEWSKI, MICHAEL GURVEN

Evolutionary theories of human personality origins have stimulated much empirical research in recent years, but pertinent data from small-scale societies have been in short supply. We investigate adaptively patterned personality variation among Tsimané forager-horticulturalists. Based on a consideration of cost-benefit tradeoffs that likely maintain variation in aspects of human prosociality, we hypothesize that individual differences in the orientation toward prosocial leadership are facultatively calibrated to variation in 'embodied capital'—i.e. knowledge, skills, or somatic traits that increase expected future fitness. In support of this hypothesis, two components of embodied capital—physical strength and formal education—were positive predictors of Tsimané Prosocial Leadership Orientation (PLO), a broad personality dimension representing gregarious sociality, interpersonal warmth, and status motivation. Moreover, using pedigrees to compute heritability estimates, strength and education had additive effects on the heritable variance in PLO, which suggests that this dimension may be 'reactively heritable' by virtue of its calibration to

condition-dependent components of embodied capital. Our findings (a) provide one of the first demonstrations of adaptively patterned personality variation in a small-scale society and (b) illustrate the potential power of an adaptationist approach to elucidate the causal underpinnings of heritable personality variation.

FR 4:40 PM

What drives personality covariation? A test of the socioecological complexity hypothesis

AARON W. LUKASZEWSKI (OKLAHOMA STATE UNIVERSITY, AARON.LUKASZEWSKI@OKSTATE.EDU), CHRISTOPHER R. VON RUEDEN, DAVID P. SCHMITT, MICHAEL GURVEN

Correlations among distinct aspects of behavior are foundational to personality science, but the field remains far from a consensus regarding the causes of such covariation. We advance a novel explanation for personality covariation, which views trait covariance as a function of differential motivations shaped by socioecology. We hypothesize that the degree of personality covariation observed within a society will be inversely related to the society's socioecological complexity, i.e. its diversity of social and occupational niches. Using personality survey data from participant samples in 55 nations (N = 17,355), we demonstrate that the Big Five dimensions are more strongly inter-correlated in less complex societies (with complexity indexed by nation-level measures of economic development and urbanization). These findings (a) support the socioecological complexity hypothesis, and more generally (b) bolster adaptationist accounts of trait covariation, which hold that distinct psychological mechanisms will produce variably correlated outputs depending on the configuration of input cues supplied in ontogeny.

SYMPOSIUM: INSIGHTS INTO SOCIAL BEHAVIOR AND LIFE HISTORY TRAITS FROM COMPARATIVE NONHUMAN PRIMATE DATA

CHAIR: EMILY LYNCH

FRIDAY, MAY 30, 3:40 PM–5:00 PM, PARKER AUDITORIUM

Nonhuman primates serve as valuable models when asking questions about human evolution because, like humans, they live in relatively stable social groups, exhibit complex behaviors, and share a relatively recent common ancestor. This symposium will evaluate nonhuman primate research with a focus on evolutionary forces that influence both social behavior and life history traits. These talks will cover focal groups in both wild and captive populations, providing a broad range of data regarding the adaptive consequences of group structure. We will consider the proximate mechanisms facilitating relationships among paternal kin in a wild group of olive baboons (*Papio hamadryas anubis*) and mountain gorillas (*Gorilla beringei beringei*) as well as dispersal strategies in capuchin monkeys (*Cebus capuchinus*). In a captive population of lowland gorillas (*Gorilla gorilla gorilla*), we will examine the

heritability of survivorship. These data will help to clarify the significance of demographic and life history traits. Furthermore, this information may help us to understand and interpret the origin of human behavior and can provide useful frameworks for evolutionary psychology and human behavioral ecology.

FR 3:40 PM

Fathers mediate social bonds among young offspring in olive baboons (*Papio hamadryas anubis*)

EMILY LYNCH (RUTGERS UNIVERSITY, ELYNCH1859@GMAIL.COM), ANTHONY DI FIORE, RYNE A. PALOMBIT

A universal and fundamental aspect of human sociality is substantive, core relationships among relatives. Although comparative studies of nonhuman primates have clarified the adaptive significance of kinship, such research has focused primarily on maternal relatives. This is partly because many monkey groups are organized around matrilineal philopatric females, and partly because maternal relatedness is readily observed through births. While individuals may be related through males too, this phenomenon and its implications have been neglected due to the demands of determining paternal relatedness. Recently developed techniques now allow us to evaluate paternal kinship in wild populations. By synthesizing behavioral and genetic data, this study examines how fathers influence the development of social bonds among immatures. We studied juvenile olive baboons (*Papio hamadryas anubis*, n=39) in one habituated group (N=111) in Kenya for 18 months. Behavioral data were gathered via focal animal sampling and genetic relatedness was determined through noninvasive genotyping. We found that when fathers were present in the group, compared to when fathers were absent, bonds among paternal half-siblings were stronger and bonds among maternal half-siblings were weaker. These data suggest that not only do fathers facilitate the development of relationships among paternal half-siblings, but also those among maternal half-siblings.

FR 4:00 PM

Should I stay or should I go? Natal dispersal in capuchin monkeys (*Cebus capucinus*)

KOTRINA KAJOKAITE (UNIVERSITY OF CALIFORNIA, LOS ANGELES, KOTRINA@UCLA.EDU), KARTHIK PANCHANATHAN

Many social animals must decide whether and when to disperse from their natal group and embark on a search for a new one. In primates, dispersal has wide consequences at the individual, group and population levels. We observe lots of variation in timing of dispersal within and between primate species. The primary question to answer is: What are the conditions that favor either dispersing or staying longer in one's natal group? Studying dispersal in a long-lived species, like primates, is challenging. Formal modeling can serve as an excellent complement to the

empirical data in studying dispersal patterns in primates. In this talk, I will present some ideas and preliminary work on understanding the conditions that either favor dispersing or staying longer in one's natal group in capuchin monkeys. I will start by describing a general agent-based model of dispersal and will then turn discuss how an agent-based model can be tested using parameters estimated from empirical findings about a wild population of capuchin monkeys.

FR 4:20 PM

Group structure predicts variation in proximity relationships between male-female and male-infant pairs of mountain gorillas (*Gorilla beringei beringei*)

STACY ROSENBAUM (LINCOLN PARK ZOO, STACYLROSEN@GMAIL.COM), A.A.
MALDONADO CHAPARRO, T.S. STOINSKI

Relationships between conspecifics are influenced by both ecological factors and social organization. Systematic variation of both, consistent with socioecological model predictions is well-documented, but there is considerable intraspecies variation that is poorly understood. Mountain gorillas (*Gorilla beringei*) are unusual because their morphology suggests an evolutionary history of contest competition, but they regularly occur in both single and multimale groups. Infanticide risk and paternity certainty vary with social structure, which may influence the strength of individual relationships. We investigated the relationship between group structure and proximity relationships of male-female and male-infant pairs of gorillas in 10 social groups in Rwanda containing 1-7 adult males. Association strength was similar for male-female pairs across group types, but male-infant relationships were strongest in groups with high paternity certainty. Ratio of all males:female+offspring pairs was a better predictor of male-female and male-infant associations than absolute number of males; the fewer males per female+offspring, the more both pair types associated. Dominant males in groups containing 1-3 males had higher eigenvector values than dominant males in 4+ male groups. Results indicate nondominant males influence relationships between dominant males and females+offspring despite their peripheral social positions, and that male-infant relationships are an important foundation of gorilla social structure.

FR 4:40 PM

Survival of the infants: An analysis of early life mortality in captive western lowland gorillas

MONICA H. AHSAN (UNIVERSITY OF MISSOURI, MHA8TB@MAIL.MISSOURI.EDU),
GREG E. BLOMQUIST

Uncovering sources of variation in gorilla infant survival informs conservation and life history research efforts. The international studbook for the western lowland gorilla provides information on a sample of captive gorillas large enough for which to

analyze genetic, maternal, and other effects on early life mortality in these critically endangered great apes. We assess the importance of variables such as sex, parity, paternal age, and hand rearing, and also estimate variance components for additive genetic and maternal effects. MCMC simulations of generalized linear mixed models produce variance component distributions in an animal model framework utilizing all pedigree relationships. Our results indicate that survival is moderately heritable with the strongest genetic influence just after birth. Maternal effects are most important during the first 6 months of life. Interestingly, hand-reared gorillas have lower mortality for the first 6 months of life. Aside from hand rearing, we found other predictors commonly used in studies of primate infant mortality to have little influence in these gorilla data. In addition to identifying variables important to gorilla infant survival, our results provide heritability estimates of early life mortality that extend to closely related species, such as humans, for which variation is more difficult to address.

SESSION: SEXUAL SELECTION

CHAIR: DAVIDE PONZI

FRIDAY, MAY 30, 3:40 PM–5:00 PM, STOTLER 1

FR 3:40 PM

Receptivity to Sexual Invitations: Gender differences may not be what they seem

ANDREAS M. BARANOWSKI (UNIVERSITY OF MAINZ, BARANOWSKI@UNI-MAINZ.DE),
HEIKO HECHT

There is an ongoing discussion about the findings by Clark and Hatfield (1989) that men accept sexual invitations from females more willingly than vice versa. We focused on two unresolved questions: First, what happens when the same request for casual sex is made in a more naturalistic setting where social pressure is lower and such a request more common? To address this issue, 6 male and 8 female average looking confederates approached 162 men and 119 women either at a university campus or in a nightclub and asked for a date or for casual sex. The gender difference remained, with significantly more men than women consenting to a sexual invitation. The second issue concerned the perceived risk for women of accepting such an offer. We invited 60 male and female participants into our laboratory and showed them 10 pictures of persons of the opposite sex. They were led to believe that these people either consented to date or to have sex with them. Participants then could choose from the pictures who they wanted to meet to engage in a date or sex. In this subjectively safer environment gender differences remained, but were significantly smaller than in the first experiment.

FR 4:00 PM

Male height: mate preference and actual choice

ANTHONIETA LOOMAN MAFRA (UNIVERSIDADE FEDERAL DO RIO GRANDE DO NORTE, LOOMAN.ANTHONIETA@GMAIL.COM), FELIPE NALON, CASTRO AMANDA CARVALHO, FÍVIA DE ARAÚJO LOPES

Physical characteristics are important for women and men mate preference. However, men give more importance for these traits than women due to the relationship between physical attractiveness and good genes and female fertility. Women give more importance to men's resources and/or ability to acquire them, male height is a cue to physical health and dominance, increasing their mate value. Aiming to investigate if women as romantic partners in fact, prefer taller men, we asked males and females about their preference of the height for a romantic partner and the height of their actual romantic partners. A total of 1,127 participants of high and low socioeconomic level (SES) took part of the research. The results indicated that: 1) most women prefer a taller partner while the opposite was also true: most men prefer a shorter partner; 2) men of low SES that are in a relationship are significantly taller than single men; and 3) the difference of participants' height and participants' romantic partner height were similar when comparing between SES. This study suggests that preference for taller mates is more dependent of sex than of SES.

FR 4:20 PM

Sexual interest vs hostile sexism: The relevance of sociosexual orientation in the understanding of opposite and same sex sexual harassment

LEIF EDWARD OTTESEN KENNAIR (NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, KENNAIR@NTNU.NO), MONS BENDIXEN

Sexual harassment is not merely—as many feminist perspectives argue—a case of men's dominance over women. Kennair & Bendixen (Evolution & Human Behavior, 2012) found that sociosexual orientation predicted being sexual harassed and sexually harassing others, for both sexes. A community sample of 1365 (57 % women) heterosexual high school students was recruited through their schools. Both sexes answered electronic questionnaires about sexually harassing actions toward others of each sex independently, as well as experiences of being sexually harassed by each sex. No earlier study has considered all of these combinations of harassing actions and experiences. Participants also answered questions about hostile sexism, exposure to porn, stereotypical beliefs about rape, and SOI-R. For all eight combinations of having been harassed or having harassed others, SOI-R explains most of the variance. There is great overlap between sexually harassing others and having been harassed. SOI-R, as the only predictor, explains the remaining variance, when controlling for having been harassed. Both opposite sex and same sex harassment is driven by an interest in short term sex as measured by SOI-R. Same sex harassment may further be considered the primary form of competitor derogation, and thus best understood from a sexual selection perspective.

FR 4:40 PM

Adaptive significance of interindividual variation in morningness/eveningness

DAVIDE PONZI (THE UNIVERSITY OF CHICAGO, PONZDBIOL@GMAIL.COM), ANDREA HENRY, KONRAD KUBICKI, NORA NICKELS, CLAIRE M. WILSON, DARIO MAESTRIPIERI

Night owls score higher than early birds in extraversion, impulsivity, novelty-seeking, and sexual promiscuity suggesting that eveningness may have evolved to facilitate short-term mating. We hypothesized that inter-individual variation in morningness/eveningness (chronotype) reflects variation in life history strategies such that early birds exhibit traits associated with slow life histories while night owls exhibit traits associated with fast life histories. We also hypothesized that time orientation (i.e., being present- vs future-oriented) may be one of the mechanisms linking chronotype to sociosexuality. In college students, variations in chronotype and in life-history traits were significantly associated in the direction predicted by our hypothesis. Male and female night owls exhibited greater risk propensities than early birds. Male night owls also scored significantly higher on the Intrasexual Competition Scale. Time perspective emerged as a significant mediator of the association between chronotype and socio-sexuality so that the future orientation of early birds was associated with their long-term mating orientation, while the present orientation of night owls was associated with their short-term mating orientation. This research provides the first evidence that variation in chronotype may be adaptive and elucidates one of the psychological mechanisms underlying the life history and reproductive strategies of early birds and night owls.

SYMPOSIUM: A SEQUENTIAL CASCADE MODEL OF SOCIAL BIOGEOGRAPHY

CHAIR: AURELIO JOSÉ FIGUERO

FRIDAY, MAY 30, 3:40 PM–5:00 PM, S110

A sequential cascade model, detailing the hypothesized social biogeography of human intelligence, derives elevated levels of human intelligence through a series of causal steps, starting with the evolution of slower Life History (LH) strategies based on both the physical ecology (climatological factors) and community ecology (population density and parasite burden). This model then examines the social ecology of slow LH strategy through the establishment of cooperative and mutualistic social systems with enhanced levels of social equality, within-group and between-group peace, and sexual equality. These social sequelae, in turn, lead to the strategic differentiation of resource allocation profiles among slower LH strategists (the SD-IE effect) that foster socioecological niche-splitting through intraspecific character displacement and produce mutual competitive release among individuals in saturated, resource-limited environments. By producing cooperative systems of specialists that each efficiently exploit different social micro-niches, the mutual exchange of resources so derived inevitably triggers the action of Ricardo's Law of Comparative Advantage, producing

greater aggregate wealth through these emergent social properties than would otherwise be attainable to equal numbers of generalists. We track this hypothesized mediating mechanism through the relations among three major macroeconomic indicators at the national level of aggregation: higher Economic Complexity Indices, lower Gross Domestic Product Dissimilarity Indices, and lower Krugman Dissimilarity Indices. Finally, we explain how this combination of powerful macroeconomic forces inevitably produces massive increases in aggregate wealth that elevate the collective human capital of the entire society, enhances physical brain volume, and contributes to higher overall levels of human intelligence.

FR 3:40 PM

Some like it hot, wet, and fast: A population-level cascade model of the relationships among climate, population density, parasite burden, and life history strategies

TOMÁS CABEZA DE BACA (UNIVERSITY OF CALIFORNIA, SAN FRANCISCO, TOMAS.CABEZADEBACA@UCSF.EDU), HEITOR BARCELLOS FERREIRA FERNANDES

Slower Life History (SLH) strategies are selected by both population density, according to classical theory, and age-specific schedules of extrinsic morbidity and mortality. Lower parasite burdens are sources of morbidity and mortality, and higher population densities select for intraspecific competitive strategies for limited resources in saturated environments. As frequent interpersonal contact facilitates contagion, parasite burden should increase in areas with higher population density. Further, local parasite prevalences should increase in areas with climates that are hot and humid. Human Population Density should also tend to increase under favourable climatic conditions. A Sequential Canonical Analysis was conducted in UniMult2 to test this set of complementary hypotheses. Although population density was positively influenced by a hydrological factor (humidity and rainfall), parasite burden failed to be influenced by population density, instead being negatively influenced by a Brumal factor (lower mean temperatures, temperature range, and a composite of absolute distance from the equator and altitude above sea level) and by the Hydrological factor, with the effect of the Brumal factor being more negative in conjunction with higher Hydrological levels. Finally, SLH was negatively influenced by parasite burden, with the predicted positive influence of population density not statistically significant.

FR 4:00 PM

Giving peace a chance by taking it slow: An ecological approach to life history, social equality, collective peace and sexual equality

CANDACE JASMINE BLACK (UNIVERSITY OF ARIZONA, CJBLACK@EMAIL.ARIZONA.EDU), MATEO PEÑAHERRERA AGUIRRE

Much previous research has revealed consistent associations between slower Life History (LH) strategies and higher levels of social equality and cooperation, whereas

increased levels of intraspecific aggression are instead associated with faster LH strategies, and is intertwined with the emergence of conflict both within groups and between groups. As a natural consequence of social equality and cooperative mutualism, enhanced levels of peaceful coexistence between groups and within groups are expected to arise. Such conflict is not only expected to manifest in intrasexual competition, but in antagonistic intersexual interactions as well. Hence, a decrease in intraspecific conflict will also lead to greater manifestations of sexual equality, as has been proposed in other studies. Thus, we hypothesize sequential causal connections among slow life history, social equality, within-group and between-group peace, and sexual equality. Unit-weighted factors were constructed as indices of social equality, within-group and between-group peace, and sexual equality. These social outcomes were then predicted sequentially from a slow LH construct in a sequential canonical cascade model. The results of that analysis supported our theoretical predictions, which were also consistent with conclusions reached by previous research. These sequential effects were all moderate to large in magnitude.

FR 4:20 PM

How slow life history strategy fosters the development of human capital via strategic differentiation and socioeconomic specialization as emergent properties of cooperative social systems

AURELIO JOSÉ FIGUEREDO (UNIVERSITY OF ARIZONA, AJF@U.ARIZONA.EDU),
RAFAEL ANTONIO GARCIA

We present a sequential cascade model that derives elevated levels of human capital from the cooperative and internally diversified social systems typically generated by populations of slow Life History (LH) strategists. We explain how natural aggregations of slow LH strategists spontaneously produce the conditions needed for cooperative and mutualistic social systems. Diversification of resource allocation profiles among slow LH strategists fosters socioecological niche-splitting and produce mutual competitive release among individuals in saturated, resource-limited environments. Intraspecific character displacement produces specialists exploiting different social micro-niches, as narrower realized niches within the species-typical fundamental niche. Through mutual exchange of resources derived from these micro-niches, such cooperative systems of specialists trigger the action of Ricardo's Law of Comparative Advantage, producing greater aggregate wealth than would otherwise be attainable to equal numbers of generalists. At the national level of aggregation, this internal socioeconomic diversification leads to higher Economic Complexity Indices, which then produce lower Gross Domestic Product Dissimilarity Indices, which in turn generate lower Krugman Dissimilarity Indices. This combination of powerful economic forces inevitably produces massive increases in aggregate wealth that elevate the collective human capital of the entire society. We speculatively attribute the international wealth disparities called 'The Great Divergence' to these evolutionary processes.

FR 4:40 PM

A sequential canonical cascade analysis of the evolutionary and developmental predictors of national IQ

MICHAEL ANTHONY WOODLEY OF MENIE (VRIJE UNIVERSITEIT BRUSSEL, MICHAEL.WOODLEY@VUB.AC.BE), HEITOR BARCELLOS FERREIRA FERNANDES

We present the results of a sequential canonical cascade model, ultimately predicting average national IQ. The final stages in this sequence were the hypotheses that increased Human Capital should lead to larger Brain Volume, and that larger Brain Volume should lead to enhanced mental abilities, as indicated by average national IQ. These main hypotheses were all supported. Brain Volume, the first predictor in the final hierarchical regression, was the strongest positive influence on national IQ. Human Capital, the next in the hypothesized causal hierarchy, also strongly contributed to an increase national IQ, consistent with the expected impact of the Flynn Effect. The residual effects of the Krugman Dissimilarity Index, GDP Dissimilarity Index, and Economic Complexity Index were also statistically significant, as was the residual effect of Strategic Differentiation Effort (consistent with the LH model of the Flynn effect) and Sexual Equality (consistent with more convergent sex-roles in higher IQ populations). In contrast, between-group peace negatively influenced IQ, consistent with the theorized historical role for group selection favoring higher intelligence, and parasite burden also negatively influenced IQ. The Hydrological Factor had significant residual effects, but not the Brumal, although hotter climates increased the negative effects on IQ of the Hydrological factor.

SATURDAY, MAY 30

SESSION: PSYCHOPATHOLOGY?

CHAIR: EDWARD H. HAGEN

SATURDAY, MAY 30, 8:00 AM–9:20 PM, WRENCH AUDITORIUM

SA 8:00 AM

Cooperative Eyes in Evolutionary Context: Autism Spectrum Disorder Children and Typically Developing Children/Adults Compared

NANCY L. SEGAL (CALIFORNIA STATE UNIVERSITY, FULLERTON, NSEGAL@FULLERTON.EDU), AARON GOETZ, ALBERTO MOLDONADO

Humans and African great apes track the gaze direction of others. Advantages proposed by the Cooperative Eye Hypothesis (Kobayashi & Kohshima, 2001; Tomasello et al., 2007) include information acquisition regarding another's thoughts

and actions, and the presence of friends, foes and resources. This is facilitated by the prominence of the human sclera, the opaque white outer coat enclosing the eyeball that shows no pigmentation. In contrast, nonhuman primates' sclera shows dark pigmentation, suggesting different adaptations. Gaze aversion is a marker for autism in children. This study reports the first test of the Cooperative Eye Hypothesis using autism spectrum disorder (ASD) children (n=24) and typically developing children (n=47) and adults (n=40). The prediction that ASD children would not consistently favor eyes with/without visible sclera was assessed by their preferences across six sets of stuffed animals, identical except for the eyes. It was also expected that typically developing children/adults would show reliable preferences for stimuli with visible sclera. Chi-square analyses were statistically significant, supporting these predictions. The findings broaden the applicability of the Cooperative Eye Hypothesis for understanding gaze aversion in ASD children, in current and evolutionary contexts, and provide guidance for selecting toys/materials for ASD children.

SA 8:20 AM

Why is there a sex-difference in depression?

THOMAS HAARKLAU KLEPPESTØ (HAUGALAND PSYCHIATRIC CENTER, HAUGESUND, NORWAY, THOKLE1@GMAIL.COM), LEIF EDWARD OTTESEN KENNAIR, DAVID M. BUSS

Studies of western societies report that women have roughly double the likelihood of becoming depressed as do men. Possible evolutionary explanations can be derived from sexual selection theory or mismatches between ancestral and modern environments (e.g., lack of extended kin in close proximity in modern environments adversely affect women more than men). A key proximate factor in the etiology and maintenance of the sex difference is rumination: Women tend to ruminate after stressful life-events or on their low mood itself. It is unclear whether this cognitive process has simply been more adaptive for women than for men (sexually selected), or whether rumination results from other sex-differentiated sexually selected traits (e.g. empathy) that interact with pathological processes (such as mutations) that differentially increase the likelihood of severe depression in women. Theories claiming that women's rumination is adaptive have been advanced within evolutionary psychology, but recent clinical research with depressed patients suggests that discontinuing rumination is actually curative. Lacking are data on sex-differences in depressed mood in traditional hunter-gatherer societies. But, the sex-difference is typically smaller in developing countries. It therefore remains unclear whether the western sex difference can be explained as an evolutionary mismatch or resulting from sexual selection. The current paper addresses sex differences in depression by considering possible sources of mismatch, and possible sexual selection pressures that might have established sex differences in normal perseverative cognitive processing.

SA 8:40 AM

Sex Differences in Wason Selection Task Performance in Schizophrenia and

Autism

ROGER J. SULLIVAN (CALIFORNIA STATE UNIVERSITY, SACRAMENTO, SULLIVAR@CSUS.EDU), M. SOLOMON, M. MINZENBERG, J. YOON, J. D. RAGLAND, S. URSU, E. ERMER, C. CARTER

Studies of conditional Wason Selection Task (WST) performance in clinical groups with cognitive impairments may reveal clues about disorder-specific preservation or impairment of reasoning performance across cognitive domains. Here we continue to look for such differences in a study of conditional WST performance in two clinical groups with recognized social cognition deficits—schizophrenia and autism spectrum disorders (ASD). We previously reported that WST social-contract performance was preserved in schizophrenia despite deficits in descriptive logic, although with modest statistical effect. Further analysis reveals considerable sex-differences in WST task performance. Men with schizophrenia and ASD largely performed as well as male controls in WST task performance. On the other hand, there were significant between-group differences in social, descriptive and precautionary WST task performance with large effect sizes among women with schizophrenia and ASD. In particular, women with schizophrenia performed poorly on social contract and precautionary tasks when compared to women with ASD and female controls. These results suggest that social reasoning may be preserved in men with schizophrenia, but not in women; a finding with interesting implications for theories of domain specificity in human cognition.

SA 9:00 AM

Testing the costly signaling and inclusive fitness models of suicidal behavior against the ethnographic record

EDWARD H. HAGEN (WASHINGTON STATE UNIVERSITY, EDHAGEN@WSU.EDU), KRISTEN L. SYME

Suicidal behavior (SB) is common: the lifetime prevalences of suicide ideation and attempts are 9.2% and 2.7%, respectively, and suicide is responsible for about 5% of mortality among 15–49 year olds. Globally, suicide causes more deaths than all wars and homicides combined. Strategies to increase fitness can decrease survival, raising the possibility that SB might have one or more evolved functions. Individuals with low reproductive potential who are a burden on kin, such as someone with a debilitating illness, would increase their inclusive fitness by committing suicide. A second adaptationist theory proposes that suicidal behavior is a costly signal of need that would elicit help when there are severe conflicts among social partners. Individuals only benefit if they survive their attempts; a low, but non-zero risk of death underwrites the credibility of the signal. To test these two theories, all discussions of suicide in the HRAF probability sample of 60 cultures were coded on variables from the inclusive fitness and costly signaling models. The final data set comprised 476 accounts of suicidal behavior in 53 cultures. There was strong support for the costly signaling model across cultures, but much more limited support for the

inclusive fitness model.

SESSION: SOCIAL EVOLUTION

CHAIR: ADAM POWELL

SATURDAY, MAY 30, 8:00 AM–9:20 PM, STOTLER 1

SA 8:00 AM

The palaeogenetics of Holocene European hunter-gatherers and early farmers

ADAM POWELL (JOHANNES GUTENBERG UNIVERSITY MAINZ, GERMANY, POWELLA@UNI-MAINZ.DE)

Ancient DNA (aDNA) data are revolutionizing our understanding of the human past, providing direct means of testing long-standing archaeological hypotheses. The spread of farming into Europe from the Near East during the Neolithic is still far from comprehensively understood. Debate centers on the degree to which it was an expansion of farming peoples or a diffusion of farming culture to indigenous Mesolithic hunter-gatherers. aDNA has begun to demonstrate that the process was highly regionally and temporally heterogeneous. I present work on the demography of pre-Neolithic hunter-gatherers and their interaction with incoming farming populations. Among the results, I show the deep genetic structure in west Eurasian hunter-gatherers that probably predates the Last Glacial Maximum, and demonstrate that north and Baltic European forager populations were likely well-established prior to any incursion of farmers. This explains the slow northward expansion of the Neolithic and the high component of hunter-gatherer ancestry in modern northern and Baltic Europeans. I also present analysis of a cave burial site in Germany, used throughout the Holocene. By analyzing both aDNA and dietary isotope data we show that some hunter-gatherers maintained a distinct foraging lifestyle for over 2000 years amidst the rapid expansion of the Neolithic in central Europe.

SA 8:20 AM

The Ecological Theory of Emotions

STEPHEN HAUSCH (UNIVERSITY OF CALGARY, SJHAUSCH@UCALGARY.CA)

Understanding emotions is key to understanding and predicting human behavior, but the subjective nature of emotions confounds emotions research. I propose an alternative approach to characterizing emotions: building a model of adaptive decision-making from first principles and comparing the result to descriptive models of emotions. Using game theory, I ask what emotions should look like, generating new hypotheses about what they do look like. Novelty, my model incorporates not just evolutionary principles through game theory and inclusive fitness, but also the ecological principles of diminishing returns and spatiotemporal variation.

Incorporating the ecological context generates scope for the optimal action (cooperate or defect) to vary between rounds of a repeated game. The ecology generates a three-part decision-making cycle, with each stage informing the next: (1) attraction: ranks possible interactions, (2) action: cooperate or defect based on current conditions and attraction, and (3) appraisal: update attraction based on outcome. These stages correspond to, and unify, the basic emotions of trust-disgust, fear-anger, and joy-sadness. The evolutionary principles generate three dimensions of attractiveness: value (individual selection), complementarity (reciprocal altruism), and sameness (kin/group selection). This model provides a logical and unified framework to integrate the study of emotions across psychology, biology, economics, and computer science.

SA 8:40 AM

The double-edged sword of warfare: Opposing historical and recent effects of armed conflicts upon collectivism, life history, human capital, and intelligence in Japan

HEITOR BARCELLOS FERREIRA FERNANDES (UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL, BRAZIL, HEITOR.BARCELLOS@UFRGS.BR), KENYA KURA, AURELIO JOSÉ FIGUEREDO

Intergroup competition has been argued to select for in-group altruism, slow life history, intelligence, and closely-related traits. To test this, we used prefecture-level data on 523 major military events that occurred since AD 1000 in Japan and on several contemporary traits. Per-capita frequency of battles (PCFB) in the highly competitive Warring States period positively predicted collectivism (cohesion and self-sacrifice within extended families), slow life history (an aggregate of longevity, reversed fertility rate, reversed infant mortality, height), intelligence (national achievement tests with adolescents), and human capital (an aggregate of percentage of high-school graduates pursuing further education, employment rate, socioeconomic position, income, savings), but not social capital (an aggregate of trust in and frequency of socializing with others, and volunteer activity in the community). PCFB in previous and subsequent more peaceful periods showed weaker, less consistent effects. Prefectures which were more victimized by WW-II bombings presented faster life history, lower intelligence and human capital, and more social capital. No period predicted psychological health (an aggregate of life satisfaction, happiness, peace of mind, energy, reversed hopelessness, reversed depression, reversed loneliness, reversed impacts of mental-health problems). The usefulness of theories of group selection, individual selection, and proximate effects for understanding the results is discussed.

SA 9:00 AM

Gene-Culture Co-Evolution of the Oxytocin Receptor Gene (OXTR) II: New Revelations from Haplotype Analyses

SHIMON SAPHIRE-BERNSTEIN (UCLA, SHIMON.SAPHIREBERNSTEIN@GMAIL.COM),

MARTIE G. HASELTON

A previous talk (at HBES 2012) explored the possibility of gene-culture co-evolution acting on the oxytocin receptor gene (OXTR) in Asian and Caucasian populations. The G allele of the single nucleotide polymorphism (SNP) rs53576, which has been associated with prosociality and self-esteem, is found at higher frequencies in Caucasians, relative to Asians. This talk provides an updated look at gene-culture co-evolution at OXTR using data collected from a sample of 172 couples in long-term relationships to examine haplotypes constructed from four SNPs in OXTR. The G allele of rs53576 was found on several different haplotypes at moderately high frequencies, whereas the A allele was associated primarily with a single dominant haplotype, both in Asian and in Caucasian samples. These findings suggest an ongoing selective sweep favoring the derived A allele at this SNP that is occurring specifically in Asian populations, and of balancing selection acting on both alleles of this SNP in Caucasian populations. However, associations of haplotypes with indicators of mating strategies (relationship quality and extradyadic sexual interest) suggest that other SNPs in OXTR, particularly rs237893 and rs237902, are more likely to be the sources of functional variation in this region of the gene. Implications are discussed.

SESSION: NEIGHBORHOODS

CHAIR: DANIEL BRIAN KRUPP

SATURDAY, MAY 30, 8:00 AM–9:20 PM, STOTLER 2

SA 8:00 AM

Local ecology influences reproduction in Northern Ireland even with controls for individual resource access

CAROLINE UGGLA (UNIVERSITY COLLEGE LONDON,
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Evolutionary models of human life history predict that ecological characteristics drive variability in reproductive timing by altering anticipated returns to inclusive fitness. Local extrinsic mortality risk, crime and a female-biased sex ratio, have all been predicted to accelerate reproduction. However, previous research has failed to isolate the impact of these ecological characteristics from individual factors, such as wealth. Here we utilize a unique longitudinal dataset from Northern Ireland (570 electoral wards; 62,339 individuals) that enables us to address this issue, and to apply a novel measure of extrinsic mortality based on a definition from public health. We demonstrate that high ward-level extrinsic mortality rate, crime rate and a female-biased sex ratio have additive positive impact on the risk of early motherhood, and that crime rate and extrinsic mortality rate predict early fatherhood. These effects remained significant after adjustment for potentially confounding factors, but were greatly attenuated when individual-level socioeconomic characteristics were

adjusted for. Our findings suggest that young individuals in this population are sensitive to several ecological cues, including local crime rate and adult sex ratio, which speed up first birth over and above the strong effects of individual resource access.

SA 8:20 AM

Institutions or Evolved Behavior? Evidence that 311 Hotlines are Leveraging Human Territoriality in the Maintenance of the Urban Commons

DAN O'BRIEN (NORTHEASTERN UNIVERSITY, D.OBRIEN@NEU.EDU)

Many North American municipalities have recently implemented 311 hotlines by which residents can request government services for non-emergency problems (e.g., pothole). They have been hailed as joining government and residents in the collaborative maintenance of public spaces and infrastructure (i.e., the *urban commons*). Because the effectiveness of 311 relies on the involvement of residents, it is important to know which motivations it harnesses. The more popular, *institution-centered approach* emphasizes that reports entail engagement with government, classifying them with traditional forms of political participation, like voting. In contrast, I take a *behavior-centered approach*, guided by an evolutionary perspective, focusing on the motivations that precipitate engagement. Reporting a public issue reflects care for the space, which would logically arise from the human capacity for territoriality (i.e., to feel ownership for spaces and objects). The talk presents evidence supporting this thesis from a study in Boston, MA that combines an individual's objective reporting behaviors, derived from 311 report archives, with a survey of self-reported attitudes and behaviors. Reports were made predominantly near an individual's home, and their volume and geographic extent were best explained by territorial motives. Political participation was only predictive of whether an individual reported issues beyond the home neighborhood.

SA 9:00 AM

The evolution of constrained sociality

TAMAS DAVID-BARRETT (UNIVERSITY OF OXFORD,
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All group living species face the problem of collective decision making, action coordination, and—in many cases—of free-riding. A subset of species solved this problem via constrained sociality, that is, the behaviour in which positive social affiliation is limited to a small number of others. Empirical studies of primate behaviour suggest that the underlying behaviour, the need to build long-term cooperative relationships among non-kin, arises due to complex ecological environments that are particularly difficult to exploit. At the same time a recent theoretical paper suggests that in a behavioural synchrony framework the presence of constrained sociality in large groups results in highly structured social networks. This

talk merges these results, in an evolutionary agent-based model of collective action in which agents can inherit their traits driving their ego network constructing behaviour; and shows that constrained sociality in humans can be an evolutionary adaption to group living in high dimensional environments.

SA 8:40 AM

A Solution to the “Paradox” of Inequality and Conflict

DANIEL BRIAN KRUPP (ONE EARTH FUTURE & QUEEN’S UNIVERSITY,
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Variance in fitness is thought to select for violence. In humans, fitness variance likely depends on income variance and, as it happens, income inequality is an exceptional predictor of the homicide rate in cross-sectional studies. Somewhat paradoxically, however, it is an unreliable predictor of homicide over time. This has led some to dismiss inequality as an important cause of violence. However, longitudinal studies (and many cross-sectional ones) of income inequality have not been appropriately mechanistic in their approach: interpersonal violence is primarily a local phenomenon, typically perpetrated by neighbors known to their victims, yet inequality tends to be measured at global spatial levels—as if violence instead occurs mainly between random individuals scattered throughout the larger population. In other words, the failure to link inequality to homicide temporally may be the consequence of careless measurement. I test this with income and homicide data from the fifty US states for five time periods from 1970 to 2010. As expected, a measure of inequality (the Palma) aggregated across lower spatial units (census tracts) significantly predicts the homicide rate and outperforms the same measure when derived from higher units (states). This suggests that the inequality-conflict “paradox” is simply an illusion.

SESSION: PARENTAL INVESTMENT

CHAIR: DAVID COALL

SATURDAY, MAY 30, 8:00 AM–9:20 PM, STOTLER 3

SA 8:00 AM

Father involvement predicted by a male’s own early environment in a U.S. sample of first-time fathers

RANDY CORPUZ (UCSB, CORPUZ@PSYCH.UCSB.EDU), DAPHNE BUGENTAL,
GILLIAN COLLOM

Across mammals, direct care of offspring by fathers is rare. Human fathers do direct energy toward direct care, however the level of this care varies greatly depending on context (e.g., culture, resource availability). In this study, we investigate the influence that a father’s own early environment plays in calibrating the amount of paternal care

directed toward his infant. In a U.S. sample of first-time fathers (n=229), we explore predictions drawn directly from life history theory. Males who experienced relatively harsh childhood environments are expected to be less involved in direct-care activities. We found support for this prediction. Those males raised in harsh childhood environments (self-reported) were rated by their partners as being less involved in direct care. This was not the case when looking at a male's own ratings of his involvement in direct care. Our findings suggest that males may be using cues from their childhood environment to calibrate their later reproductive strategies.

SA 8:20 AM

Morning sickness as a proximate mechanism for allocating resources to the fetus and placenta: A life history perspective

DAVID COALL (EDITH COWAN UNIVERSITY, D.COALL@ECU.EDU.AU), MICHELLE TICKNER, JULIE SARTORI, JIM CHISHOLM, ADRIAN CHARLES

An increased placental weight relative to birth weight is consistently associated with a higher risk of adult diseases such as diabetes and cardiovascular disease. However, the proximate mechanisms that reduce the nutrient supply to the fetus remain elusive. This study uses a life history framework to explore severe morning sickness as a potential mechanism. In adverse childhood environments it may be adaptive for an individual to reproduce earlier, produce more offspring and investing fewer resources in each. Here, it is proposed that morning sickness may reduce investment during pregnancy, reducing birth weight and increasing placental weight as an adaptive response to the reduced fetal supply. In a study of 513 pregnancies we found that morning sickness was associated with a higher placental weight and placental weight to fetal weight ratio. Factors across the lifespan also predicted morning sickness. These factors included higher levels of childhood stress (0–15 years of age), younger maternal age, a higher pre-pregnancy BMI, and an increase in depression symptoms during pregnancy. In a regression model, only childhood stress was no longer significant. This study suggests the early environment may influence morning sickness and placental weight through the adult phenotype as part of a reproductive strategy.

SA 8:40 AM

Certainty of Paternity in Humans Depends on Maternal Mating and Parenting Effort

DEBRA LIEBERMAN (UNIVERSITY OF MIAMI, DEBRA@MIAMI.EDU), JAN ANTFOLK, PEKKA SANTTILA

In most species, males do not give birth and cannot be guaranteed of their relatedness to offspring. Yet selection pressures relating to inbreeding avoidance and kin selection suggest that in species where relatives interact over the lifespan and both parents substantially invest in offspring, males should have evolved mechanisms for

discriminating their own young from young of other males. Despite the fundamental nature of familial relationships and the profound influence of relatedness on mating and cooperative behavior in humans, the cues men use to assess paternity and guide offspring-directed behavior have yet to be resolved. Here we fill this gap. Using a population-based sample, we test a novel paternity cue: the combined effect of perceived partner fidelity and observations of maternal-infant perinatal association (MPA). We show that this Fidelity-MPA cue—and not facial resemblance, coresidence duration, fidelity alone, or MPA alone—impacts a man's certainty of relatedness. Furthermore, we demonstrate that within the same sample, reported relatedness certainty mediates the relationship between Fidelity-MPA and daughter-directed sexual aversions and altruism. Taken with prior studies on human kin recognition, this study suggests that humans possess separate computational pathways for identifying different nuclear relatives and the mind translates perceived kinship cues into internal estimates of relatedness, which then regulate mating and cooperative effort.

SA 9:00 AM

Bioecological exchange theory: Both sexes trade resources for childcare when selecting a long-term mate

KATHERINE A. VALENTINE (SINGAPORE MANAGEMENT UNIVERSITY, KVALENTINE.2010@SMU.EDU.SG), NORMAN P. LI

We propose bioecological exchange theory, which resolves contradictions between sexual strategies theory and social role theory. People are hypothesized to flexibly shift their mate preferences in response to the percentage of resources they can provide within a couple, but not limitlessly. Men are hypothesized to facultatively shift between 25-100% of provisioning and women from 0-75% of provisioning, as seen in foragers. Both sexes are then hypothesized to trade provisioning for a reciprocal amount of childcare in a mate. Study 1 uses a sample of undergraduate Singaporean women ($n = 197$) to demonstrate that the more women expect to contribute to their household income, the less important social level becomes in a long-term mate. Study 2 uses a U.S. community sample ($n = 155$) to show that both men and women expect to make less than their spouses when low in income, women expect to make the same as their spouses when high in income, and men expect to make more than their spouses when high in income. Women expect greater equality of provisioning and childcare the more they make, while men expect to make more than their spouses and do less childcare in exchange the more they make.

SYMPOSIUM: ADVANCES IN BIOPOLITICAL RESEARCH CONCERNING POLITICAL LEADERSHIP

CHAIR: PATRICK A. STEWART

SATURDAY, MAY 30, 8:00 AM–9:20 PM, S110

In this symposium four presentations explore how evolutionary adaptations for the communication of group membership and, concomitantly, followership influence response to political and social leadership. The first two papers consider the relationships between followers and leaders when there is betrayal of trust—whether by the leaders themselves or by free-riding group members taking advantage of group members who pay the price of leadership. The following two papers address nonverbal signals, whether vocalic or facial displays, and how they influence followers. Taken together, these papers provide empirically driven insights informed by evolutionary theory to better understand interactions between leaders and followers.

SA 8:00 AM

The evolution of leadership: Tests of the service-for-prestige theory

MICHAEL E. PRICE (BRUNEL UNIVERSITY LONDON, MICHAEL.PRICE@BRUNEL.AC.UK), ANNABELLE KERN, MATTHEW RUFFELL, MARK VAN VUGT

According to the service-for-prestige theory, leader-follower relations evolved as exchanges in which a leader produces public goods for followers, and followers reciprocate by collectively producing prestige for the leader. Followers who help pay the costs of prestige production (“respectful” followers) risk being free-ridden by those who do not pay (“disrespectful” co-followers). Several key predictions of the service-for-prestige theory are based on the expectation that in order to solve this free rider problem, respectful followers will punish disrespectful co-followers, to the extent that these co-followers benefit from leader services. We tested these predictions in a study of how British and German business employees (N = 339) regard their supervisors, and in an online experiment focusing on how U.S. citizens (N = 1,008) regard President Obama. Both studies produced support for predictions. For example, although citizens who benefit from yet disrespect Obama are free riders compared to citizens who benefit from and respect Obama, only participants with high respect for Obama punished the former (i.e., the free riders) more than the latter (and they did so overwhelmingly); participants with low respect for Obama in fact reversed this pattern by punishing the latter more than the former (i.e. they favored the free riders).

SA 8:20 AM

Evolutionary Leadership Preferences: Group Interests, Distrust of Leaders, and Leader Evaluations

GREGG R. MURRAY (TEXAS TECH UNIVERSITY, G.MURRAY@TTU.EDU)

Evidence suggests evolutionary forces may influence modern leadership preferences. In particular, because humans benefited so greatly from sociality in the harsh evolutionary environment, theory suggests humans should be especially sensitive to violations of group interests. Further, as a result of the decision making authority

group leaders have to distribute resources and to organize activities, they are in position to exploit group resources for their personal gain at the expense of the group and its members. Due to this vulnerability, group members are expected to be particularly sensitive to potential violations of group interests by leaders. This research tests and finds support for assertions derived from the evolutionary argument presented here that evaluations of a political leader's willingness to violate group interests are associated with individuals' favorability toward and support for that leader. Moreover, the effect is most powerful for those most vulnerable to violations of group interests, which underscores the evolutionary argument. As well, the magnitude of effect of distrust of a leader relative to other factors that affect leader evaluations is striking. Distrust effectively competes with, and in many cases outperforms, specified prototypic leadership traits as well as assessments of policy performance.

SA 8:40 AM

Vocal Pitch and Legislative Success in the U.S. House of Representatives

BRYCE JENSEN DIETRICH (UNIVERSITY OF MISSOURI, DIETRICHB@MISSOURI.EDU)

For men, speaking with a deeper voice is evolutionarily advantageous. Generally, men who have deeper voices are seen as being more physically and socially dominant, which makes them seem like better leaders. In two separate studies, political scientists have shown this matters to voters, but does it matter to members of Congress (MCs)? MCs, unlike voters, are single-minded seekers of re-election. Thus, they probably pay little attention to their colleagues' vocal characteristics which makes the relationship between vocal pitch and leadership on Capitol Hill potentially more tenuous. However, recent research has shown that male Chief Executive Officers (CEOs) with deeper voices tend to be more successful. Not only do these individuals manage larger companies, but they tend to make more money. CEOs, like MCs, have constituents and they too can be voted out of office, which is why I think it is time to explore whether vocal pitch matters in the U.S. House of Representatives. Using a unique dataset of over 7,000 floor speeches, this paper asks whether male MCs are punished by their colleagues for speaking with a higher voice. Ultimately, I find high-pitched males are less likely to serve in leadership positions, receive fewer campaign contributions, attract fewer cosponsors, and are unlikely to be covered by the media. Collectively, these factors make them less effective in the legislature.

SA 9:00 AM

Facing their fears (amongst other emotions): The influence of political ideology on the evaluation of ambiguous displays

PATRICK A. STEWART (UNIVERSITY OF ARKANSAS-FAYETTEVILLE, PASTEWAR@UARK.EDU)

The recent work by Hibbing, Smith, Alford, and colleagues concerning the biological

roots of political ideology has suggested that the root of political and social ideological differences stems from greater recognition of threats in the environment. Specifically, those higher in conservatism are more likely to identify and/or respond to potential threats from conspecifics with fear or pathogenic threats with disgust. Based upon their theoretical construct, it can be hypothesized that individuals higher in self-reported conservatism will be more likely to identify negative emotions in ambiguous—and often subtle—facial displays, especially by putative leaders. To test the assertion that political conservatives are more likely to identify threatening facial displays, I propose a two-stage process of analysis. The first stage will utilize the Componential Processing Model (CPM) of emotion appraisal to characterize ten facial displays by the 2012 Republican Party presidential candidates that have been coded using the Facial Action Coding System (FACS). This will allow a more objective analysis of the different displays by the ten candidates. The second stage will involve the statistical analysis of data collected from 90 participants who evaluated the emotional intent of the candidate's facial displays in terms of fear, anger, disgust, and happiness.

SYMPOSIUM: PARENTING STRATEGIES IN MODERN AND EMERGING ECONOMIES

CHAIR: KERMYT G. ANDERSON

SATURDAY, MAY 30, 9:40 AM–11:00 AM, WRENCH AUDITORIUM

This symposium will examine parenting strategies across a variety of economies, both modern (i.e., fully industrialized and market-oriented) and emerging (making the transition from subsistence to wage labor). Parental investment has been one of the major focal points of evolutionary analyses of human behavior. Parenting behavior by males and females are often examined in isolation from each other, but of course in species that exhibit biparental care, such as humans, males and females coordinate the care they provide, reacting to the level provided (or not provided, in the case of male abandonment) by the other parent. The challenges faced by parents trying to successfully raise offspring vary across cultural contexts, and in particular across ecologies. The papers in this session focus on parenting strategies in both fully developed and emerging market economies. Gray and Brown discuss how partnership dynamics contribute to variation in fatherhood in the Caribbean island of St. Kitts. Anderson examines the establishment of legal paternity in U.S. birth certificates, noting how male absence influences birth outcomes and maternal investment in children. Starkweather uses time allocation data to examine the complementarity of men's and women's contributions to family economy in the semi-nomadic Shodagor of Bangladesh. And Davis and Kramer use data from the Tsimane and Maya to examine divergent household and reproductive strategies as these cultures transition to a market economy. Taken together, these papers draw attention to current research on the relationship between economic system and parenting strategies across a variety of cultural contexts.

SA 9:40 AM

Fatherhood in St. Kitts: Patterns and Predictors of Partnership and Paternal Dynamics in a Caribbean IslandPETER B. GRAY (UNIVERSITY OF NEVADA, LAS VEGAS, PETER.GRAY@UNLV.EDU),
EULYNIS BROWN

While paternal investment is a defining feature of human behavioral biology, it is also considerably variable, with previous research on Caribbean fatherhood pointing to a high prevalence of visiting relationships and blended families within which children are raised. The aims of the present study were to characterize key patterns of paternal behavior and to test three hypotheses concerning variation in fatherhood in the Caribbean island of St. Kitts. One hundred two fathers 21-40 years of age completed a questionnaire providing sociodemographic, partnership and paternal data. Fathers varied in relationship status (e.g., married, common-law, visiting), partnership quality (e.g., commitment) and paternal status (biological vs. stepfathering). Results revealed differences in partnership dynamics and paternal outcomes with respect to relationship status, with married men reporting higher quality partnerships and providing more paternal care than fathers in visiting relationships. Partnership quality predicted a number of paternal outcomes such as supportive paternal attitudes and paternal behavior. In both between- and within-subject analyses, biological fathers showed evidence of more favorable paternal attitudes and investments compared with stepfathers. Findings are discussed with respect to evolutionary theory, previous research on Caribbean fatherhood, and study limitations.

SA 10:00 AM

Paternity Confidence and Birth Outcomes: Results from Six Million U.S. Birth Certificates

KERMYT G. ANDERSON (UNIVERSITY OF OKLAHOMA, KGANDERS@OU.EDU)

Roughly 59.5% of births in the United States are to unmarried couples. Of these, 69.5% have paternity established at birth, that is, a legal father is identified on the birth certificate. (Among married couples, legal paternity is typically ascribed to the mother's husband.) Paternity establishment has important implications for paternal investment, particularly child support. I argue that paternity establishment reflects paternity confidence: men with high paternity confidence allow themselves to be named on the birth certificate, while men with low paternity confidence do not. This paper uses U.S. data on 5.9 million births to unmarried women from 2009 through 2013, to examine the following predictions: 1) paternity confidence will be predicted by higher maternal socioeconomic status (education, Medicaid use, and frequency of prenatal care) and greater maternal health (measured by BMI, diabetes, hypertension, and STIs); and 2) paternity confidence will negatively predict deleterious birth outcomes (premature delivery, unusual labor duration, and caesarian section) and positively predict maternal investment in offspring

(birthweight and breastfeeding). Logistic regression supported nearly all predictions. Among the unexpected results: while pre-pregnancy diabetes predicts low paternity confidence, gestational diabetes increases the odds of high paternity confidence; and paternity confidence is not correlated with c-sections.

SA 10:20 AM

Strategies for Production and Reproduction: Complementarity Among the Shodagor

KATHRINE STARKWEATHER (UNIVERSITY OF MISSOURI, KESC99@MAIL.MISSOURI.EDU)

The Shodagor are a semi-nomadic people who live and work on their small, wooden boats on the rivers of Bangladesh. Twelve months of fieldwork show that Shodagor women and men contribute to the family economy in several ways, with both mothers and fathers engaging in childcare and working outside the home, fishing and selling goods. Men's and women's modes of production and reproduction complement one another and can be organized into 4 primary family strategies: (1) father works all year, mother stays home as the primary caregiver; (2) father works during the rainy season and stays home as primary caregiver during the dry season, while mother is primary caregiver during the rainy season and works during the dry season; (3) mother and father work together and take children along, both engaging as caregivers; and (4) mother and father both work all year while another family member watches the children. This talk will use time allocation data to examine the complementarity of Shodagor men's and women's roles through the lens of life history theory, examining these four family strategies, describing circumstances that lead a family to engage in a particular strategy, and the outcomes of each strategy for children.

SA 10:40 AM

Evidence of Diverging Strategies within Transitioning Populations: Wealth Stratification, Formal Education, and Fertility Differentials in Two Small Scale Societies

HELEN E. DAVIS (UNIVERSITY OF UTAH, HDAVIS81@UNM.EDU), KAREN L. KRAMER

Worldwide, many traditional subsistence communities are undergoing economic and demographic transitions. This paper aims to investigate the effect of these transitions on family level variation in wealth, fertility, and investment in formal education through path analysis and multi-level modeling. Although families now have increased access to formal education, market labor opportunities, health care and market foods, subsistence has diversified with some households pursuing wage labor and others agricultural intensification. Both economic strategies generate cash and facilitate market integration, but have different impacts on the value of children.

Using data from two populations in transition, we investigate the potential emergence of markedly different strategies by Maya and Tsimane parents. We hypothesize that among those further along in the transition to the market economy, wage laborers will have significantly lower fertility compared to parents who invest in agricultural intensification. Further, we suggest that the latter continue to benefit from a large labor base and the economic contributions of children, while parents who shift to wage labor will invest more in childrens formal education and training.

SESSION: PERSONALITY

CHAIR: BRENDAN ZIETSCH

SATURDAY, MAY 30, 9:40 AM–11:00 AM, STOTLER 1

SA 9:40 AM

Attachment as Resource and Risk Management Strategies

LEI CHANG (THE HONG KONG INSTITUTE OF EDUCATION, LCHANG@IED.EDU.HK)

Attachment is conceptualized as life history strategies in response to two sets of environmental conditions that are mediated and embodied by caregiving and caregivers. The two environmental sets are Resources relative to population density and competition and extrinsic Risk levels and stochastic variations also known as mortality and mobility. Calibrated based on these two environmental conditions early in life, attachment styles are related to resource and risk management strategies later in life. Resource includes external or material resources as well as internal or bioenergy. Within this life history framework, two studies based on 169 Chinese adults and 81 Chinese children, respectively, were conducted to test and to have partially supported the hypothesis that attachment anxious ambivalence was associated with health concerns and body energetic conservation, conservative spending, and risk aversion, and that attachment avoidance was associated with high spending and squandering and impulsivity and risk taking.

SA 10:00 AM

Individual Differences in Self-Esteem and Embodied Capital: Expanding the Sociometer Hypothesis

DALLAS NOVAKOWSKI (UNIVERSITY OF REGINA,
DALLASNOVAKOWSKI@GMAIL.COM), SANDEEP MISHRA

The sociometer hypothesis has described self-esteem largely as a subjective index of an individual's relational value to others, serving as an affective and motivational system to detect and respond to changes in the quality of social relationships. While self-esteem has been shown to be sensitive to events that threaten devaluation and exclusion, as well as self-evaluations on dimensions such as competence and sociability, information regarding an individual's relational value can be gathered

from other sources. Since overall quality can influence value in the eyes of others, indicators of one's own quality should be processed by the sociometer, in turn influencing self-esteem. The current study examined this hypothesis by testing self-esteem's relationship with embodied capital, intrinsic traits that allow for effective social competition (e.g. attractiveness, intelligence, strength). The results indicated a positive association between self-esteem and self-reported embodied capital, expanding on the notion that the sociometer may be responsive to individual-level traits that are likely to influence relational value in the future.

SA 10:20 AM

Individual Differences in Fearfulness and Card Selection on the Wason Task

JOSEPH H. MANSON (UCLA, JMANSON@ANTHRO.UCLA.EDU)

A large body of research has used the Wason selection task to examine domain-specific, human-typical reasoning processes. Less attention has been paid to individual variation in Wason task performance. Both accuracy (choice of the P and not-Q cards) and reaction time have been found to be related to general intelligence, trait harm avoidance (for hazard avoidance tasks) and emotional intelligence (for social contract tasks). This study was the first to test hypothesized associations between the major dimensions of personality and performance on descriptive, social contract and hazard avoidance Wason tasks. MTurk workers (N = 253) completed five Wason tasks and the HEXACO-60 personality inventory. Predicted associations between social contract Wason accuracy and Honesty-Humility (positive) and Agreeableness (negative) were not found, nor was Emotionality associated, as predicted, with hazard avoidance accuracy. However, participants higher on the Fear facet of Emotionality selected significantly more cards on hazard avoidance tasks (but not on social contract tasks), relative to the number of cards selected on descriptive tasks. These results are interpreted in light of Oaksford and Chater's (1994) Bayesian (information gain optimization) analysis of the Wason task. More fearful people may place greater value than less fearful people on marginal information gains regarding hazards.

SA 10:40 AM

A test of the facultative calibration/reactive heritability model of extraversion

BRENDAN ZIETSCH (UNIVERSITY OF QUEENSLAND, ZIETSCH@PSY.UQ.EDU.AU),
HANNAH HAYSOM, DORIAN MITCHEM, ANTHONY LEE, NICHOLAS MARTIN,
MARGIE WRIGHT, MATTHEW KELLER

A model proposed by Lukaszewski and Roney (2011) suggests that each individual's level of extraversion is calibrated to other traits that predict the success of an extraverted behavioural strategy. Under "facultative calibration", extraversion is not directly heritable, but rather exhibits heritability through its calibration to directly

heritable traits (“reactive heritability”). The current study uses biometrical modelling of 1659 identical and non-identical twins and their siblings to assess whether the genetic variation in extraversion is calibrated to variation in facial attractiveness, intelligence, height in men and body mass index (BMI) in women. Extraversion was significantly positively correlated with facial attractiveness in both males ($r=0.11$) and females ($r=0.18$), but correlations between extraversion and the other variables were not consistent with predictions. Further, twin modelling revealed that the genetic variation in facial attractiveness did not account for a substantial proportion of the variation in extraversion in either males (2.4%) or females (0.5%).

SESSION: HEALTH

CHAIR: MICHAEL BANG PETERSEN

SATURDAY, MAY 30, 9:40 AM–11:00 AM, STOTLER 2

SA 9:40 AM

Healthy Outgroup Members are Psychologically Represented as Sick Ingroup Members

MICHAEL BANG PETERSEN (AARHUS UNIVERSITY, MICHAEL@PS.AU.DK), LENE AARØE

A range of studies has established that people who have strong pathogen avoidance motivations are more hostile towards outgroups. In the present series of studies, we provide the first direct evidence of the psychological mechanisms that link psychological responses towards outgroups and pathogens. Using a memory confusion protocol, the “Who Said What?” design, we show that healthy outgroup members are represented using the same psychological categories that represent manifestly sick ingroup members. The “Who Said What?” design is traditionally used to investigate race categorization. We extend this design to offer a new understanding of the mechanisms linking pathogen avoidance and hostility towards outgroups. In two samples (including one nationally representative), we show that race categorization is reduced when ingroup members show physical signs of infectious disease. In a third study, we show that this effect is even stronger when pathogen avoidance motivations are experimentally primed. We argue that these effects have important consequences for our understanding of the evolution of a link between pathogen avoidance and outgroup sentiments. This link, we argue, is best viewed as a by-product rather than as an adaptation.

SA 10:00 AM

Shape cues to health: Evidence from geometric morphometrics

IAN D. STEPHEN (MACQUARIE UNIVERSITY, IAN.STEPHEN@MQ.EDU.AU), VIVIAN HIEW, VINET COETZEE, DAVID I. PERRETT

Several aspects of facial appearance contribute to attractiveness, including shape cues such as symmetry (Grammer & Thornhill, 1994), averageness (Rhodes et al., 2001) and sexual dimorphism (Thornhill & Gangestad, 1999). It has been suggested that these facial cues represent cues to underlying health, thereby conferring an evolutionary advantage to individuals who find them attractive. The link between facial cues and health is therefore central to evolutionary explanations of attractiveness. Previously, studies linking facial cues directly to health have been infrequent (Coetzee et al., 2009), and have had varying levels of success (Pound et al., 2014; Rhodes et al., 2001, 2003; Thornhill & Gangestad, 2006). In the current study, we apply geometric morphometric methodology to facial shape data from 278 participants from South Africa, Malaysia and the UK to produce models that successfully predict aspects of underlying health—percentage body fat, body mass index (BMI) and blood pressure. Predicted values of BMI and blood pressure, but not percentage body fat, correlate with health ratings, and predicted values of health ratings correlate with these two measured health variables. This suggests that facial shape provides a valid cue to health, and may pave the way for non-invasive automated screening for cardiac disease risk.

SA 10:20 AM

Men's testosterone and cortisol predict their preferences for healthy color cues in faces

MICHAL KANDRIK (UNIVERSITY OF GLASGOW, M.KANDRIK.1@RESEARCH.GLA.AC.UK), AMANDA C. HAHN, JOANNA WINCENCIAK, CLAIRE FISHER, LISA M. DEBRUINE, BENEDICT C. JONES

Recent work on the behavioral immune system suggests that preferences for facial cues of health function to reduce our exposure to pathogens and are stronger among individuals who are particularly susceptible to infectious diseases. Other recent work on men's immune function found that immune responses to a vaccine were positively correlated with testosterone and that this correlation was strongest among men with low cortisol. Here we combine these two recent research streams to investigate whether testosterone and cortisol also interact to influence men's preferences for health-related color cues in faces. We collected saliva samples from 47 men in five weekly test sessions, also measuring their preferences for health-related facial color cues in each test session. Analyses of these preferences showed that men with high testosterone levels generally showed weaker preferences for health-related color cues and that this relationship was particularly strong among men with low cortisol. Our results for men's facial color preferences, together with those of other recent work on men's immune system response, suggest that testosterone and cortisol have complementary effects on men's behavioral and physiological immune systems.

SA 10:40 AM

Cannabis use vs helminthiasis among Congo Basin foragers: Evidence of self-medication?

CASEY ROULETTE (WASHINGTON STATE UNIVERSITY,
CASEY.ROULETTE@EMAIL.WSU.EDU), EDWARD H. HAGEN

Vertebrate-helminth coevolution has shaped the basic structure and function of the immune system and might have selected for behavioral anti-parasite strategies, such as self-medication with plant toxins. Similar strategies were perhaps important during hominin evolution as most non-human primates and extinct and extant hunter-gatherer populations are heavily infected with parasites. Because many recreational drugs, including cannabis, contain anthelmintic compounds, it is possible that the widespread use of these substances is due, in part, to a (unconscious) motivation to self-medicate against parasites. To test this hypothesis we investigated the relationship between cannabis use and helminthiasis among the Aka foragers of the Congo. Self- and peer-reports of cannabis use were collected among n=379 adult Aka. The prevalence of use was very high among men but low among women. Additional questions and urine (for THCA, a metabolite of THC), saliva (for cotinine, a metabolite of nicotine), and stool (for worm burden) specimen collections were thus restricted to a subset of men (n=62). THCA had significant negative correlations with worm burden, and with worm reinfection one year after treatment with a commercial anthelmintic. These data, and those of a previous tobacco-vs-helminths study, provide the first support for the self-medication hypothesis.

SESSION: COALITIONS

CHAIR: ROBERT LYNCH

SATURDAY, MAY 30, 9:40 AM–11:00 AM, STOTLER 3

SA 9:40 AM

The Brawler, the Brainier: Evolutionary repercussions of social conflict over neuroanatomical volume indicators and life history in non-human primates

MATEO PEÑAHERRERA AGUIRRE (UNIVERSITY OF NEW BRUNSWICK, CANADA,
MPEAHER@UNB.CA), HEITOR BARCELLOS FERREIRA FERNANDES

Past research has demonstrated an important connection between social complexity (e.g. group size, allogrooming frequency, coalition and alliance formation) and neuroanatomical volume indicators (NVIs, e.g. neocortex ratio, endocranial volume) in nonhuman primates, ungulates and carnivorans. We analyzed the relation between indicators of social conflict (male and female intensity and frequency of conflict, and formation of coalitions and alliances) and NVIs in 49 species of nonhuman primates. These indicators positively predicted NVIs (the strength of the relation varied according to each predictor from strong to moderate). However, as closely-related species are expected to be more similar to each other than to more distant relatives, phylogenetic generalized least squares regressions (PGLS) were conducted to test the consistency of the aforementioned results. All PGLS regressions demonstrated that

the relationships between social conflict indicators and NVIs were still significant. Moreover, a conflict factor (C) was extracted based on the levels of intensity and frequency of conflict, and formation of coalitions and alliances, which predicted NVIs with and without phylogenetic controls. We also demonstrate that the positive effect of social conflict upon a slow life history factor (composed of interbirth interval, gestation length, age at female sexual maturity, litter size, longevity) is mediated by NVIs.

SA 10:00 AM

A Male Coalitional Competition Framework For Understanding Attitudes Towards Gay Men

TANIA REYNOLDS (FLORIDA STATE UNIVERSITY, REYNOLDS@PSY.FSU.EDU)

Research indicates that men are more hostile towards gay men than gay women. This puzzling phenomenon makes sense in light of male coalitional competition. If men competed heavily in coalitions across human evolution, they should prefer traits in other men that increase the likelihood of success (e.g., considerable physical strength, high pain tolerance). We contend that hostility towards gay men stems from a dislike of perceived lack of masculinity (i.e., absence of traits that would typically help coalitions in aggressive competitions) rather than sexual orientation, per se. Across four studies, we demonstrate that men attend more to cues of masculinity/femininity in other men than sexual orientation. These cues affect men's perceptions of and preferences for other men as coalitional partners, particularly in physically competitive contexts.

SA 10:20 AM

Outgroup Prejudice: An Evolutionary Perspective

SERDAR KAYA (SIMON FRASER UNIVERSITY, SKA99@SFU.CA)

This study investigates the root causes of outgroup prejudice. The literature explains prejudice primarily with threat perceptions, or the lack of optimal intergroup contact. The literature also emphasizes the generalized nature of prejudice—that is, individuals who are prejudiced against one outgroup are more likely to be prejudiced against other outgroups as well. This study does not react to these established perspectives. Instead, it argues from an evolutionary social psychological perspective that the root cause of outgroup prejudice is the activated human sense of insecurity. Individuals who fear and distrust other people in general are more likely to be prejudiced against all of their salient outgroups—hence the generalized nature of prejudice. In this process, agents of socialization act as mediating variables that activate or deactivate feelings of insecurity, and more importantly teach individuals which groups to direct their negative attitudes to. To test that hypothesis, the paper specifies six multilevel regression models, and analyzes the factors that lead to prejudice against six salient minority groups: immigrants, Muslims, Jews, homosexuals, gypsies, and

the people of different races. Data come primarily from the latest wave of the European Values Study, and covers 43 European countries. In all six cases of outgroup prejudice, findings indicate a strong and consistent support for the proposed theory.

SA 10:40 AM

The impact of cross cousin marriage on alliances and fitness outcomes among the Yanomamö

ROBERT LYNCH (UNIVERSITY OF MISSOURI, LYNCHRF@MISSOURI.EDU), ROBERT WALKER, MARY SHENK, DAVID A. NOLIN, NAPOLEON CHAGNON

Marriage between closely related ‘cross cousins’ (a cousin through an ancestor’s opposite-sex sibling) is the most common cross cultural prescriptive marriage system (Murdoch, 1949). The negative effects of such inbreeding caused by marriage between close relatives may, however, be offset by the benefits of social exchange generated through alliances (Chagnon, 1979a). We examined multi-generational genealogies of Yanomamö Indians (Venezuela) to test the effects of cross cousin marriages on: 1) alliances between members of patrilineages and 2) fitness outcomes across three generations. We found that in exchange for women, smaller patrilineages gain support and protection from larger patrilineages and that cross cousin marriage helps to ensure the reliability of this arrangement. We also report that marrying relatives, and in particular marriage between cross cousins, is associated with the higher lifetime reproductive success for the parents of the spouses, particularly fathers, but that the inbred offspring of consanguineous marriages suffer reduced fertility. These results suggest that cross cousin marriage practices may provide social benefits by ensuring the reciprocal exchange of women and stable alliance formation between lineages. In support of this interpretation we show that members of patrilineages that give away female cross cousins as marriage partners receive more women in return, are attacked less often and are at lower risk of being abducted by their exchange partners.

SESSION: LIFE HISTORY

CHAIR: CURTIS DUNKEL

SATURDAY, MAY 30, 9:40 AM–11:00 AM, S110

SA 9:40 AM

Using the California Q-sort Measure of Life History Strategy to Predict Sexual Behavioral Outcomes

CURTIS DUNKEL (WESTERN ILLINOIS UNIVERSITY, C-DUNKEL@WIU.EDU), LAUREN SUMMERVILLE, EUGENE MATHES, SEAN KESSELRING

The validity of the California Q-sort measure of life history (LH) strategy was examined by conducting secondary analyses on longitudinal data that included the Q-sort measure of LH strategy at multiple ages and measures of an array of

reproductive behaviors. LH strategy Q-sort ratings showed stability from ages 14 to 23. Additionally, the ratings were found to be good prospective and age concurrent predictors of many reproductive behaviors. For example, LH strategy as rated at age 14 was found to be a significant predictor of age of sexual debut, number of sexual partners, frequency of intercourse, number of abortions, age at birth of first child, and likelihood for having contracted venereal disease as measured up to age 32. Future research should test the further utility of the measure focusing on ways to reduce its cumbersomeness without reducing its ability to predict behavioral outcomes.

SA 10:00 AM

Environmental unpredictability and competition in shaping moral reasoning as a manifestation of life history strategies

NAN ZHU (THE CHINESE UNIVERSITY OF HONG KONG, DARREN_ZHU730098@MSN.COM), LEI CHANG

Moral reasoning can be seen as part of human life history strategies that are responsive to two overarching environmental forces—intraspecific competition and environmental unpredictability. Altruistic and prosocial moral reasoning represents high-K, slow life history strategies that facilitate long-term cooperation and alliance necessary for group living, whereas self-serving moral reasoning represents low-K, fast strategies best suited for short-term gains in unstable living conditions. In two survey studies, we tested and supported the hypotheses that indicators of environmental unpredictability (such as negative life events, financial insecurity, and parental separation) were negatively associated with high-K, slow life history strategy and prosocial moral reasoning (Study 1, $n = 303$), and that the relationship between competition and prosocial moral reasoning was negative in relatively impoverished rural environment but positive in relatively affluent but competitive urban environment (Study 2, $n = 296$). In a final experiment ($n = 106$), imagined unpredictable environment promoted self-serving moral reasoning while imagined competitive environment increased prosocial moral reasoning. These findings provided a life history perspective on moral and social development, suggesting that stable and controllable environment with moderate competition facilitates the co-development of slow life history strategies and prosocial and altruistic morality.

SA 10:20 AM

The Crowded Life is a Slow Life: Evidence across Nations, States, and Individuals

OLIVER SNG (ARIZONA STATE UNIVERSITY, OLIVER.SNG@ASU.EDU), STEVEN L. NEUBERG, MICHAEL E. W. VARNUM, DOUGLAS T. KENRICK

Early studies of humans and nonhuman animals focused on the pathological effects of crowdedness on behavior. Taking a fresh perspective to an old topic, we draw upon life history theory to examine how population density influences a host of traits in human

populations, at multiple levels of analysis. Across nations (Study 1) and the U.S. states (Study 2), denser populations exhibit traits corresponding to a slower life history strategy, including lower fertility, greater long-term mating orientation, later marriage age, greater investment in embodied capital, and a more future-focused time orientation. In addition, in experimental studies using written and auditory manipulations of density (Studies 3 and 4), individuals led to perceive high density were more likely to delay gratification in a financial decision, suggesting a shift to a future-focused orientation. The current work thus suggests the presence of psychological sensitivities to environmental density, creating shifts towards slower life history strategies under high densities. We discuss implications of our findings for thinking about density's role in human behavioral ecology, and for understanding cultural and geographical variation in social behavior.

SA 10:40 AM

The functional basis of individual differences in personality: A life history examination

ANDREW TEMPLETON (UNIVERSITY OF REGINA, A.TEMPLETON@SASKTEL.NET),
SANDEEP MISHRA

Life history theory (LHT) provides a functional evolutionary account of how individuals differentially allocate effort, time, and energy toward important functions (e.g., reproduction, growth). LHT thus provides one of the few functional accounts for individual differences in personality (i.e., consistency in behavior across contexts). In the traditional social psychological and personality literature, individual differences have been accounted for through various personality constructs (e.g., the “Big Five”) that provide proximate, descriptive accounts of individual differences. However, a functional approach requires understanding meaningful personality traits as products of natural selection (either as adaptations, or byproducts of adaptations). Consequently, any stable individual differences in personality that are of functional significance must necessarily be associated with individual differences in life history. Others have identified individual differences in personality that are related to life history (e.g., Figueredo et al., 2005, Jonason and Tost, 2010). However, many “traditional” personality characteristics have yet to be studied. We examined several stable personality characteristics often studied in social and personality psychology (grit, self-control, self-efficacy, future time orientation) and assessed their connection to individual differences in life history. Results indicate that all of these traits share variance with individual differences in life history strategy. These results have implications for better understanding the functional basis of personality.

SESSION: FACULTATIVE RESPONSES IN MATING AND REPRODUCTION

CHAIR: LARS PENKE

SATURDAY, MAY 30, 11:20 AM–12:40 PM, WRENCH AUDITORIUM

SA 11:20 AM

Dressed to Unimpress: How Sexual Cues Influence Non-Sexual DomainsJESSICA AYERS (CALIFORNIA STATE UNIVERSITY, FULLERTON,
JESSIAYERS90@CSU.FULLERTON.EDU), AARON GOETZ

The outcomes of women's intrasexual competition have received considerable investigation, but the specific characteristics women attend to when competing has received far less attention. In two studies, Vaillancourt and Sharma (2011) documented that the "sexiness" of a female confederate increased female participants' hostility and indirect aggression toward her. However, Vaillancourt and Sharma (2011) were not able to determine the specific cues women attended to when making these decisions as multiple cues were manipulated in the confederate's appearance. Building upon these cues, we sought to replicate and further investigate the individual physical cues women may attend to in rivals and how these cues may be used to influence other unrelated domains of interpersonal interactions. Specifically, we manipulated the amount of cleavage shown in an image across two conditions. Using a large and diverse sample of women (N = 732), we demonstrated that when more cleavage was shown, the target woman was perceived more negatively, even in domains seemingly unrelated to physical attractiveness and mating. Women's physical attractiveness, intrasexual competitiveness, and social comparison orientation did not moderate this effect.

SA 11:40 AM

Sexual selection for symmetry: Three indicators of developmental instability in relation to mating behaviour and success in humansTOBIAS KORDSMEYER (GEORG-AUGUST-UNIVERSITY GÖTTINGEN,
TOBIAS.KORDSMEYER@PSYCH.UNI-GOETTINGEN.DE), LARS PENKE

Developmental instability (DI) has been proposed to relate negatively to indicators of evolutionary fitness, like male quantitative mating success. One suggested indicator is fluctuating asymmetry (FA), random deviations from perfect symmetry in bilateral bodily traits. A meta-analytically robust negative association between FA and number of lifetime sexual partners has been shown in men. We examined the relationship between bodily FA (12 traits) and indicators of mating success (lifetime sexual partners, one-night stands, extra-pair copulation (EPC) partners, having been an EPC partner) in 284 individuals (141 males, age 19-30 years). Two further proxies of DI, minor physical anomalies (MPAs) and asymmetry in palmar atd angle, were assessed also. More asymmetric men, but not women, had fewer lifetime sexual partners, replicating previous findings in a large sample and using a highly aggregated FA index. This relationship could be explained by fewer one-night stands and having been an EPC partner less often, but not by having EPC partners. Surprisingly, controlling for various indicators of attractiveness, dominance and flirting dispositions did not attenuate this relationship, questioning their mediating role. Only spurious associations were found for MPAs and atd angle in both sexes,

indicating differential relationships between developmentally distinct manifestations of DI and sexual selection.

SA 12:00 PM

Death and taxes: Shifting fertility intentions in response to mortality and resource scarcity cues

LORA ADAIR (KANSAS STATE UNIVERSITY, LORAP@KSU.EDU), GARY L. BRASE

Life History Theory explains that individuals raised in an environment characterized by resource scarcity and harshness (a “fast” life history strategy) tend to invest in current reproductive efforts at the expense of than somatic efforts. Individuals raised in an environment characterized by resource abundance and low mortality rates (a “slow” life history strategy) invest in somatic efforts, and marriage and childbearing are delayed. Importantly, recent work has suggested that not only are individuals’ reproductive decisions shaped by these cues from their early environment, cues in their current ecology also produce important differences in fertility intent. However, this work has only manipulated mortality-relevant information, in spite of the fact that Life History Theory contends that both resource and mortality-relevant ecological cues shape reproductive decision-making. The current work responds to this need by manipulating both mortality and resource-relevant information in one’s current environment (N = 249, Mage = 24, SDage = 6.10, 61.4% female), finding that exposure to mortality primes up-regulated fertility intentions for individuals with “fast” life history strategies, and facilitated the down-regulation of fertility intentions for individuals with “slow” life history strategies. Interestingly, resource scarcity primes were associated with the postponement of fertility plans in individuals’ with “fast” life history strategies.

SA 12:20 PM

Male general intelligence does not increase female sexual attraction

LARS PENKE (GEORG AUGUST UNIVERSITY GOETTINGEN, LPENKE@UNI-GOETTINGEN.DE), RUBEN C. ARSLAN, JULIANE STOPFER

Human general intelligence (g) has been hypothesized to be an indicator of genomic mutation load and under sexual selection for indirect genetic benefits, implying that high g should be sexually attractive. People clearly report preferences and assortatively mate for intelligence, but these effects can be due to direct phenotypic benefits of g and social homogamy. Only one study (Prokosch et al., 2009) with methodological limitations has directly tested if higher intelligence increases initial sexual attraction. We tested 88 young men on eight intelligence subtests, from which a g factor was extracted, and on the Big 5 personality dimensions. Standardized photos, voice recordings and videotapes of three behavioral tasks (reading headlines, charade, tell-a-joke) were also taken. A group of 16 women could accurately judge intelligence and extraversion from the videos. A second group of 16 women rated the

attractiveness of the men as long-term and short-term partners. g had no effect on short-term attractiveness, but a small positive effect on long-term attractiveness, though only after extraversion and independently rated physical attractiveness were controlled. A third group of 25 women received information about each men in five steps, with intelligence cues being increasingly present over and above physical attractiveness information, and rated long- and short-term attraction after each step. For both contexts, intelligence cues did not alter initial impressions based on physical attractiveness. Overall we found no support for intelligence being sexually attractive to women on first encounters.

SESSION: CULTURE AND EVOLUTION

CHAIR: JOSEPH WATTS

SATURDAY, MAY 30, 11:20 AM–12:40 PM, STOTLER 1

SA 11:20 AM

The Function of Human Sacrifice in Austronesia

JOSEPH WATTS (UNIVERSITY OF AUCKLAND, ME@JOSEPHWATTS.ORG), OLIVER SHEEHAN, QUENTIN ATKINSON, JOSEPH BULBULIA, RUSSELL GRAY

Human sacrifice is found in the archaeological records of early human societies, the ethnographies of recent indigenous world cultures, and features in the texts of today's most successful religions. While the potential prosocial effects of belief in supernatural punishment has received substantial attention, painful and dysphoric rituals are capable of increasing group cohesion, suggesting that human sacrifice may serve a function. Using a Bayesian phylogenetic method, capable of modelling ancestral history and getting at causality, we test for the coevolution of human sacrifice and social stratification in a sample of 87 indigenous Austronesian cultures. We find strong evidence that human sacrifice drives the evolution of highly stratified societies and the loss of social stratification. In Austronesia human sacrifice was often used by elites as a form of coercion, highlighting the darker functions of religion, and suggesting that human sacrifice acted as a stepping stone in the evolution of large complex societies.

SA 11:40 AM

Resolving Galton's Problem: Cultural Trait Origin is not the Same as Cultural Trait Maintenance

RANDY THORNHILL (UNIVERSITY OF NEW MEXICO, RTHORN@UNM.EDU), COREY L. FINCHER

Comparative methodology is often misapplied in biology and biology's subfield of research on human cultural diversity. The widely held assumption of non-independence among historically-related cultures—often called Galton's

problem—and among species errs by not understanding the two distinct and complementary categories of causation that account for an extant trait—the phylogenetic origin of the trait (cultural or otherwise) and the maintenance of the trait after its phylogenetic origin. Phylogenetic correction for dependence is required in the comparative study of a trait’s phylogenetic origin. Otherwise, the trait’s location of origin in a phylogenetic tree cannot be identified. But such correction is unnecessary and misleading for the comparative study of the causation of a trait’s maintenance after its phylogenetic origin. Across cultures, even closely related cultures, causes that are specific to each culture act to maintain cultural similarities, which makes such similarities causally independent. These specific causes arise from the functional design of culture-acquisition psychological adaptation, which discriminatively adopts cultural items that are solutions to local adversity affecting inclusive fitness. Among closely related species, similarities are maintained by lineage-specific, and hence independent, evolutionary causal processes.

SA 12:00 PM

Universal Cognitive Mechanisms Explain the Cultural Success of Bloodletting

HELENA MITON (UNIVERSITY OF LYON, HELENA.MITON@GMAIL.COM), NICOLAS CLAUDIÈRE, HUGO MERCIER

Bloodletting—the practice of letting blood out to cure a patient—was for centuries one of the main therapies in the West. We examine three potential explanations for bloodletting’s cultural success: efficiency, defense by prestigious sources—ancient physicians—, and attractiveness through cognitive mechanisms. First, a review of the anthropological data available in eHRAF revealed that bloodletting is practiced by many unrelated cultures worldwide, for different indications and in different ways. This suggests that the success of bloodletting cannot only be explained by its medical efficiency or by the prestige of Western physicians. Instead, some universal cognitive mechanisms likely make bloodletting an attractive form of therapy. We further test this hypothesis using the technique of transmission chains. Three experiments are conducted in the U.S., a culture that does not practice bloodletting. Studies 1 and 2 reveal that stories involving bloodletting survive longer than some other common therapies, and that the most successful variants in the experiments are also the most successful variants worldwide. Study 3 shows how a story about an accidental cut can turn into a story about bloodletting. This research demonstrates the potential of combining different methodologies—review of anthropological data, experiments, and modelling—to investigate cultural phenomena.

SA 12:20 PM

Transmission dynamics and cultural evolution within a multigenerational Bengali migrant community in the UK

KESSON MAGID (DURHAM UNIVERSITY, KESSON.MAGID@DURHAM.AC.UK), ALEX

MESOUDI

Cross-cultural studies call into question whether human cognitive structures for conceptualizing the environment and relating with others are universal or culturally specific traits. If cognitive styles vary between cultures, the mechanisms and speed of transmission of traits through cultures remain unclear, as does the importance of horizontal (peers) or vertical (parents) factors for transmission. Here we use migration from Bangladesh to the UK as a natural experiment in adaptation of cognitive styles. We tested measures of social orientation and cognitive style across multiple generations of 187 Bengali migrants to the UK, plus 99 British-born individuals with British-born parents, all resident in London, UK. Individualism and collectivism were higher among the Bangladesh-born, as was the attribution of motivations of others to situations rather than dispositions, as compared to children of British-born parents. Individualists identified positively with mainstream British values, while collectivists agreed more with heritage values. Attributional style did not differ between children of Bangladesh-born migrants and British-born parents, but children of migrants were more collectivist. We conclude that transmission dynamics appear trait dependent: with individualism transmitted more horizontally, and collectivism more vertically. These individual-level cultural transmission dynamics generate and maintain population-level variation in psychological characteristics that lead to cultural evolution.

SESSION: NETWORKS

CHAIR: MATTHEW M. GERVAIS

SATURDAY, MAY 30, 11:20 AM–12:40 PM, STOTLER 2

SA 11:20 AM

The relational contexts of generosity in a Fijian social network: Evidence from a RICH economic game

MATTHEW M. GERVAIS (RUTGERS UNIVERSITY, MATTHEW.M.GERVAIS@GMAIL.COM)

Experimental economic games have shed significant light on human social behavior. However, most games involve anonymous recipients and tap norms for one-shot interactions; they do not generalize to enduring, networked relationships in human communities, which are the cornerstone of human adaptation. This talk introduces RICH economic games that integrate recipient identities and tap Recipient Identity-Conditioned Heuristics (RICHs) such as reputation, kinship norms, and need-based helping, key aspects of human uniqueness. I focus on the Allocation Game, an N-recipient Dictator Game across a photo array of known targets, validated in the male social network of one fishing-horticultural village in Fiji characterized by both communalism and hierarchy. Levels of generosity in this game are higher than those found using anonymous-target games in neighboring villages, and cannot be accounted for by the N recipient design. MCMCglms with model selection reveal

that recipient need(+), chiefness(+), anger-proneness(-), and education(-) all influence allocations, along with dyadic relatedness(+), shared church(+), and love(+) from A to B. Decider traits do not make the best models, underscoring the role of recipient identities in driving decisions. RICH games hold promise for mapping population variation in the norms and sentiments regulating human communities, expanding the toolkit of the evolutionary behavioral sciences.

SA 11:40 AM

Hunter-gatherer residence camps reveal that homogeneity in cooperation is due to reciprocity, not other mechanisms

KRISTOPHER M. SMITH (UNIVERSITY OF PENNSYLVANIA, KRSMIT@SAS.UPENN.EDU), COREN L. APICELLA, IBRAHIM MABULLA

Cooperation among non-kin is ubiquitous across human societies and remains a puzzle for evolutionary theory. Models suggest cooperation can be maintained when cooperators cluster together in space. Consistent with this, a previous study with Hadza hunter-gatherers found that there is more variation between camps and less variation within camps in levels of cooperation than expected by chance. Whether this clustering is maintained by reciprocity or another mechanism, such as homophily, is debated. In the current study, an incentivized public goods game was played at two time points (2013, 2014) and involved 270 Hadza participants from 26 camps. Some individuals (n=55) participated both years. Despite high amounts of residential change, we replicate at both time points the previous finding that contributions are more similar between campmates. Individuals' contributions in 2013 and 2014 do not correlate. Instead, the best predictor of an individual's contribution in a given year is the mean contribution of their current campmates, not demographics, shared environment or campmates' contributions from a previous year. These findings are unique to cooperation and are not found for other preference data. Together, the results suggest that cooperation is flexible and that reciprocity was important in supporting cooperation in our hunter-gatherer ancestors.

SA 12:00 PM

Behavioral Ecology Meets Behavioral Economics: Modeling Organized Crime as an Evolutionarily Stable Strategy

TASSIE KATHERINE HIRSCHFELD (UNIVERSITY OF OKLAHOMA, TKHIRSCHFELD@OU.EDU)

This paper applies Maynard Smith's work in behavioral ecology to explain the evolution of racketeering and organized crime in human systems of exchange. Conventional research in criminology pathologizes organized crime as a deviant behavior to be eradicated by law enforcement. Models from behavioral ecology, however, suggest that racketeering should be understood as an evolutionarily stable strategy (ESS) that will naturally emerge in unregulated markets at certain critical

points along the supply/demand curve. Redefining organized crime in this way allows it to be modeled as a natural (though undesirable) economic behavior that will spontaneously evolve under certain environmental conditions. Once racketeering becomes established, it potentially serves as a building block for the subsequent development of complexity, stratification and inequality in the social system. Racketeering literally “organizes” exchange so that production becomes intensified and wealth is aggregated upwards into the hands of racketeers. Redefining organized crime in this way allows for the development of a new, improved Darwinian political economy that has significant potential to explain patterns of social evolution in human groups from prehistory to the present.

SA 12:20 PM

Modeling the effect of social networks on cooperation

CURTIS ATKISSON (UNIVERSITY OF CALIFORNIA, DAVIS,
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Behavior in one-shot, anonymous games is variable both within and between populations. Some between-group variation is accounted for by differential market integration of populations. Few variables have been shown to consistently predict game behavior across games and contexts. We translate verbal models from anthropology and social psychology concerning how interactions with the same people across different contexts impacts cooperation. In our model, individuals are involved in an ecology of cooperative games. Individuals can evolve different amounts of “overlap” in their social networks: more overlap means that more individuals are the same across an individual’s different networks. Individuals can also evolve different cooperative strategies in the games, including how to behave in a one-shot interaction. We find that individuals who evolve strategies of low overlap compensate by evolving strategies of high contributions in a one-shot game. This results in two strategies that allow for the evolution of cooperation: low overlap and high one-shot contributions, or high overlap and low one-shot contributions. Further, the introduction of low overlap individuals into a population leads others to evolve low overlap and high one-shot contribution strategies. This model demonstrates the plausibility of a unifying explanation for within and between group variation in one-shot, anonymous interactions.

SYMPOSIUM: A TRIBUTE TO IRVEN DEVORE

CHAIR: MELVIN KONNER

SATURDAY, MAY 30, 11:20 AM–12:40 PM, STOTLER 3

SA 11:20 AM

MELVIN KONNER (EMORY UNIVERSITY, ANTMK@EMORY.EDU)

SA 11:40 AM

STEVEN GAULIN (UNIVERSITY OF CALIFORNIA, SANTA BARBARA,
GAULIN@ANTH.UCSB.EDU)

SA 12:00 PM

JOHN TOOBY (UNIVERSITY OF CALIFORNIA, SANTA BARBARA,
TOOBY@ANTH.UCSB.EDU)

SESSION: FORMIDABILITY

CHAIR: ALEXANDER K. HILL

SATURDAY, MAY 30, 11:20 AM–12:40 PM, S110

SA 11:20 AM

Upper-body strength and conflict resolution in human males

DAN NGUYEN (AARHUS UNIVERSITY, DNGUYEN@ECON.AU.DK), MICHAEL BANG
PETERSEN, JULIA NAFZIGER, ALEXANDER KOCH

Conflict is universal across all living species. Among non-human animals, a key strategy is to resolve conflicts without fighting by merely assessing relative fighting ability. We demonstrate the existence of the same system for conflict-resolution in humans by providing experimental evidence that human males intuitively resolve conflicts based on differences in upper-body strength. We do so by applying a non-physical, anonymous, economic game—the war of attrition—in which contestants compete by means of perseverance to win a monetary prize. While strength differences are not relevant for pay-offs in this game, weaker males are more likely to withdraw from conflicts against stronger males. The results show that the complex conflict-resolutions strategies of humans are founded on more rudimentary strategies, present throughout the animal world.

SA 11:40 AM

Evidence of Partner Choice Mechanisms in a One-Shot Bargaining Game

ADAR B. EISENBRUCH (UNIVERSITY OF CALIFORNIA, SANTA BARBARA,
EISENBRUCH@PSYCH.UCSB.EDU), RACHEL L. GRILLOT, JAMES R. RONEY

People consistently defy economic rationality in the ultimatum game: Responders demand too much and Proposers offer even more. The present research explores the possibility that this behavior arises from adaptations for partner choice in a market of potential long-term cooperators. In study 1, men played one-shot ultimatum games for real stakes while looking at a facial photograph of their partner. Stronger men received more generous treatment (higher offers and lower demands). The effect of strength was mediated by perceptions of the target's productivity, but not his

formidability, indicating the operation of mechanisms designed to establish relationships with more valuable cooperators rather than simply to avoid violent retribution. Subjects were also more generous towards apparently healthy, attractive and prosocial men. This behavior was costly, indicating that men forwent monetary gains in order to selectively cooperate with valuable long-term partners. We also report the results of a replication in men and an extension of the paradigm to female dyads. These findings suggest a novel explanation for ultimatum game behavior, and provide evidence that people choose cooperators based not only on expected reciprocity, but also based on intrinsic traits that indicate the ability to create benefits.

SA 12:00 PM

Individual Differences in Men's Spontaneous Assessments of Formidability: Preliminary Tests of Competitive Strategy Theory

AARON GOETZ (CALIFORNIA STATE UNIVERSITY, FULLERTON, AGOETZ@FULLERTON.EDU)

Given the costs associated with fighting (e.g., reputational damage, injury, death), selection seems to have designed a psychology that estimated the likelihood of incurring such costs in a contest. This estimate is based on many factors, among the primary being the opponent's formidability (i.e., ability to impose physical costs), which is represented by their size, strength, condition, weaponry, facial metrics, the presence and size of their coalition, and perhaps their physical risk-taking. Appreciating that humans possess formidability assessment mechanisms, we sought to a) estimate how likely men were to spontaneously assess the formidability of men in everyday life and b) examine moderators that make men more or less likely to spontaneously assess formidability. We surveyed a large and diverse sample of men (N=604) about their likelihood of assessing the formidability of men and women they had just met, as well as their own perceived size, strength, and quickness to anger. Even without threat or provocation, men spontaneously assessed the formidability of other men, and this was especially true of stronger men and men who are quick to anger. Surprisingly, larger and taller men were not more likely to spontaneously assess other men's formidability. Discussion introduces Competitive Strategy Theory that states that men's phenotype and physical prowess acts as input which facultatively adjusts men's psychology toward or away from contest competition.

SA 12:20 PM

Sexual selection favors low vocal pitch in humans and other anthropoid primates

ALEXANDER K. HILL (THE PENNSYLVANIA STATE UNIVERSITY, AKH167@PSU.EDU), DREW H. BAILEY, ROBERT WALKER, DAVID PUTS

In humans and many nonhuman primate species, the vocalizations of males and

females differ dramatically, with male vocalizations and vocal anatomy often seeming to exaggerate size. Males may evolve low-frequency vocalizations to intimidate rivals and/or attract females, but this hypothesis has not been systematically tested across primates. We therefore measured fundamental frequency (F0), the acoustic correlate of pitch, in recordings of 1723 unique adult vocalizations representing 34 anthropoid species from 24 genera, and collected data on mating system and body mass from the literature. We found that (1) humans exhibit the greatest F0 sexual dimorphism of any ape, (2) across species, body mass negatively predicts F0 in both sexes, and (3) controlling for sexual size dimorphism, males have lower F0 relative to females in polygynous species than in monogamous species. Analyzing our data using phylogenetically independent contrasts, we found that sexual dimorphism in F0 increases during evolutionary transitions toward polygyny and decreases during transitions toward monogamy. Our results thus support the hypothesis that sexual selection favors lower F0 among male anthropoids.

POSTER ABSTRACTS

1. **Similarity Between Friends and Romantic Partners in Moral Intuitions**

WHITNEY JOSEPH (UNIVERSITY OF WISCONSIN-EAU CLAIRE, JOSEPHWE@UWEC.EDU), DANA STROTHENKE, GREGORY SIKOWSKI, MALLORY DERNBACH, EMILY COX, APRIL BLESKE-RECHEK

Friends and romantic partners are similar to one another in education level, interests and hobbies, attractiveness, and social and political attitudes. In this study, we tested the hypothesis that individuals select relationship partners who are similar to themselves in the moral intuitions that underlie political attitudes: fairness/justice; caring/protecting from harm; loyalty/patriotism; obedience/respect for authority; and purity/sanctity. We approached male-male, male-female, and female-female dyads in a high-traffic lounging area of a public university. This sampling method resulted in 98 pairs of same-sex friends, 38 pairs of opposite-sex friends, and 19 heterosexual dating couples. We assessed each participant's standing on the five moral foundations and their perceptions of the friendship/relationship. In partial support of the hypothesis, dyad members were similar in their endorsement of three moral foundations: harm/care, authority, and purity. The strongest assortment was in attitudes toward purity, which has been linked to people's feelings about abortion, same-sex marriage, and immigration. We found no links between relationship duration and degree of similarity between partners, which suggests that individuals select relationship partners who are similar to themselves rather than become similar to their relationship partners over time. We discuss the implications of assortment for intra-individual stability in attitudes and beliefs.

2. **Laboratory rats can receive visual emotional signal of pain from conspecifics**

SATOSHI F. NAKASHIMA (NTT COMMUNICATION SCIENCE LABORATORIES; CREST, JAPAN SCIENCE AND TECHNOLOGY AGENCY (JST), SHAIKH.COGPY@GMAIL.COM), MASATOSHI UKEZONO, HIROSHI NISHIDA, RYUNOSUKE SUDO, YUJI TAKANO

Recent studies have shown that rodents show emotional expression of pain. However, whether the emotional expression in rodents has function of social signal is still unclear. Here we demonstrated the ability of visual recognition of emotional expression in laboratory rats. We found that Long-Evans rats avoid staying the place that was attached images of pain expression of conspecifics

rather than those of neutral expression. We confirmed that the result was not derived from visual characteristics of the picture of emotional expressions by conducting some experiments with using transformed images of the pictures. In addition, we showed that prior painful experience promotes avoidance behavior of rats to pain expression of conspecifics. The results indicate that rats use visual emotional signal from conspecifics to adjust their behavior in environment such as avoiding potential dangerous place. Therefore, emotional expression in rodents, rather than just a mere “expression” of emotional states, might have a function of social signal.

3. Mating Motives, Self Presentation, and Male Athletic Performance

MICHAEL D. BAKER (EAST CAROLINA UNIVERSITY, BAKERMICH@ECU.EDU),
NICHOLAS THOMAS

Using a repeated-measures design, this experiment provides evidence that mating motives and self-presentation play a role in male athletic performance. Male participants completed a weight-lifting task in the presence of an attractive female confederate and a male experimenter in counterbalanced sessions. More repetitions were completed when the attractive female confederate was present. This effect is hypothesized to be the result of mating-relevant self presentation rather than general self-presentational concerns or social facilitation. Implications for fitness-related interventions are discussed.

4. Religious Priming Increases Help if Requesters Dress Poorly: Effects of Dress, Priming, and Task Difficulty on Helping Behaviors

HUI JING LU (THE HONG KONG POLYTECHNIC UNIVERSITY,
HUIJING.LU@POLYU.EDU.HK)

The present study investigated requester-helper interaction in effecting helping behavior. In a 2x2x2 experimental design, participants were asked to help with an effortful or effortless task by a well-dressed or poorly dressed help requester after being primed with religious or neutral words. Results showed that well-dressed requesters, religious primes, and effortless tasks independently increased helping behavior, and helping with effortful task requested by poorly dressed requesters increased only when religiously primed. These findings add to the discussion of the evolution of helping and altruistic giving.

5. Adaptive responses to increasing population density: Perceived crowding increases individualistic attitudes and social dominance for masculine individuals

THOMAS R. BLUE (TEXAS CHRISTIAN UNIVERSITY, THOMAS.BLUE@TCU.EDU),
MARJORIE L. PROKOSCH, SARAH E. HILL

Across three studies we tested the effects of priming perceived crowding (via

slideshows about increasing population density) on participants' individualistic/collectivistic attitudes and attitudes towards competition versus cooperation. We found that (1) priming perceived crowding led to increased levels of state anxiety, but only for individuals who scored low on the masculine portion of the Bem Sex Role Inventory, (2) priming crowdedness increased endorsement of individualistic attitudes, only for individuals high in masculinity, and (3) marginal statistical support for an increase in social dominance in highly masculine men following a perceived crowding prime. These results suggest that there may exist psychological mechanisms that evolved to detect cues of population density and shape attitudes that lead to adaptive behaviors in crowded environments. An increase in individualistic attitudes and behaviors would be beneficial specifically for the highly masculine (those able to best compete) in environments where increased population density threatens to deplete resources.

6. Can your lipstick makeup influence men's perception of you?

YASUYUKI FUKUKAWA (WASEDA UNIVERSITY, FUKUKAWA@WASEDA.JP),
WATARU ONOGUCHI, RYO ODA

This study investigated if a woman's lip makeup is associated with men's evaluation of her in a laboratory situation. Male participants had a test regarding the knowledge on cosmetics and were instructed they could earn money if their results of the test exceeded that of their (fictitious) female competitors. After the test participants were asked two questions: (1) whether they use their results of the test for comparison with that of their competitors or they use the result of an assistant woman in the experiment who had the same test, and (2) how much they allocate their earned money to the assistant woman when entrusting their outcome of the game to her. The lip color of assistant woman were manipulated in red lipstick, concealer, or no lipstick condition. Analyses indicated that participants in no lipstick condition entrust the confederate woman in a higher probability compared to those in concealer group. On the other hand, participants in red lipstick condition allocated larger amount of money to the confederate woman compared to those in concealer group. The results of the study suggest that wearing red lipstick would increase men's perception of women's sexual attractiveness, rather than their reliability.

7. Connected or disconnected? Romantic couples' adrenocortical attunement in a "connected" world

CASANDRA SWEARINGEN-STANBROUGH (OKLAHOMA STATE UNIVERSITY,
CASANLS@OKSTATE.EDU), JENNIFER BYRD-CRAVEN

With the advancements in society, there is a need to assess evolutionarily novel circumstances that could be impacting connection and satisfaction within relationships. Prior research has shown that adrenocortical attunement within the stress response system provides information about the connections between

individuals within dyadic relationships (Middlemiss, et al., 2012; Papp, Pendry, & Adam, 2009); however, literature has not examined the influence of modern society on attunement. The present study tests the hypothesis that the amount of time couples spends using media will impact cortisol attunement. Adrenocortical attunement was assessed in romantic partners attending a couples' communication workshop. Media usage, communication styles, and adult attachment were also assessed. Results show that couples with high amounts of media usage (both males and females) predicts less synchronized cortisol responses. The results also show that both males' and females' perception of "female demand/ male withdraw" communication predicts overall media usage of both male and females. Females' perception of "female demand/ male withdraw" communication was also positively related to the amount of time that the couple spent usage media together. Overall the study provides a naturalistic example of mate challenges occurring in modern societies that are characterized by increasing use of technology and social advances.

8. Conservation and discovery of isolated indigenous tribes in Amazonia using remote sensing

BRYCE SCHMIDT (UNIVERSITY OF MISSOURI, COLUMBIA, BPSVY4@MAIL.MISSOURI.EDU), ROBERT WALKER, DYLAN KESLER

Amazonia is home to 50-100 isolated indigenous societies that have limited to no contact with the outside world. Remote sensing offers an inexpensive and systematic approach to analyze demographics and land use of isolated villages without the cost and risk of overflights or encounters on the ground. To date, we have located over 30 isolated villages and show that they are commonly located near the tops of watersheds and far from roads and deforestation. Estimates of village population sizes vary from 50 to 300 people. Our research is a first step towards the longitudinal monitoring of population dynamics and movements of isolated peoples through time, and in relation to currently protected territories and encroaching deforestation. The long term survival of isolated indigenous populations is our primary concern, and our project can help inform policy on ways to mitigate against the external threats to their livelihood.

9. Victim Blaming Through the Lens of Racial Prejudice

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In the current study we investigate the conceptual domain of victim blaming in the context of racial prejudice. Recent incidents have increased awareness of the volatile situations that arise when unarmed black men find themselves in confrontations with police officers. Furthermore, research has found that an individual's ethnicity can affect the decision to shoot (Correll, et al, 2002). In four separate studies participants responded more quickly and more often to

African American targets compared to White targets. In the current study we examine the individual and combined effects of race of target (White v. African American), type of incident (grocery theft v. weapon possession), and target outcome (severely beaten v. shot and killed) on perceptions of responsibility for the incident outcome. We predict perceptions will vary as a function of our manipulations as well as participant ethnicity. Specifically, police officers will be perceived as less responsible for the outcome when the target is African American v. White. We also expect that White participants will perceive the African American target as more responsible for the outcome compared to African American participants. Finally, we will investigate the ability of The Racial Arguments Scale to predict perceptions of the outcome of the incident.

10. Punishers pay costs to maintain their reputation in the context of indirect reciprocity

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The evolution of reputation-based cooperation, such as indirect reciprocity, faces a difficult problem: How do individuals distinguish fair punishers (who only defect with “bad” players) from genuine free-riders (who defect with everyone)? Although this problem can be solved if cooperative players take into account second-order reputation information (e.g., I won’t do you a favor because you were unfair with someone “good”), people do not utilize this information (Milinski et al., 2001) possibly because of its high cognitive load. Thus in response to the lack of an empirically sound indirect reciprocity strategy, we propose a signaling strategy that allows punishers to protect their reputation by voluntarily abandoning a resource they saved during a defection. If other cooperators respond to this costly-signal, cooperation can be maintained without second-order reputation information. Two experiments provided empirical support for this strategy. First, conditionally punitive defectors abandoned their endowment more often than unilateral defectors. Second, participants were more inclined to give resources to signaling defectors (who abandoned a resource to signal the fair nature of their defection) than non-signaling defectors. These results underscore the importance of intention signaling in human cooperation.

11. Modeling the Diversification of Car Models using Macroevolutionary Methods

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Macroevolutionary methods provide a potentially powerful framework for interpreting the tempo and mode of material culture diversification. However, application of these phylogeny-based approaches to material culture data is not straightforward when the underlying evolutionary tree is unknown.

Paleobiological models based on occurrence and waiting times offer an attractive alternative for studying diversification in the absence of phylogenies. As these methods are model-based, they provide a natural framework for quantifying key parameters that describe diversification processes and enable competing explanatory hypotheses to be compared in a rigorous and direct way. Here we adopt a Bayesian statistical framework to quantify rates of origination and extinction of cars and trucks produced in American, European and Japanese markets from 1896 to 2014. With this statistical framework we test whether the rate of innovation of new car models has remained constant or slowed through time. Furthermore, we test whether oil price and gross domestic product have shaped automobile diversification. Our results reveal a pervasive slowing of car model origination through time that is striking consistent with adaptive radiation scenarios from known biological systems.

12. Polyamory and Monoamory: Alternative Approaches to Pursuing a Strategically Pluralistic Mating Strategy

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We examined frequency of partner-directed mate retention behaviors and several self- and partner-rated romantic relationship evaluations (i.e., sociosexuality, relationship satisfaction, mate value, and partner ideal measures) within monoamorous and polyamorous relationships. Measures were compared between 1) monoamorous and polyamorous participants and 2) between two concurrent partners within each polyamorous relationship (i.e., primary and secondary partners). Individuals in monoamorous relationships performed more mate retention behaviors compared to those in polyamorous relationships. Within polyamorous relationships, participants reported engaging in more mate retention behaviors with primary partners compared to secondary partners. We interpret our results within the context of previous research on monogamous and consensually non-monogamous relationships and propose that polyamory and monoamory are alternative strategies for pursuing a strategically pluralistic mating strategy.

13. Social micro- and macrodynamics explained with constructal theory

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This theoretical paper explains social micro-, meso-, and macrodynamic forces and structures as formulated by Jonathan Turner from the perspective of constructal theory. While Turner argues that social dynamics can generate adaptive changes in a society, constructal law adds directionality to these changes by considering the natural tendency of all flowing media to facilitate their flows. The described evolutionary process governs behavioral adaptations to accommodate the needs of growing societies. I show that Turner's socio-dynamic forces, e.g., emotions and social rules, fulfil the requirements of

constructal law. 1) They have flowing characteristics at social micro-level, for example through exchanges during personal encounters. 2) Some of these exchanges have spread driven by people with similar notions, needs, or discourse, e.g., when individuals organize themselves promoting their viewpoints. 3) When strong enough, these emerging social forces influence society's macro-level, for example by legalizing equal rights for men and women. 4) Over time, the flows of emotions, information, and other social goods, shape structures that minimise obstructions of such flows and instead allow for social adaptation, for example through structures like organized assemblies and voting rights. When obstacles prevent free flow, social unrest becomes predictable, e.g., in form of social movements.

14. Perceptions of Threats to Ingroup Cohesion Drive Moral Disgust, Aggression, and Expulsion of LGB Men and Women

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Group living emerged as a strategic, evolved adaptation. Members that openly defy ingroup norms threaten ingroup values and cohesion and potentially undermine group success. To prevent individuals from undermining group performance, groups assert social control over counter-normative and non-cooperative members by using aggression and ostracism to avoid fitness costs. We applied these principles to understanding prejudice toward LGB men and women and predicted moral disgust toward LGB men and women stems from perceptions that they undermine group cohesion which elicits aggression to try to change the deviant behavior and expulsion if the individual fails to comply with ingroup normative behavior. Rating heterosexual, bisexual, and gay male and female targets, heterosexuals reported their moral disgust toward, their perceptions of ingroup cohesion threats (degrade social structure, possess oppositional beliefs, violate traditional gender roles, and threaten traditional family values) posed by, and the extent to which they would restrict the rights of and expel from the group each target group. Consistent with predictions, LGB men and women were perceived to undermine ingroup cohesion, which elicited moral disgust, ingroup aggression, and group expulsion. In all, this research demonstrates the functionality of intragroup emotions and behaviors as predicted by evolutionary mechanisms.

15. Genetic Diversity and Facial Cues of Kin Recognition

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Kin recognition adaptations facilitate inbreeding avoidance to ensure hybrid vigor in offspring and altruism to aid the survival of social species. The genes of the major histocompatibility complex (MHC), Human Leukocyte Antigen genes

(HLA) in humans, are a family of highly polymorphic loci. Given the high degree of MHC polymorphism, it has been suggested that MHC sharing may be a signal of relatedness, aiding kin recognition. In this study we evaluated the link between MHC allelic diversity and facial similarity in humans. We hypothesize that related individuals should exhibit greater MHC sharing than unrelated people and that these similarities should also be detected via perceived facial similarity. Using participant surveys of relatedness among strangers and self-phenotype matching we assessed whether facially similar individuals possessed similar HLA-DRB alleles. Individuals perceived as kin or related by observers had more similar HLA genotypes than dissimilar pairs. We also tested for a relationship between facial similarity and genetic diversity outside the MHC region, using x microsatellite loci and mitochondrial DNA (mtDNA). These loci had no association with perceived relatives. Our results suggest that facial similarity and MHC similarity is correlated and that MHC similarity is communicated through facial cues useful for kin selection and mate choice.

16. Is belief in evolution associated with political conservatism and sexist attitudes? Evidence from a community sample

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VEANNE N. ANDERSON

Some writers (e.g., McCaughey, 2008) have criticized evolutionary psychology as supporting traditional gender roles. Postulating that sex differences in behavior emerge from biology is thought to reinforce views that they are inevitable and immutable, and a public exposed to overly-simplistic reports of “evolutionary” findings may use them to justify sexism. But do they? What is the relationship between belief in evolution and political attitudes? Although evolutionary psychologists are a liberal group, the relationship between evolutionary belief and political views in the general public is not well-known. We conducted a telephone survey in a Midwestern community (N=382). The minority of respondents who acknowledged belief in evolution (38%) identified themselves as more politically liberal than those who believed in humanity as God’s creation; they were also more likely to identify as feminists, and expressed less sexism. And level of belief in biological bases of sex differences did not predict sexist or conservative attitudes among those believing in evolution. Although belief in evolution is more common among the educated, these results do not seem an artifact of education, which produced separate effects. These findings cast doubt on claims that evolutionary psychology will engender support for continuing gender inequality.

17. The Tear Effect: An Affective Signal Influencing Perceptions of Emotional Expressions

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What is the function of emotional tearing? Previous work has found a tear effect, which resolves ambiguity in neutral expressions and increases perceptions of sadness in sad expressions. Tearing, however, is associated with a variety of emotional states and it remains unclear how the tear effect generalizes to other expressions. Here, we expand upon previous works by examining ratings of video clips depicting posed facial expressions presented with and without tears. We replicate Provine et al.'s (2009) findings that tearing increases perceptions of sadness in sad expressions. Furthermore, we find that tearing has specific effects on ratings of intensity, valence, happiness, sadness, anger, and fear in neutral, positive and negative expressions. These results suggest that tearing may serve a specific communicative function, interacting with those of various expressions.

18. Transitory Environmental Stress Alters Sexual Strategies and Sexually Dimorphic Mate Preferences

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Here we tested how potential environmental threat influences preferences for different body and face characteristics and attitude towards long- (LTM) versus short-term mating (STM). Via a cover-story regarding a fictitious "pheromone response hormone," experimental participants were led to believe they would be required to handle a poisonous snake. Participants (N=100) completed the PANAS-X, a multidimensional measure of sociosexual orientation, and indicated face and body types that they found most attractive from 5x5 opposite-sex image matrices. These stimuli varied on two dimensions through five increments: Female bodies varied in body fat and waist-to-hip ratio and male bodies varied in muscle mass and waist-to-chest ratio whereas face stimuli varied on masculine-feminine shape and coloration-contrast (i.e., contrast of eye and lip coloration compared to skin tone). The PANAS-X fear subscale suggested the manipulation was effective. Compared to controls, environmental-threat condition men showed a preference for higher body-fat and women showed a preference for higher muscle-mass, a more masculine face shape, and lower facial coloration-contrast. Such women also showed a more positive attitude to STM, but no difference in attitude to LTM. The effect of condition on mate-preferences and attitude to STM remained significant when the other was incorporated into the analysis as a covariate, suggesting that these effects are somewhat independent. In line with the Environmental Security Hypothesis (ESH), findings predominantly support a context-dependent pattern of mate-preference and sexual-strategy.

19. Hormonal evidence that men's voice pitch reveals underlying condition

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Abundant evidence indicates that low vocal fundamental frequency (F0, the acoustic parameter closest to pitch) increases perceptions of dominance to other men and attractiveness to women. However, it is unclear why F0 should signal formidability or mate value; F0 is only weakly associated with body size in humans, although it may be modulated according to relative formidability and mate quality. Recent evidence suggests that male traits whose expression is linked to the interaction of testosterone (T) with the stress-hormone cortisol (C) are indicators of immunocompetence. We therefore explored relationships between C, T, and F0 in two samples of men (N = 62 and 58) and one sample of normally-cycling women (N = 52). In women, F0 was unrelated to C, T, and their interaction. However, in both male samples, C and T interacted in predicting F0, such that T was negatively related to F0 only in low-C men. This pattern of relationships between hormones and F0 suggests that men's F0 reveals underlying condition to same-sex competitors and potential mates.

20. The evolution and persistence of defensive hyperthermia

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Fever is a highly conserved trait among vertebrates, and has also been documented in many arthropods. Fever is known to truncate the duration of infection and reduce mortality. These observations present an evolutionary puzzle: why has fever continued to be an effective response to fast-evolving pathogenic microbes over hundreds of millions of years and across diverse phyla? Framing fever as part of a more general thermal manipulation strategy that we term defensive hyperthermia, we hypothesize that the solution to this puzzle lies in the independent contributions to pathogen fitness played by virulence and infectivity. A host organism deploying defensive hyperthermia alters the ecological environment of an invading pathogen. To the extent that the pathogen evolves so as to be able to function effectively at both normal and elevated temperatures, it disadvantages itself in the task of infecting the next host—whose body temperature will be lower—becoming more likely to be thwarted by both that host's immune system and wild ecotype conspecifics that, though more vulnerable to elevated temperatures, operate more effectively at the host's normal temperature.

21. Consequences of mate separation and extra-pair mating opportunities on pair bonding and paternal care in an animal model of monogamy, the California mouse

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Infidelity is often reported as a major cause of divorce among humans, yet experimental studies testing the hypothesis that infidelity disrupts the pair

bond among monogamous animals are surprisingly dearth. We tested this hypothesis in a wild-derived mouse model system, the strictly monogamous and biparental California mouse, *Peromyscus californicus*. Pair-bonded male or female California mice were temporarily re-housed with extra-pair opposite sex individuals for one week, and changes in social behaviors and ultrasonic acoustic communication between mates upon re-union were measured. Pairs in which the female was re-housed showed a higher incidence of aggression, as compared to undisturbed control pairs and separated (but not re-housed) pairs. Responses to social manipulation showed marked sex differences. Additionally, re-housing detrimentally affected paternal investment as measured by reduced grooming of pups, suggesting fitness consequences of extra-pair interactions. Potential implications for human multiple mating are revealed using a comparative approach.

22. Experimenter Effects on Pain Reporting in Women Vary Across the Menstrual Cycle

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Conditional factors such as relative fertility stage of menstrual functioning in women and contextual factors such as gender of experimenters influence experimental pain reporting. This investigation shows that the gender of laboratory personnel who minimally interacted with participants prior to, but not during the actual cold pressor task (CPT), has latent effects on pain sensitivity in women, and these effects vary across women's menstrual cycles. These unique findings highlight the indirect role of hormonal functioning and recent, stochastic social experiences on experimental pain reporting, factors that currently confound our ability to reliably measure pain experiences in research and clinical settings.

23. Does Previous Criminal Record Help Explain the Differential Risk of Filicide by Stepparents?

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Stepparents commit filicide at higher rates than genetic parents. Stepparents, relative to genetic parents, are also more likely to commit filicide using methods that are more brutal. One explanation for these differences in expressions of parental psychology is that stepparents do not share genes with their stepchildren and genetic parents do share genes with their children (Daly & Wilson, 1988). An alternative explanation is that stepparents are disproportionately more violent than genetic parents (Temrin, Nordlund, Rying & Tullberg, 2011). Using a Swedish national level database, Temrin et al. (2011)

found that, of parents with a previous criminal record, stepparents were over-represented as perpetrators of filicide. We sought to replicate these findings using a database of homicides in Chicago. Discussion addresses the extent to which parents' criminal history is a contributing factor in explaining the differential risk of filicide by stepparents, limitations of the current study, and future directions in this line of research.

24. Need-based transfers and account-keeping in social networks: How do alternative cooperative strategies scale-up?

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Across life, surviving in volatile environments requires the effective management of risk. Individuals can use a number of different strategies for managing risk. Here we focus on two resource sharing rules that can lead to the pooling of risk: the "osotua" need-based transfers (NBT) system used by Maasai pastoralists in East Africa and an account-keeping (AK) system based on tracking of debt and credit. We use an agent-based model to compare the survival of agents using these strategies in volatile environmental conditions. Our model extends the original need-based transfer model (Aktipis et al. 2011) by considering a multiplayer scenario where agents may interact with one another in different network topologies. Our results show that for small populations (up to $N = 10$) the NBT strategy outperforms the AK strategy. However, the advantage of NBT over AK disappears when network size becomes sufficiently large. This suggests that the advantage of need-based transfer strategies over account-keeping strategies may be limited to small-scale interactions.

25. Do Dual Hormones Duel?

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The current study investigated young men's cortisol response when interacting with either highly similar or highly dissimilar others during a group task. During the group task participants were either fully included or actively excluded from the group discussion by the other members of the group. All group members interacted via a computer-mediated discussion. Participants provided saliva samples at three separate time periods during the research. It was found that interacting with highly dissimilar others increased circulating cortisol levels, and this effect was most pronounced when participants were excluded by the out-group members. Cortisol levels were not affected by exclusion when the interaction was with others believed to be highly similar to oneself. Higher testosterone levels predicted sharper cortisol rise when dissimilar others behaved pro-socially or when similar others were perceived as excluding the participant. We interpret this as cortisol working to check the tendency towards

aggressiveness or dominance seeking behavior when it is not advantageous. Overall, the change in cortisol levels was predicted by testosterone levels, but the effect was not the same across conditions. The research is consistent with the dual hormone hypothesis, but emphasizes context dependent neuroendocrine mediation of adaptive behavioral tendencies.

26. The factor structure of traits predicting the memorability of face photographs

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Research into the characteristics that predict the memorability of face photographs traditionally emphasize relationships with typicality, familiarity, and memorability ratings. More recent work suggests that ratings of social traits, such as attractiveness, intelligence, and responsibility, predict the memorability of face photographs independently of typicality, familiarity, and memorability ratings. The factor structure underlying these traits is unclear, however, as is how these factors relate to the actual memorability of face photographs. To investigate these issues, we (1) assessed the memorability of face photographs using an old-new memory test, (2) had the faces rated for a diverse range of social traits often considered in social perception research (e.g., trustworthiness, attractiveness, dominance, sociability), and (3) had the faces rated for traits typically emphasized in traditional work on the memorability of face photographs (e.g., typicality, familiarity, memorability). Principle component analysis of the face ratings produced three orthogonal factors that were highly correlated with trustworthiness, dominance, and memorability ratings, respectively. Importantly, each of these orthogonal factors also predicted the actual memorability of face photographs. Collectively, these results suggest that the rated memorability of faces can be isolated from social judgments of faces and clarify the factor structure of traits predicting the memorability of face photographs.

27. Addressing the paradox: Reproductive hypotheses for the evolution of human male homosexuality

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K. SHACKELFORD

Reduced sexual attraction to the opposite sex, in the context of homosexuality, is usually interpreted as an evolutionary byproduct that does not promote individual reproductive success. However, the case against reproductive hypotheses for the evolution of the traits associated with homosexuality has yet to be adequately presented. In this presentation, I offer two hypotheses for the adaptive function of these traits as elements of alternative reproductive strategies in ancestral men. The first hypothesis proposes that a reduction in

heterosexual desire complements a strategy of infrequent, high-investment parenting. Evidence regarding parenting dispositions, female mate choice, homosexual infidelity, and sexual fluidity are reviewed. The second hypothesis suggests that reduced heterosexual desire enabled ancestral men to specialize in gaining covert reproductive access to partnered females. Evidence regarding female multiple matings, non-human covert copulators, and sperm competitive psychology and physiology are reviewed. Finally, the culture of abstinence from reproductive sex among self-identified homosexuals is assessed as evidence against these hypotheses.

28. Selection of kin for mate in a tribal population: Reputation comes before wealth, social status and beauty

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Objectives: Kin marriages are often arranged in tribal societies and this is believed to be related to poverty and lack of education. However, kin are generally more cooperative than non-kin and selecting kin for a mate could be due to non-kin families being less cooperative. Reputation is determined by the past cooperation in social contracts and we investigated its possible effect on mate selection. **Methods:** We asked 268 Emirati medical students to rank the importance of family reputation, family wealth, family social status, and physical appearance of a potential mate in selecting a future spouse. **Results:** The respondents ranked family reputation as more important than the family wealth and social status and mate physical attractiveness combined. Family reputation however was equally important for the participants preferring kin and non-kin for mate. **Conclusions:** In consanguineously marrying society family reputation is more important in mate selection than family wealth and social status. We discuss possible role of human cooperation in the partitioning of society into kinship groups and selection of kin for mate.

29. Moral judgment and shared knowledge: When what they don't know might hurt you

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Third party judgment of a moral transgression involves evaluation of both the outcome of the behavior and inferences of the motives of the transgressor. In order to avoid sanctions for actions in ambiguous situations perceived as moral violations by others, moral judgment systems may have an evolved sensitivity to the knowledge third parties possess about the intentions behind their actions. Thus, first party moral judgments are expected to track the appraisals of third parties regarding their motives in morally ambiguous situation. In an internet sample (N=618), we investigated whether utilitarian judgments in moral dilemmas were sensitive to varying levels of shared knowledge between first and

third parties in “high” and “low” common knowledge conditions. Participants indicated whether they would harm one person to save five, and the extent to which it is morally permissible for others to do so. Our analyses revealed no significant differences between knowledge conditions for judgments of one’s own utilitarian actions. However, we found that participants rated others’ utilitarian actions as less morally permissible when they couldn’t infer their motivations for behavior in a morally ambiguous situation. We interpret these findings in terms of a strategy for the avoidance of third party punishment.

30. Mother’s purpose in life prompts care for offspring: Report from the Tokyo Preadolescent Survey (T-PAS)

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Purpose in life (how individuals see their life as meaningful) improves mental and physical health outcomes. Those who are high in purpose would care about their health, and therefore they stay healthy (Kim et al., 2014). If so, those who have high purpose may also care about health of their offspring. We examined whether mothers’ purpose in life links with care about health of their preadolescent offspring. We conducted Tokyo Preadolescent Survey (T-PAS), a population-based survey in Tokyo, Japan. Participants of the survey are 10-year-old children (N=4795) and their mothers. Using mothers’ data from T-PAS, we assessed mothers’ purpose in life, maternal care behaviors for child’s health, and general health status of children. We found that mothers with higher purpose are caring for their children’s mental and physical health more and that their children are indeed healthier in general. In addition, mothers’ higher purpose in life is associated with children’s better appetite as well as lower likelihood of special care needs. Purpose in life also relates to subjective life expectancy of mothers. High purpose in life might reflect slow life history strategy, which is likely to enhance high levels of allocation of parenting effort.

31. The Influence of Odorants on the Perception of Elder Abuse

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Health care professionals, especially those dealing with the vulnerable aging population, have daily interactions with patients exhibiting potentially disgusting conditions—conditions such as undesirable body odor, leaking bodily fluids, or open wounds—and thus are especially prone to the behavioral effects of induced disgust. Previous elder abuse studies use vignettes which address different types of elder abuse and respond to them in terms of perceived harm and justification of the caregiver. In this paper we consider the effect of induced

disgust in two different studies. In Study 1, an online experiment (N=166) inducing disgust through images found no direct treatment effect; however, the personality traits of pathogen and moral disgust were connected with perceived harm in the treatment and control conditions respectively. In Study 2 we plan to assess the moral decision-making of nursing students in the presence of: a) butyric acid, a disgust inducer, b) disinfectant, and c) no odor control condition while using similar vignettes to Study 1. The effects of the treatment are expected to be powerful enough to create a negative effect on the responses of the nursing students.

32. Different parasites, different human life histories: Roundworm increases human fecundity and leads to earlier reproduction, while hookworm entails costs to reproduction

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Few studies have investigated how parasitism affects human reproduction, despite several pathways through which parasitism might influence fecundity. These include decreased reproduction due to costs of parasitism, altered fertility schedules due to changes in host life history, and effects from manipulation of host physiology. For example, helminths bias host immune function in a way that resembles the changes that allow a mother to tolerate a genetically distinct fetus during pregnancy. We hypothesized that infection with helminths might affect human fecundity through immune biasing and alterations in life history allocations. We investigate with seven years of longitudinal data from the Tsimane, Bolivian forger-horticulturalists, experiencing both natural fertility and a 70% helminth prevalence. We observed 192 nulliparous women, 53 of whom became pregnant during the study period, and 506 intervals following births for 427 multiparous women. Controlling for physical condition, season, and acculturation, roundworm (*Ascaris lumbricoides*) was associated with earlier first pregnancy (HR=2.04, $p=0.02$) and shortened IBIs at younger ages (HR=2.58, $p < 0.001$). In contrast, hookworm was associated with both delayed first pregnancy (HR=0.36; $p=0.002$) and extended interbirth intervals (HR=0.76, $p=0.037$). Our results suggest that these species have different effects on life histories, through a combination of both mechanistic and life historical interactions.

33. Testing logical validity of the concept of relational mobility by agent-based computer simulations

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Groups and society play a critical role in shaping the mind and behaviour of

humans, so it is crucial to explore the socioecological environments in which people live. Recently, there has been significant attention given to examining one such socioecological factor—the role of relational mobility, which refers to the amount of opportunities in interpersonal relationships to select a new partner in a given society (Yuki, et al., 2007). Many studies have provided strong empirical evidence for a relationship between relational mobility and a host of social and personal outcomes. However, there has been no real investigation of how the societal differences in relational mobility are created and maintained. In this study, we addressed this gap and examined the logical validity of the concept of relational mobility using a series of agent-based computer simulations. In particular, we focused on the finding from Schug et al. (2009) that friends are more similar in societies with high relational mobility and conducted computer simulations to examine if high relational mobility actually increases the similarity between friends. The results of our simulation were inconsistent with Schug et al.'s (2009) argument and suggest that some refinement of the concept of relational mobility as an ecological variable is necessary.

34. Temporal Reproductive Pressures on Human Sexual Strategies in a Large, Representative Dataset

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Female reproduction is constrained in time between a limited reproductive window and a lengthy courtship process to judge male mate quality and resource commitment prior to copulation. When menopause increasingly limits the resource of time and thus fertility, selection should alter female reproductive strategies to reduce the courtship period prior to intercourse and so increase total offspring. Using a large, representative sample of American singles, we investigated variation in how quickly individuals engage in sexual intercourse with new partners. The most dominant temporal strategy among women was engaging in intercourse after 'agreeing to an exclusive relationship', followed by 'after the third date'. The use of the former strategy decreases and the latter increases dramatically as women approach the end of the reproductive window at age 40. After this, strategy use reverts to predominantly exclusivity. This pattern was observed across sexes and desires for children. The results indicate that individuals may unconsciously alter their search for reproductive partners as their fecundity decreases; women who can no longer alter their fitness through additional offspring may revert to seeking male commitment prior to intercourse to ensure continual resources for existing children.

35. The Influence of Social Meaning on Group Bias

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This study compares the intensity with which the social meaning affects the generous behavior and in-group favoritism. The experiment consisted of an adaptation of the one shot public goods game in which 349 participants could donate from zero to five wafers to one of the four groups, with no prospect of return. There were two experimental conditions: Low Social Meaning (LSM) condition, where the groups were represented by letters (H, O, B, and Y) with the participants being randomly allocated at each group; and High Social Meaning (HSM) condition, used religion as a group marker and the groups were comprised by the two most dominant Brazilian religions, the Catholics and Neo-Pentecostals, one group covering other affiliations, and the fourth group representing no affiliation, including agnostics and atheists. The ratio of in-group/out-group donations was roughly the same across both conditions. However, the amount of wafer donated to one's own group was significantly bigger in the HSM condition compared to LSM condition. Furthermore, both entitativity and group identification play an important role in the HSM condition, even though they are irrelevant in the LSM condition. We suggest that the social meaning of the group marker affects positively the group bias.

36. Perceived self-mate value and the selection of mating strategies

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Multiple strategies exist to attract mates in a sexual market. Among them is "self-promotion"; advertising one's own traits that indicate one's reproductive value. Another is "self-constraint"; voluntarily limiting one's access to alternate mating opportunities in order to show exclusiveness and ensure long-term reproductive cares to a specific mate. What determines which strategy an individual will take? Drawing on the theory of conditional strategies, we hypothesized that an individual's mate value (MV) would moderate the selection of strategies. Specifically, individuals with higher MV would adopt self-promoting strategies, because they have sufficiently competitive resources that are worth advertising. In contrast, individuals with lower MV, whose resources lack competitiveness, should adopt self-constraint strategies to ensure a minimal level of reproductive success. Testing this hypothesis, we asked Canadians and Japanese to report their own MV and what strategy they would adopt to attract a desirable mate. As expected, individuals with higher MV tended to advertise abilities over relational exclusiveness, whereas this difference was not found among lower MV individuals. Interestingly, the same pattern held in cross-culturally: Canadians adopted self-promotion strategies more than self-constraint strategies, whereas Japanese did not show such a difference. We will discuss implications for investigating individual- and societal-variation in mating strategies.

37. Self-reported gender conformity predicts preferences for sexual dimorphism in own-sex, but not opposite-sex, faces among heterosexual women

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Here we investigated the relationship between self-reported gender conformity and preferences for sexual dimorphism and symmetry in same-sex and opposite-sex faces. Heterosexual participants (N = 60, 27 female) completed the sex-appropriate Conformity to Feminine Norms Inventory (CFNI-45) or the Conformity to Masculine Norms Inventory (CMNI-46). Participants also completed four two-alternative face preference tasks that assessed preferences for sexual dimorphism and symmetry in male and female faces. Among women, CFNI-45 scores were significantly negatively correlated with preferences for masculinity in female faces ($r = -0.422$, $p = 0.028$), but there was no relationship between CFNI-45 scores and preferences for masculinity in male faces ($p > 0.37$). Among men, CMNI-46 scores were not related to preferences for sexual dimorphism in either sex (both $p > 0.86$). There were no effects for preferences for symmetrical faces (all $p > 0.33$). Although preliminary, these results suggest that gender conformity is related to higher expectations of sex-typicality in own-sex faces among heterosexual women.

38. How Crude! Personality Judgments of Men and Women Who Swear

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We investigated people's first impressions of men's and women's personality traits as a function of their use of taboo language. Drawing from past research on personality and language use, sex differences in swearing frequency, and the negative emotional valence attached to many taboo words, we hypothesized that people will form more negative first impressions of the personality traits of (1) people who swear than of people who do not swear, and (2) women who swear than of men who swear. Using hypothetical vignettes, we asked men and women to imagine overhearing either a man or woman of their age tell a story about a series of events at work. The story included either five high-frequency taboo words (shit, hell, assholes, fuck, damn) or five negatively-valenced non-taboo words. Male storytellers who used taboo language were judged to be more impolite, aggressive, and psychopathic compared to male storytellers who did not use taboo language. Female storytellers who used taboo language were judged to be more impolite than female storytellers who did not use taboo language, but overall participants did not form more negative impressions of women who swore than of men who swore. We discuss our plans to investigate self-reported and other-perceived personality traits of those who actively use (versus avoid) taboo language, particularly low-frequency taboo words in the sexual domain

that are perceived as both severe and defaming (e.g., co&*sucker; cu&%).

39. **An Evolved Visual Illusion Among the Ixil Maya**

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Most visual illusions occur only at low magnitudes and in highly specific, artificial conditions that are starkly different from the environments in which humans evolved. Expectably, few illusions replicate across cultures. This lack of cross-cultural replication may derive from the relative lack of causal evolutionary hypotheses about the underlying nature of visual illusions. Up to this point, evolutionary investigations of illusions have primarily tested WEIRD (Western, Educated, Industrialized, Rich, & Democratic) populations and so the capacity for evolutionary hypotheses to predict cross-cultural visual illusions remains unclear. In this experiment, we tested ostensibly evolved illusions in a non-WEIRD population: the Ixil Maya of the Guatemalan highlands. Our data indicate that individuals within this population experienced evolved illusions powerfully and indistinguishably from WEIRD populations. We predicted the existence of these illusions from Evolved Navigation Theory, which specifies how selection may have shaped perceptual mechanisms, such as distance perception. Frequently testing one particular population, such as WEIRD populations, poses drawbacks to generalization of findings. These results show that the evolved nature of visual perception may provide the key to cross-cultural generalization.

40. **Men's body scent predicts women's sexual and romantic relationship satisfaction**

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In non-human mammals, scent communicates dominance, health, age, relatedness, and fertility, all of which strongly influence sexual attraction. There is some evidence that scents could affect human attraction in similar ways. For example, women are attracted to scents associated with putative indicators of male genetic quality, including symmetry, testosterone, and MHC compatibility. Women also rank scent as more influential in determining attraction to a mate than other important features, such as physical appearance. What remains unknown is whether scent attractiveness has implications for women's satisfaction in their romantic relationships. Women recruited using M-Turk (N=373) rated the attractiveness of their partner's scent, face, and body. Scent attractiveness predicted women's sexual and relationship satisfaction to a markedly greater extent than did face and body attractiveness. The relationship between scent attractiveness and sexual and relationship satisfaction was greater among women using hormonal contraception. Scent attractiveness, but not facial or body attractiveness, negatively predicted women's number of

extra-pair fantasies. The results of this study suggest that scent cues play an important and potentially unique role in sexual and relationship satisfaction.

41. The Effect of Secular and Religious Priming on Rule-Based Moral Arguments

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Religious priming can impact various domains, including altruism and prejudice, potentially because it increases deontological (rule-based) moral orientation. However, secular primes have had equivalent effects, possibly because both religion and secularism appeal to moral authority. Previous research has also found that acceptance of causally opaque actions, or actions where the goal is obscure, is positively related to religious belief and may have served as an evolved mechanism to promote in-group cohesion. We propose that priming of moral authorities—religious or secular—causes higher acceptance of casually opaque actions and consequent a preference for deontological reasoning. Participants first completed a questionnaire that measured moral orientation and causal opacity in the absence of priming. Then, after at least one week, participants were primed with “secular moral”, religious, or neutral words in a sentence unscrambling task. Lastly, they completed the original questionnaire on moral orientation and causal opacity for a second time. We predict equivalent shifts to deontological reasoning after secular and religious, but not neutral, priming. The presence of intentional agents (e. g., God, angel, police, jury) was experimentally controlled in the primes. Thus any effects should not be due to sensitivity to cues of being observed alone. Data collection is still in progress.

42. Rethinking Condition Metrics for a Test of Sex-Biased Parental Investment in a Modern Population

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The Trivers-Willard hypothesis (Trivers & Willard, 1973) predicts that parents will invest differently in male and female children based on differential reproductive potential of men and women given parental condition. Tests of the Trivers-Willard hypothesis in modern populations have yielded conflicting results, likely in part due to a reliance on government census data which provides only gross measures of parental condition. Another shortcoming in the literature is a tendency to treat the entire population as a single reproductive population, thus comparing parental condition across individuals who are unlikely to include potential reproductive partners or competitors. The hypothesis rests on the idea that parents of poorer or greater condition within a reproductive population will preferentially specialize in either daughters or sons, thus producing a complete reproductive population. When looking at large-scale census data from countries such as the U.S. and comparing, for

example, highly educated parents to poorly educated parents, it is likely that researchers are looking at more than one mating population, thus obscuring any sex-biased investment effects that might occur within mating populations. The current study seeks to address this shortcoming by utilizing existing data on marriage patterns to define reproductive subpopulations and constructing a comprehensive index of parental condition and offspring outcomes to test for sex-biases within reproductive populations.

43. Differences in nonmarital breakup experiences based on sex and breakup initiator

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Previous research (Perilloux & Buss, 2008) has identified sex differences in nonmarital breakup experiences, such as in post-breakup behaviors. However, such research did not investigate the effect of characteristics of the self and the ex-partner (as reported by the participant) on breakup coping period. The current online questionnaire study (using Mechanical Turk; N=338) tested for sex differences in coping period based on self and ex-partner physical attractiveness, ambitiousness, intelligence, popularity, and sense of humor. While no sex differences emerged based on ex-partner characteristics, there were sex differences based on characteristics of the self. Specifically, men self-rated as more intelligent had a shorter coping period and women self-rated as more physically attractive had a shorter coping period. Additionally, previously established sex differences in post-breakup behaviors were also tested for replication, and instead of being based on sex, differences were based on breakup initiator such that those who were the rejected partner were more likely to contact (via various methods) the initiator and ask for a second chance, while the initiator was more likely to avoid the ex-partner. Although behavior differences were not based on sex, it is important to note that women were much more likely to initiate breakups than men.

44. Women's evaluation of men's attractiveness as a function of accent and mating context

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The purpose of the study is to examine the potential variations in women's judgments of mating attractiveness as a function of temporality of the mating context and perceived accent. Women's short- and long-term mating preferences exhibit a difference in emphasis on good-gene indicators and good-parenting indicators of potential mates. Speech accent may serve as a significant cue in mating-related decisions. Particular foreign accents of English vary in their aesthetic appeal and social status affiliation. French-accented English (FE) has been referred to, by native speakers of American English (AE), as romantic,

pleasant, sexy, and has been associated with high social status relative to several non-native accents of English. How a “romantic” non-native accent (FE) compares with a native accent (AE) in light of conditional mating strategies needs to be examined. Using the verbal guise technique, we try to address this question in an ongoing experiment. Preliminary data indicate that while there is a significant difference between long-term and short-term attractiveness scores for FE speakers (lower long-term attractiveness scores given by female AE speakers), such a difference is not apparent in AE.

45. Anomalous experiences and paranormal attributions in a new spiritual movement

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The present study reports on an investigation of participants in a new spiritual movement centered on anomalous experiences, specifically so-called near-death experiences. The goal of the investigation is to explain across multiple levels of analysis (ethnographic, experimental) what causes people to affiliate with this movement rather than a different spiritual movement, a traditional religion, or no spiritual movement or religion at all by focusing on anomalous experiences and their attributions. In a sample of movement participants ($n = 97$) and community controls ($n = 36$) it is shown that movement participants report higher numbers of anomalous experiences and are more likely to interpret their anomalous experiences as paranormal. More so, it is argued that there exists a reinforcing feedback loop between anomalous experiences, paranormal attributions, and movement affiliation. Additionally, two related phenomena are demonstrated across both samples: (1) due to the ambiguity inherent in certain experiences a higher tendency to identify causal relationships and patterns in ambiguous events predicts a higher tendency to report anomalous experiences, and (2) due to the higher intuitive appeal of paranormal versus scientific attributions lower inhibition (but not other executive processes) predicts a higher tendency to interpret anomalous experiences as paranormal.

46. Cheater detection in need-based transfer systems

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Cheater detection is thought to have evolved in the context of account-keeping reciprocity. However, systems of risk-pooling through transfers to those in need without the accretion of debt may be simpler, more ancient, and more widespread than account-keeping reciprocity. The purpose of this study is to compare humans' ability to detect cheaters across different situations including both account-keeping reciprocity and need-based transfers. Through a series of treatments administered through Amazon Mechanical Turk (AMT), participants

were given a scenario and a version of a logical problem called the Wason Selection Task (WST). The WST involves deciding which of four cards must be turned over to determine if a logical rule of the “if p then q” variety has been broken. 800 people participated across four treatments. More participants chose correctly when the task was framed as a need-based transfer system (cheating conditions) as opposed to either the abstract version or the account-keeping reciprocity version. This suggests that cheater detection systems are not limited to situations in which individuals take benefits without incurring cost, but also encompass situations characterized by other resource transfer norms, in particular those of need-based transfer systems.

47. Subjective Social Status Predicts Wound Healing

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Across human and nonhuman social species, social status is associated with stress-related diseases. In humans, subjective social status (SSS)—the psychological perception of one’s position within the social hierarchy—is negatively associated with health. Research of nonhuman dominance hierarchies suggests that repeated experiences of social threat (e.g., low social status) decrease glucocorticoid sensitivity, which potentially primes an adaptive inflammatory response to injury and leads to faster wound healing. We tested whether lower SSS individuals healed more quickly following wound infliction. Dating couples (N=34) reported their SSS relative to individuals in the U.S. using the MacArthur ladder scale. During two laboratory visits, we inflicted a minor skin wound, then couples participated in a discussion of personal concerns or relationship problems (counterbalanced across visits). Among women, lower SSS predicted faster wound healing, regardless of discussion type. Among men, lower SSS predicted faster healing during the relationship problems task. However, lower SSS predicted slower healing during the personal concerns task. The results highlight the importance of considering gender when examining SSS and health associations. Overall, evidence suggests that low SSS individuals might have decreased glucocorticoid sensitivity, which functions to enhance wound healing following social threats.

48. Are Smiles Reliable Due to Receiver-Dependent Costs?

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Evidence suggests that smiles can function as a signal of cooperative intent—by producing a smile, the smiler can expect to receive benefits from perceivers and perceivers can expect a return from smilers. However, this type of signal is susceptible to the evolution of cheats who smile in the absence of cooperative intent, thereby receiving the benefits of smiling without paying the costs of

cooperation. If smiles were to maintain reliability over evolutionary time, some mechanism(s) must have prevented the evolution of cheats. Though a wealth of research shows that smiles are reliable signals of cooperative intent, researchers have not yet developed a paradigm to directly test why smiles might have maintained reliability over evolutionary time. This experiment was the first to assess whether smiles might have maintained reliability due to receiver-dependent costs associated with smiling in the absence of cooperative intent. Subjects played a Trust Game with a confederate who was either smiling or not smiling, and who behaved either fairly or unfairly. We tested our hypothesis by examining whether those who were treated unfairly by a smiling confederate were more inclined to punish in a subsequent economic game than those who were treated unfairly by a non-smiling confederate.

49. Determinants of Reproductive Stopping Behavior and Menopause in Bangladeshi Women

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The premise of life history theory is that individuals have finite resources to invest in growth, maintenance, and reproduction. Woman's age at sexual maturation and first birth have been well-studied, but considerably less is known about life history influences on the end of the reproductive lifespan. For a sample of rural women in Bangladesh, we investigate whether age at last birth and age at menopause are shaped by earlier life history traits, specifically reproductive history, health, and economic variables. The dataset includes 1,056 women aged 49–70 years who were part of the Matlab Health and Socio-Economic Survey in 1996. Using generalized linear modeling and information criteria to compare alternative models, we find clear correlates between earlier life history variables and age at last birth and age at menopause. For example, women with a more balanced sex ratio among their children have earlier ages at last birth, while women with families engaged in agriculture tend to stop later. Age at menopause appears to be more closely linked to age at menarche and other health and socioeconomic variables. In addition to different predictors, women on average stopped reproducing a decade before menopause, indicating that these are not interchangeable life history traits.

50. Love Sick: The effects of disease salience and Dark Triad personality on mate preferences

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Across cultures, greater pathogen prevalence is associated with conservative values and sexual restrictiveness (Thornhill, Fincher and Aran, 2009). Within the same culture, individuals with increased germ aversion show decreased interest in short-term mating (STM; Murray, Jones & Schaller 2013). This

relationship is even more pronounced if disease is made temporally salient. We present results from two multi-method, experimental studies investigating whether the effect of disease salience on preferences for short term mating is moderated by the Dark Triad (DT) personality traits. In high pathogen environments, the costs associated with short-term relationships are higher and we would expect to see increased sexual restrictiveness; however, individuals pursuing an opportunistic, or exploitative mating strategy (high DT) may discount these costs and continue with a more permissive mating style (e.g. lower standards). Results suggest that when disease is primed, individuals low in Machiavellianism, psychopathy and narcissism report decreased interest in short-term relationships (e.g. one night stands, or friends with benefits), while those high in the Dark Triad either do not change or increase their preferences for STM. Interactions with sex of participant and attractiveness of target photo are also discussed.

51. Parenting Concerns Drive Moral Disgust, Anger, Avoidance, and Aggression toward LGB Men and Women

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Our research sought to understand heterosexuals' sexual prejudices by applying the affordance management perspective, which suggests that human behavior evolved to manage the perceived threats and opportunities (affordances) posed by others. Applied to intergroup relations, the threats perceived posed by outgroups elicit specific emotional and behavioral reactions to mitigate these threats. Integrated with the fundamental motives theory (Kenrick et al., 2010), the most relevant threats are ones to survival and reproduction, e.g., parenting and kin development (Buckels et al., 2015). We predicted sexual prejudices stem, in part, from concerns of the influence LGB individuals could have on children. Heterosexual participants rated their perceptions of affordances posed by, emotional reactions to, and behavioral inclinations towards heterosexual, bisexual and gay/lesbian male and female targets. Mediation analyses revealed that perceptions of threats to children's sexual orientation and gender development from non-heterosexual target groups motivated moral disgust, which predicted desires to sequester children from LGB men and women (e.g., switching classes if the teacher was gay), as well as anger which predicted aggressive attempts at blocking LGB influence on children (e.g., preventing LGB individuals from being teachers, banning books with LGB content). This research demonstrates the evolved functionality of intergroup emotions and behaviors.

52. Does sickness, injury, or fatigue recalibrate perceptions of formidability?

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Little is known about how handicaps and incapacitation affect assessments of formidability in humans. Fessler & Holbrook (2013) demonstrated that men's perceptions of another's formidability increased when their own ability to inflict costs was impaired, which was surprising given the evolutionarily novel nature of the incapacitation in these studies (i.e., being tied to a chair and standing on a balance board). In the present study, we explored the extent to which naturally-occurring impairments to fighting ability (i.e., sickness, injury, and fatigue) influenced perceptions of formidability (e.g., size, strength, toughness, fighting ability). In a large and culturally diverse sample (N = 604), men reported their current health, injury status, and fatigue, as well as their perceptions of a target male's formidability and perceptions of their own formidability. Despite our large sample, use of established measures, and use of evolutionarily recurrent impairments, there were no effects of sickness, injury, or fatigue on perceptions of formidability, and including various controls and moderators did not help to uncover any effect or relationship. These results begin to suggest that various naturally-occurring forms of incapacitation might not recalibrate perceptions of formidability. More research is needed on how specific types of incapacitation modify perceptions of formidability.

53. Conception risk increases Galvanic Skin Response but not handgrip strength in women exposed to cues of potential sexual assault

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Risk of pregnancy by a man who bypasses mate choice by forcing unwanted sex is one of the largest possible risks to women's reproductive success. This risk is positively related to the likelihood of conception over the menstrual cycle. Previous research has found that women are less likely to engage in behaviors that put them at risk for sexual assault during the fertile window (Broder & Hohmann, 2003; Chavanne & Gallup, 1998), and that women see a potential assailant as bigger and stronger as conception risk increases (Fessler, Holbrook & Fleischman, 2014). Another suggested adaptation for reducing the likelihood of complete sexual assault is greater strength during the fertile window. Sarwar, Niclos & Rutherford (1996) found an 11% increase in hand and arm strength during the fertile window. Petralia and Gallup (2002) found ovulating women showed increased handgrip strength but only when reading a vignette featuring cues of potential sexual assault. We found that Galvanic Skin Response (a measure of physiological arousal) but not handgrip strength is greater in ovulating women and is positively correlated with conception risk when women read Petralia and Gallup's (2002) sexual assault vignette. Vigilance as opposed to strength may be more central to the mechanism of sexual assault avoidance.

54. Clear goals, high need, can't lose: Risk-sensitive decision-making in two

football populations

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Risk-sensitivity theory, derived from behavioural ecology, posits that decision-makers should prefer high-risk options in high need situations when low-risk options will not meet this need. Recent attempts to adopt risk-sensitivity as a framework for studying human decision-making have shown promising results. However, these studies have focused only on individual-level decision-making, have lacked external validity, and have not examined the influence of multiple levels of need on decision-making under risk. We examined group-level risk-sensitive decision-making in both National Football League (NFL) and National College Athletic Association (NCAA) games. Offensive plays from the 2012 NFL (N = 33,944) and NCAA (N = 15,250) regular seasons were examined to better understand how offensive teams make risk-sensitive decisions pertaining to two distinct needs: (1) attaining first downs, and (2) scoring more points than the opposing team. Results indicate that decision-makers made risk-sensitive decisions correlated with attaining first downs at all points of the game in both leagues. Risk-sensitive decisions were made in regards to score disparity predominantly in the fourth quarter when the need to outscore the opponent was most salient. These findings represent the first empirical support of risk-sensitivity in a naturalistic human setting.

55. Avian burial from late Holocene California

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Animal burials in the paleoanthropological record are largely characterized by *Canis* remains. Though present, evidence for avian burials are relatively less common. This poster presents evidence for a late Holocene avian burial from Santa Cruz Island, CA-pit H, CA-SCrI-100. In doing so, I demonstrate taphonomic methods that can be used to identify non-food faunal deposits. Results of my taphonomic analyses of avifauna from pit H are distinct from faunal remains from subsistence middens, suggesting that these avian remains were deposited in a non-food context. Further, pit Hs context, adjacent to a human cemetery, and contents suggest that these faunal remains were deposited in a ceremonial context. Taxa present in ethnographic ceremonial burials such as: dog (*Canis*), fox (*Urocyon*), eagle (*Haliaeetus*), and hawk (*Buteo*) are identified in pit H. Thus, taphonomic analyses, location, and identified taxa suggest that avifauna in pit H were deposited as non-food burials. This research exemplifies avian taxa in California during the late Holocene that were preferentially selected by humans for non-subsistence purposes. These results highlight the range of human ceremonial behavior and use of animal remains in non-food contexts. Thus, this poster contributes valuable information for understanding how humans have selected and deposited birds in the past.

56. Sex Differences in Humor Production on Facebook

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GEOFFREY MILLER

Are men funnier than women when broadcasting public humor? Mutual mate choice theory (Miller, 2000) predicts that men and women will have roughly equal capacities for humor in private courtship, averaged over the long term, but that men will be more motivated to broadcast their humor abilities in public, given their higher incentives for short-term and multiple mating. Additionally, are men's attempts at humor more risky/edgy/potentially controversial than women's attempts? As only men who are genuinely funny and of high status can readily bear the social costs of edgy humor (e.g., offending others and incurring social sanctions, violence, rejection, exclusion), we suspect that successful employment of edgy humor is a hard-to-fake-signal of men's high intelligence and social status. We tested these humor dimorphism hypotheses in the evolutionarily novel domain of social media by surveying 205 people to name and discuss the individual who routinely posted the funniest and edgiest material on Facebook, as well as asking them which of their friends made them laugh the most offline. As predicted, men were more likely than women to have been selected as participants' funniest on- and offline friends, and were rated as being edgier than women with their humorous posts on Facebook.

57. Criterion validity of the life history strategy scale and its relationship with personality traits

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Life History Theory suggests that personality traits can be explained as an aspect of life history strategies—how organisms allocate limited resources to future and current reproduction. This study investigated the relationship between personality traits and life history strategies in a Japanese community sample. In study 1, reliability and validity of a Japanese translation of the life history strategy (Mini-K) scale was evaluated through its relations with direct and indirect life history indicators. All life history indicators associated with the Mini-K scale in theoretically predicted ways: people who have K (slow life history) strategy tended to have fewer offspring, later age of having first offspring, lower preference for short-term mating, greater mate retention effort, higher willingness to invest in offspring, longer subjective life expectancy, and greater effort to live long. In study 2, correlation and regression analyses showed that personality traits such as Big Five and impulsivity were highly associated with the Mini-K and life history indicators in functional ways. These results first demonstrated the validity of the Mini-K scale based on its theoretically predicted correlations with life history indicators, and, secondly, that personality traits can be explained as a function of the scale.

58. They Should Have Seen it Coming: Hindsight Bias in Evaluation of Romantic Relationship Outcomes

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Hindsight bias is commonly referred to as the “I knew it all along” effect. First documented by Fischhoff (1975), individuals who are informed of a specific outcome prior to judging how the event will pan out perceive that outcome as more likely to occur than do individuals who are not given any outcome information. In the current research, we investigate hindsight bias in people’s perceptions of romantic relationship outcomes. All participants reviewed a hypothetical scenario about a couple and the development of their romantic relationship; at the end of the scenario, one of the partners was sexually unfaithful. Then, in the control condition, participants assigned a 0-100% likelihood rating to three possible relationship outcomes for this couple dealing with the infidelity. In three different experimental conditions, the scenario was followed by a statement describing one of the three specific outcomes, and participants were instructed to ignore that outcome knowledge as they assigned a 0-100% likelihood rating to all three possible outcomes. Participants also evaluated the quality of the relationship and what they thought the partners should have done. We predict that participants who are given outcome knowledge will be unable to ignore it when evaluating the couple and forecasting outcomes.

59. Mate primes produce domain-specific shifts in men’s risk sensitivity

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A diverse body of research suggests that men exposed to mating primes are more willing to engage in a variety of risky behaviors. These shifts are argued to be the product of cognitive systems designed to facilitate courtship behavior in the presence of potential mates. Under such an account, changes in risk sensitivity should not be the product of global recalibrations, but rather specific to domains relevant for courtship. The present study investigated this possibility using an instrument that measured risk-taking across five domains (financial, recreational, social, ethical, and health-related) for men (N = 35) who had been randomly assigned to watch a video of a young woman “matched” to them with a dating algorithm (mate prime condition) or a man “matched” using a work-compatibility algorithm (control condition). Men in the mate prime condition showed larger increases in social and recreational risk-taking relative to controls, but no difference across the other domains. As risk-taking in both social (e.g., mate pursuit) and recreational (e.g., signals of phenotypic condition) domains are likely to be differentially important in courtship, these results are consistent with a mechanism that adjusts risk sensitivity in accordance with potential fitness benefits.

60. The Evolution of Cooperation and Coalitional Competition: Field Experiments in an Amazonian Tribal Population

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This poster will present proposed research concerning the evolution of cooperation in the realm of coalitional aggression and competition. A conundrum confronting an evolutionary approach to the study of human behavior is how to adaptively account for human cooperation. Cooperative tendencies are thought to be difficult to explain given the vulnerability of cooperators in social-interactions with defectors. One particular instance of cooperation common to human groups is in the collective-action involved in coalitional aggression and warfare, wherein individuals risk injury and death to acquire a potential suite of shared benefits. Given the cost-benefit structure of individual costs, collective benefits, and the incentive to free-ride on cooperation, how are individuals motivated to participate in coalitional aggression? This research investigates in-group inequality as a plausible individual-level mechanism for solving the collective-action problem of coalitional competition, in a tribal population of Amazonian forager-horticulturalists. Methods include conducting public goods games, with experimental treatments eliciting coalitional and competitive motivations into game structure. Data analysis will utilize social network and social ranking measures in an experimental economic games approach to investigate the individual level characteristics that influence cooperative participation in coalitional competition. Data collection will occur in Ecuador from June to July 2015.

61. The Complexity of Acheulean Stoneknapping in Relation to Language

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The appearance of Late Acheulean technologies (~1 ma) is often considered to be a cognitive watershed signaling both the emergence of *Homo heidelbergensis* and near-modern cognitive abilities. The sequencing of actions required to produce handaxes such as those found at Boxgrove, UK, appears to share some surface similarities with language syntax. If true, this may provide indirect evidence for the presence of language by 1 ma. In an earlier analysis, Mahaney (2014) found that Late Acheulean replication and English language utterances showed statistically significant overlap on a complexity metric, Gbadinho's Complexity Index (CI). This study continued this analysis using the set of coded stoneknapping actions from the earlier study, but (1) improving methods for estimating CI and (2) determining the effects of coding platform preparation as a series of discrete actions or as a single rhythmic action. Assuming that platform preparation is a series of discrete actions, the results of the earlier study are replicated. However, under the assumption that they are a single rhythmic action, the statistical overlap disappears. I argue for the second

alternative, that platform preparation is a rhythmic action, and that the results of the earlier study should be revised.

62. “Spiritual kinship”, need-based transfers, and the evolution of cooperation

HILLARY L. LENFESTY (ARIZONA STATE UNIVERSITY, HLENFESTY@GMAIL.COM), ATHENA AKTIPIS, LEE CRONK

Do humans generalize kinship concepts in ways that help to manage risk especially in unpredictable ecologies? In this paper, we describe how “spiritual kinship” may enhance need-based transfers and help individuals pool risk under such circumstances. We define spiritual kinship as a concern for the welfare of another that emerges from proximate ecological factors, such as fitness interdependence and a sense of shared fate. Spiritual kinship is often instantiated by cultural mechanisms such as kinship terminology (e.g. fictive kinship) and rituals that take on a religious or spiritual character (such as godparents or Maasai “osotua” relationships). The establishment of such relationships may result in the intrinsic (rather than instrumental) valuation of social partners, thus allows individuals to overcome commitment barriers by attuning their concern to others’ need and prompting risk-pooling through need-based transfers. Spiritual kinship may enable a form of social insurance that helps individuals and groups survive when ecological conditions are unpredictable.

63. Adapting Evolution Education to a Warming Climate of Teaching and Learning

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We argue that evolution educators must adapt to the new warmer climate in which they teach and students learn. By warmer climate we are referring to the emotionally charged environment of increasing science resistance. We draw on examples from our research about the challenges science educators faces when teaching about “hot” topics the public believes to be controversial. We challenge two prevailing points of resistance from evolutionist when conceptualizing challenges to evolution instruction: The knowledge deficit view (individuals would be more accepting of evolution if they had more knowledge) and the religious objection view (we cannot shift beliefs so we cannot make headway on evolution acceptance). We will argue these two objections leave educators tied up in a tautology: we can’t change beliefs, but beliefs stand in the way of gaining knowledge, and knowledge gaps must be overcome to change beliefs. We will counter this argument by providing other points of resistance that can be addressed including: folk biology, misconception, complexity, emergent systems, emotions, identity, and motivations. We will discuss how educators can adapt to the warmer climate of teaching resistant learners by addressing these points.

64. Mate value and mate retention in Chilean couples

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Human mating is strategic and it usually engages both individuals in a dyadic relationship who interact and invest mating effort according to their own mate value potential and the benefits they expect from a reproductive partner. We explore in 65 real couples from a very healthy and sexually satisfied sample, if different dimensions of mate value are positively associated with an individual's mate value, and the use of benefit delivering—positive mate retention strategies. We also explore this premise on an ongoing sample of couples that are not fully satisfied with each other, expecting that the association of mate value and mate retention will show a different direction in unhappy couples. The results are discussed comparing them to a recent study that proposes that high mate value is correlated with positive mate retention tactics, and that low mate value individuals have an increased tendency to use negative cost delivering mating retention strategies in comparison to more attractive individuals.

65. East Asian low marriage and birth rates: The role of social status affordance in long-term mating behavior

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Although declines in marriage and birth rates are generally associated with industrialization and economic advancement, countries with a dominantly East Asian cultural population exhibit the lowest marriage and birth rates in the developed world. This study identifies a new latent construct, social status affordance, as an underlying account for the differences in long-term mating outcomes (i.e., marriage and childbearing) between developed East Asian countries and other developed countries. Two key evolutionary aspects—social status as a female long-term mating preference, as well as delayed reproduction due to the scarcity of ecological niches under life history strategy—interact with features of East Asian culture (in particular, cultural values of harmony and deference) to produce delayed long-term mating outcomes. Competition for scarce prestigious jobs in developed East Asian countries leads to the perception of less jobs available that are sufficiently prestigious, which leads to overall lower social status affordance in developed East Asian countries and thus delayed marriage and lower fertility. The results, to a larger extent, support the theoretical propositions, and suggestions for East Asian countries facing low marriage and birth rates are made given the implications of the findings obtained.

66. Sex Ratio and Women's Willingness to Engage in Sex Without Condoms: Fewer Men Prompt Greater Risk Taking

RANDI PROFFITT LEYVA (TEXAS CHRISTIAN UNIVERSITY, R.PROFFITTEYVA@TCU.EDU), DANIELLE J. DELPRIORE, SARAH E. HILL, MAX BUTTERFIELD

Sex ratio imbalances set the stage for increasingly intense competition among members of the relatively abundant sex to display traits—or provide enticements—often preferred by members of the opposite (and rarer) sex. The current research utilizes experimental methods to examine the effects of female-biased sex ratios and beliefs about men's condom use preferences on women's likelihood of having sex without a condom. Because women must compete more fiercely for mates when they are the majority sex (and men are relatively scarce), we predicted that a female-biased sex ratio would increase women's willingness to engage in sexual behaviors that they believed would increase their likelihood of mating success. We found support for this hypothesis across two experiments. The results provide preliminary naturalistic and experimental support for the hypothesis that the local sex ratio may have important implications for women's willingness to take sexual risks.

67. The role of self-esteem and emotion in aggression: anger and mate value predict aggression tactics

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In an MTurk survey (N=296), we examined the roles of domain-specific self-esteem (Kirkpatrick & Ellis, 2001) and emotions (particularly anger; Sell et al., 2009) in predicting direct and indirect forms of aggression in response to an insult. Multiple regression analyses revealed that (1) consistent with previous research, men were more likely to use direct aggression, and to prefer direct over indirect aggression tactics as measured by a difference score; (2) controlling for sex, other types of self-esteem, and emotion, self-perceived mate value positively predicts direct and indirect aggression, while social inclusion negatively predicts direct aggression; (3) anger positively predicts direct and indirect aggression; (4) anger and self-perceived mate value predict the tendency to use more direct relative to indirect aggression tactics. Together these results suggest that the roles of domain-specific self-esteem and anger are independent and important predictors of aggression tactics.

68. The influence of hormone replacement therapy on mate preferences and partner-directed behavior

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Hormone replacement therapy (HRT) is a popular treatment for menopause-related symptoms and is associated with increased well-being and sexual function (Hunter, 1990). Prior research has linked synthetic estrogen

within combined hormonal contraceptives with sexual jealousy and mate-retention behavior in young women (e.g., Welling, Puts, Roberts, Little, & Burriss, 2012). However, no studies have examined the impact of synthetic hormones in HRT on mate preferences or mate-directed behavior among postmenopausal women. The current study tests for associations between HRT and preferences for sexually dimorphic faces as assessed via a two-alternative forced choice face preference task (e.g., Welling et al., 2007). We will also examine the influence of HRT on other aspects of relationships, including satisfaction (Hendrick, 1998), sociosexual orientation (Penke & Asendorpf, 2008), sexual experience (Hill, 1998; McGahuey et al., 2000), relationship-contingent self-esteem (Knee, Canvello, Bush, & Cook, 2008), partner-specific investment (Ellis, 1998), and mate retention (Buss, Shackelford, & McKibbin, 2008). Participants will consist of approximately 200 postmenopausal adult heterosexual women who are currently in a romantic relationship and are between 45–65 years old (when HRT use is typically initiated). Data collection is currently ongoing.

69. Emotions, Empathy, and Physiology

AMBER MASSEY ABERNATHY (OKLAHOMA STATE UNIVERSITY, MASSEYA@OKSTATE.EDU), JENNIFER BYRD-CRAVEN, SAMANTHA SELLERS

False display of an empathetic response can occur without individuals actually feeling an emotional response. This can facilitate social alliances and status striving. However, this behavior in extreme instances is often seen as psychopathology (Machiavellian personality traits). Although this may be viewed as a negative phenotype, it is highly correlated with social dominance. The theoretical perspective of Resource Control Theory provides a context to understand the costs and benefits of this phenotype within a social hierarchy (Hawley, 2014). Specifically, aggression in the service of effective resource control can not only be effective but also appealing to the social group. We sought to determine how personality traits, social status, and life-history factors were related to sympathetic nervous system activity when watching videos designed to elicit an empathetic response. Results revealed that individuals high on Machiavellian personality traits displayed less of a SNS response, but did not report less empathy. Machiavellian traits were also related to bi-strategic social strategy usage. These findings suggest that lower physiological arousal to the distress of others may facilitate social dominance.

70. The Tripartite Theory of Machiavellian Morality: Judgment, Influence, and Conscience as Distinct Moral Adaptations

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Morality encompasses complex, multidimensional phenomena spanning diverse content areas. We propose a tripartite theory of Machiavellian morality in which

moral judgment, moral influence, and moral conscience are functionally distinct moral adaptations. Moral judgment is an adaptation designed to determine how exploitative or benefit-bestowing a conspecific is and to use that information when choosing relationship partners. Moral influence is designed to identify the most cost-effective means of altering the future behavior of others to be less cost-inflicting and more benefit-bestowing. Moral conscience is an adaptation designed to guide one's own behavior towards others to strategically avoid ramifications from other's moral judgment and influence mechanisms. This tripartite framework can help clarify understanding of puzzling moral phenomenon, such as sexual double standards and moral hypocrisy. It also has the potential to refocus attention on novel areas of research, such as sexual morality.

71. Killing for the Greater Good: Action Aversion and the Evolutionary Psychology of Harm Avoidance

C. DAVID NAVARRETE (MICHIGAN STATE UNIVERSITY, CDN@MSU.EDU),
ANDREW M. DEFEVER

Moral judgment is influenced by both automatic emotional and deliberative reasoning systems that evolved to facilitate or inhibit action. Psychological conflict arises when these systems produce competing intuitions about right and wrong in moral dilemmas involving harm to third parties. We investigated the role of emotional arousal in inhibiting harmful action in a behavioral study where participants were immersed in a three-dimensional digital simulation of two classic "trolley" scenarios. Participants chose whether or not to act as moral *utilitarians*—causing the death of one person in order to save the lives of five, while arousal was measured in real time via skin conductance response. Our results showed that emotional arousal is elevated when anticipating harming another person using personal force to achieve a utilitarian outcome, relative to when achieving a similar outcome via impersonal action, and this response differential is linked to a reduction in the likelihood of using harmful action. Moreover, when the use of personal harm was required to save lives, emotional arousal was higher *pre-action* relative to *post-action*, suggesting that arousal may function as the output of affective system evolved to inhibit behavior harmful to others.

72. Can "Getting the Creeps" be an Evolutionary Adaptation?

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KOEHNKE

Surprisingly, until now there has never been an empirical study of "creepiness." An international sample of 1,341 individuals responded to an online survey. Males were perceived as being more likely to be creepy than females, and females were more likely to associate sexual threat with creepiness. Nonverbal behaviors and characteristics associated with unpredictability were also

predictors of creepiness, as were some occupations and hobbies. The results are consistent with the hypothesis that being “creeped out” is an evolved adaptive emotional response to ambiguity about the presence of threat that enables us to maintain vigilance during times of uncertainty.

73. Sex Differences in Attraction to Opposite-Sex Friends: An Artifact of Sampling Method?

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In studies in which young adults are asked to either think of an opposite-sex friend or bring an opposite-sex friend to the lab, young men report more attraction to their friend than young women do (Bleske-Rechek et al., 2012; Kaplan & Keys, 1997). Do these sex differences in attraction occur because men and women have fundamentally different types of people in mind when they think of an “opposite-sex friend”? In two studies, we approached male-female dyads at a university student center, thus acquiring naturally occurring samples of opposite-sex friends. In these two samples, men did not report significantly more attraction toward their friend than women did. In fact, in both sexes, attraction to opposite-sex friends was moderate overall but varied widely from person to person. Further, one person’s attraction toward their friend did not predict their friend’s attraction toward them. Our findings suggest that men’s and women’s everyday experiences with their opposite-sex friends might differ from their mental definitions of an opposite-sex friend. We speculate that men more often mentally define an opposite-sex friend as “a member of the opposite sex with romantic potential,” and women more often mentally define an opposite-sex friend as “a friend of the opposite sex.”

74. Tend-and-Befriend: Do Males and Females Show Differential Physiological Responses to Social Stressors?

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Tend-and-Befriend (T&B; Taylor et al., 2000) posits sex differences in stress responses are based on sexually selected differences in emphases in social environment. The current study tests T&B model, along with Geary & Flinn’s (2002) suggested revisions that incorporate male befriending under coalitional contexts. Participants answered questionnaires and watched either babies crying (female-typical stressor) or an out-group threat (male-typical stressor) following a mortality salience or control paradigm, and gave three saliva samples for cortisol and testosterone before (T1), immediately after (T2), and 20 minutes after (T3) the stressor task. A significant two-way interaction showed differences in testosterone response (T2 to T3 change) to the video stressor, such that males had a higher average testosterone response to the out-group threat,

and females had a higher average testosterone response to the crying babies; however, an analysis of T2 to T3 cortisol responses showed that males had the lowest stress responses to the out-group threat in the mortality salience condition. Results add an additional layer of complexity to the physiological cascades that occur when examining male-typical and female-typical social stressors previously unaccounted for in T&B models.

75. Do third parties punish on behalf of strangers? Is it motivated by moral outrage?

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Many researchers have presented evidence that third parties to conflicts are willing to punish aggressors on behalf of strangers in one-shot interactions. However, the reliance of this area of research on experimental economic games has led some to question its external validity. We tested the propensity of humans to punish either on behalf of themselves or a stranger using different methods to increase experimental realism. Namely, we followed Bushman and Baumeister (1998) by provoking participants with an insulting essay evaluation and then presenting a cost-free opportunity to punish other participants by controlling the volume and duration of a sound blast they must hear.

Punishment of insulters relative to controls was more than twice as harsh when administered by second parties ($d = .742$) rather than by third parties ($d = .338$). Moreover, recipients were angrier at insulters relative to control subjects who were not insulters, whereas witnesses were no angrier toward insulters than they were toward control subjects. Witnesses of insults also did not feel more empathy towards sufferers of insults than towards non-sufferers. Together, these results suggest that neither moral outrage toward the insulter nor empathy with the victim motivated third-party punishment. Future research should test whether third parties will engage in costly punishment in externally valid settings.

76. Coordination of moral judgments among third parties

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Shared moral judgments allow third parties to punish transgressors in a coordinated manner. When moral judgments are not shared, punishment of transgressors is more costly and less likely to be effective. Consequently, individuals need to be able to track the moral judgments of third parties and estimate the likelihood that coordinated condemnation of a transgressor will be forthcoming. As such, individuals should regulate their own moral judgments based on whether condemnation signals are common knowledge among other third parties. In an online survey ($N = 630$), we tested whether moral judgments of norm violators varied as a function of whether violations were condemned

privately or publicly. Compared to the private condemnation condition, norm violators were perceived to be more morally wrong when violations were condemned publicly with evidence of consensus among third parties. Additionally, participants reported that they would be more likely to confront transgressors about their actions in the public condemnation condition. These results suggest that third party moral judgment may function to prepare individuals to join coordinated moral coalitions which subsidize punishment of transgressors.

77. Perceptions of Stigma by Association Threats Drive Anger, Avoidance, and Aggression toward Same-Sex Gay and Bisexual Individuals

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Our research sought to understand heterosexuals' sexual prejudices by applying the affordance management perspective, which suggests that human behavior evolved to manage the perceived threats and opportunities (affordances) posed by others. Applied to intergroup relations, the threats perceived posed by outgroups elicit specific emotional and behavioral reactions to mitigate these threats. Integrated with the fundamental motives theory (Kenrick et al., 2010), the most relevant threats are ones to survival and reproduction. Associating with LGB men and women could stigmatize heterosexuals, by either suggesting they are also gender non-normative or not heterosexual, which could degrade one's social status or mating opportunities. Accordingly, we examined the extent to which heterosexuals' anger toward same-sex gay and bisexual targets was driven by perceptions that they pose stigma by association threats, which should elicit avoidance of and aggression toward said targets to reduce the possibility of stigma by association. Heterosexuals rated their perceptions of stigma by association threats posed by, anger evoked by, and public avoidance of and aggression toward heterosexual, bisexual, and gay/lesbian targets. Mediation analyses demonstrated that heterosexuals perceived same-sex non-heterosexuals to pose threats of stigma by association, which elicited anger, public avoidance of, and aggression toward those targets.

78. When Misfortune Befalls Another

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Schadenfreude is the feeling of pleasure in response to another's misfortune. We designed the current study to determine (1) the degree of schadenfreude people feel in evolutionarily relevant domains, such as small group belonging, large group status, attractiveness, and mating success; and (2) whether feeling happiness in response to another's misfortune is more closely tied to disliking them or envying them. We asked participants (N=240) to think of a same-sex peer they either envied (but did not dislike), disliked (but did not envy), or

envied and disliked. Then they imagined hearing about that person experiencing four misfortunes—one involving their small group exclusion, one involving a fall in large group status, one involving a decrement in attractiveness, and one involving a mating failure—and reported how happy they felt the moment they heard about each misfortune. Participants reported more happiness in response to misfortunes happening to someone they disliked, or to someone they disliked and envied, more than to someone they envied (but did not dislike). All four domains elicited a moderate amount of happiness, and across sex the mating failure elicited the most *schadenfreude*. Our findings reveal that young adults experience *schadenfreude* in a variety of contexts.

79. The effects of simulated weight change on perceptions of facial attractiveness and health

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Studies demonstrating that facial cues of adiposity influence health and attractiveness judgments typically use image transformations defined by prototypes of individuals with either high or low body mass indices. Such transformations alter facial adiposity, but will also alter any additional characteristics that distinguish high-BMI from low-BMI individuals. Addressing this issue, we manipulated cues of adiposity using transformations defined by prototypes of the same individuals when their weight was relatively high and relatively low. These transformations were applied to face images of women at the mid-point of the normal BMI range. Increased- and decreased-adiposity versions of the faces simulated an increase in BMI to the upper limit of this normal range or a decrease in BMI to the lower limit of this normal range, respectively. Analyses of health and attractiveness judgments of these images showed that the decreased-adiposity versions were judged healthier and more attractive than the increased-adiposity versions. Moreover, this effect was greater for attractiveness than health judgments. This study presents new evidence that cues of adiposity influence health and attractiveness judgments of faces and demonstrates a new method that may reduce confounds in face stimuli used to study the effects of cues of adiposity on mating-related perceptions.

80. Perceptions of Disease Threats Drive Physical Disgust and Avoidance of Gay and Bisexual Men

NICOLE SORNSON (UNIVERSITY OF WISCONSIN-EAU CLAIRE, SORNSONB@UWEC.EDU), JENNA LEE, SARAH NIGRO, ANGELA G. PIRLOTT

Our research sought to understand heterosexuals' sexual prejudices by applying the affordance management perspective (Gibson, 1979; McArthur & Baron, 1983; Neuberg et al., 2010), which proposes that human cognition and behavior evolved to manage the perceived threats and opportunities (affordances) posed

by others. Prejudices between groups arise due to threats perceived posed by outgroups, which elicit specific emotional and behavioral reactions to manage those perceived threats (Cottrell & Neuberg, 2005). We integrate this with the fundamental motives theory (Kenrick et al., 2010) to suggest the most relevant threats are the ones to survival and reproduction, e.g., disease threats (Schaller & Park, 2011). Due to their association with anal sex and HIV/AIDS, we predicted physical disgust toward gay and bisexual men is driven by perceptions that they pose disease threats which elicits disease avoidant behaviors. Heterosexual participants rated their perceptions of affordances posed by, emotional reactions to, and behavioral inclinations toward heterosexual, bisexual and gay/lesbian men and women. Mediation analyses demonstrated that perceptions that gay and bisexual men carry HIV/AIDS drive physical disgust and disease avoidant behaviors toward gay and bisexual men. In all, this research demonstrates the functionality of intergroup emotions and behaviors as predicted by evolutionary mechanisms.

81. Does differential arousal explain sex differences in jealousy? Results from two field trials

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Harris (2004) proposed that men may report greater “distress” than women over sexual (vs emotional) jealousy infidelity scenarios because men experience greater physiological response (“arousal”) when thinking about sex. She suggested that this arousal might be misinterpreted as “distressing” due to the limited response options provided subjects. Whereas we could not constrain subjects’ physiological response to the sexual infidelity scenario, we theorized that differential response to the two scenarios might be masked if subjects were aroused by other means. We surveyed people on their way into and out of the student recreation center. In two studies (N1 = 324; N2 = 1068), men reported greater distress about a partner’s sexual infidelity than women. While this sex difference was not significant among “aroused” subjects (leaving the rec center) in Study 1, it was significant among both “aroused” and “unaroused” subjects in Study 2. A marginally-significant increase in distress over a partner’s sexual infidelity among women leaving (versus entering) the rec center in Study 1 explained the one non-significant result and did not replicate in Study 2. These findings seem to contradict Harris’ proposal that the sex difference in sexual jealousy is due to “confusion” about the source of men’s arousal.

82. Influence of One’s Own Infidelities on Mate Retention

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TODD K. SHACKELFORD

Ancestral women benefited from mating with a man who possessed both “good genes” and was willing to invest in her and offspring they produce together.

Finding both qualities in a partner is challenging, with the result that women sometimes form long-term partnerships with men who have lower-quality genes or provide lower-quality investment than women desire. In consequence, women sometimes pursue extra-pair relationships, either to secure higher-quality genes than their current long-term partner offers or to replace their long-term partner with a man who can provide higher-quality investment. In the first context, an unfaithful woman intends to retain her existing long-term partnership, whereas in the second context she intends to establish a new long-term partnership. I therefore predict that women's own mate retention efforts will be greater in the first context relative to the second context. I present analyses to test this and related predictions using self-report data collected from several hundred women in long-term relationships.

83. An attempt to combine the roles of exaptation and adaptation in the evolution of human language

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Every human language has the resources to express approximately the same meanings, suggesting its development is biologically constrained. Part of the language development's constraints can be explained by a repertoire of pre-existing conceptual capacities evolved independently of language. The present article hypothesizes such repertoire are adaptations evolved under selective pressures acting on individual's level, while the capacity to attribute meaning to word order was a result of exaptation of cognitive functions adapted to stone tools making. Such hypothesis is based on previous studies and experimental evidences in favor of the pre-existence of conceptual capacities guiding language development and on studies linking stone tools evolution to language evolution. The repertoire of pre-existing conceptual capacities would be cognitive functions that don't need to be communicated to be useful for their owner's survival, (e.g. volition, theory of mind, conceptualization of conditional events, etc). Before the emergence of syntax, each function's use should have been circumscribed to their respective tasks, forming a mind divided in specialized intelligences analogous to that one described by Mithen. The development of the language needed to describe a function would allow its integration to a central intelligence.

84. Low Childhood Socioeconomic Status Promotes Eating in the Absence of Energy Need

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The current research examined the effects of childhood socioeconomic status (SES) and current energy need on eating behaviors in adulthood. We

hypothesized that participants who grew up in low SES environments during childhood would consume more calories regardless of energy need. Decoupling consumption from energy need would be adaptive for survivability in unpredictable, resource-scarce environments, but may lead to overeating in modern, food-rich environments. We found support for this hypothesis across 3 studies. In each study, individuals' energy need was measured, followed by an opportunity to freely consume snacks. Results revealed that individuals from high SES early backgrounds ate based on energy need—eating more when need was high than low. As predicted, those from lower early SES consumed equally high amounts of food, regardless of energy need. These results indicate that childhood SES may produce long lasting effects upon mechanisms of homeostatic energy regulation. Future work should be done to unpack the psychological and physiological processes underlying the decoupling of eating behavior from energy need in individuals who grew up in low SES environments.

85. Examining third-party sanctions when both punishments and rewards are possible

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Recent studies have emphasized the importance of third-party punishment (e.g., Fehr & Fischbacher, 2004). However, do people really have a strong willingness to punish others? From recent experimental and anthropological evidences (e.g., Guala, 2012; Rand et al., 2009), we hypothesized that if individuals had the chance to engage in other types of sanctioning, they would prefer them to punishment. We conducted a laboratory experiment to investigate this possibility. In each session, three participants engaged in a one-shot SD game, while the remaining participant (a third-party sanctioner) decided whether to sanction any of the SD players by incurring a personal cost. There were three conditions in which the sanctioning options available varied: “punishment only” (PO), “reward only” (RO), or “both punishment and reward” (BOTH). The results revealed that in BOTH how much participants paid for punishment was almost equal to that of PO, but how much they paid for reward was significantly smaller than that found in RO. These results suggest that (1) people might, contrary to our prediction, have a tendency to punish unrelated others, even when other types of sanctioning are possible, (2) when only rewards are possible, people engage in sanctioning under the framework of cooperative exchange.

86. Hormonal Response to Partner Exposure in Female-Female, Female-Male, and Male-Male Romantic Partnerships

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Love and affection have long been the subjects of human fascination. We posit that these feelings of love and affection are the cumulative manifestations of

biological responses to prospective and current romantic partners. Such biological responses are linked especially to coordination of the hormone cortisol. Feelings of love and affection do not limit themselves to opposite-sex romantic partner pairs; they extend to female-female and male-male partner pairings. We assert that biological responses to romantic partner exposure should be similar amongst individuals of the same biological sex, regardless of the sex of their partner. Previous research shows that romantic partners display synchrony in their cortisol responses, or adrenocortical attunement. The focus of this study is on cortisol responses in individuals in response to partner exposure, measured in salivary samples taken at and around the time of partner exposure and assayed for cortisol. This study examines a series of specific hormonal snapshots related to partner exposure in opposite and same-sex romantic partnerships. Our data show homologous attunement patterns between same-sex and opposite-sex partnerships.

87. Women's Sexual Strategies and Perceptions of their Partners

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Couples readily admit to having had unprotected sex and anticipate having unprotected sex in the future and some women even report a willingness to deliberately have unprotected sex despite the risk of an unwanted pregnancy. Previous research has found that women are significantly more likely to report a willingness to have unprotected sex with men whom they rate more favorably on physical attractiveness. Using a sample of naturally cycling women in heterosexual, long-term relationships who reported not currently trying to become pregnant, we found that women who initiated sex at their last sexual encounter had partners whom they rated as above average on physical attractiveness. Women who initiated sex also used more mate retention tactics toward their partners and engaged in more risky sexual behaviors than other women. Furthermore, women who specifically engaged in risky sexual behaviors that could lead to an unintended pregnancy reported being more physically attractive and socially dominant, and reported having partners who were more socially dominant, physically dominant, and masculine. These findings suggest that women are more willing to risk an unwanted pregnancy with men of higher perceived mate quality than with men of comparatively lower quality.

88. When Danger Lurks Behind You: Effects of Priming Threat on Attitudes

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Context effects within attitude research are well documented; however, recent developments in evolutionary psychology (e.g., fundamental motives framework) offer new possibilities for the study of attitudes. Specifically, little research has

examined how attitude evaluations can be affected by evolutionary relevant motives, such as the activation of self-protection. In two studies, students read about campus crime (self-protection threat), campus safety, or a neutral article about campus parking. In Study 1, White students listed their thoughts and reported their attitudes toward affirmative action (pre and post), whereas students in Study 2 completed the same process for capital punishment (post only). When students were primed with threat, they reported more positive attitudes toward capital punishment and more negative attitudes toward affirmative action. Feeling threatened may act as an “internal context effect” that prompts people to generate associations that are more extreme than normal for relevant attitude objects. Changes in the valence and number of thoughts are discussed.

89. Development and Initial Psychometric Assessment of the Reasons to Pretend Orgasm Inventory

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Research suggests that mate retention may be the ultimate, evolutionary reason for which women may pretend orgasm with a long-term partner (Kaighobadi et al., 2012). However, the proximate, cognitive reasons for pretending orgasm are not well understood. The current research aimed to identify the proximate reasons for which women pretend orgasm and to develop a scale, the Reasons for Pretending Orgasm Inventory (RPOI), that could be used in future research. First, one sample of women (n = 48) identified reasons for which they had pretended to orgasm. After redundancies among these reasons were eliminated, a different sample of women (n = 287) indicated the frequency with which they had pretended to orgasm for each of the different reasons. Frequency data were analyzed using a principal components analysis. Results suggested three primary factors, we named these factors: Improve Partner's Experience (i.e., I want to make my partner sexually excited.), Deception and Manipulation (i.e., I want to get something from my partner.), and Hiding Sexual Disinterest (i.e., I want to stop having sex with my partner.). Future research will be aimed at validating the RPOI by examining relationships between reasons to pretend orgasm and various individual difference variables (e.g., Machiavellianism, Agreeableness, Neuroticism).

90. Online Mate Retention Tactics: number of offspring is negatively correlated with the use of Physical Signals of Possession

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Previous research has investigated individual differences in the use of Mate Retention Tactics (MRTs) in non-online settings. In the current study, we investigated whether previous findings about sex differences in non-online

MRT-use extend to online MRT-use. Additionally, we explored whether the tradeoff between parental- and mate- investment was associated with online MRT-use. We predicted that participants' number of offspring would be negatively correlated with online MRT-use. A modified version of the Mate Retention Inventory Short-Form was administered to participants. Results show a sex difference in the use of Physical Appearance Enhancement, but no sex differences in the use of other online MRTs. The difference between men's and women's use of online Resource Display approached significance. There was also a significant negative correlation between number of offspring and the use of Physical Signals of Possession. There was no other significant correlation between number of offspring and any other online MRTs. Overall, because our results do not perfectly parallel previous findings about sex differences in MRT-use, it is likely that people do not use online MRTs in the same ways as they use non-online MRTs. Our results also show that people with more children engage in less online public signals of possession.

91. **Rape Avoidance and Affective Temperaments**

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Rape has been documented across history and cultures and is likely to be a recurring adaptive problem (Shields & Shields, 1993; McKibbin et al., 2011). The devastating physical and psychological effects of rape on women may have led to the development of behaviors to avoid rape. Rape avoidance behaviors have been documented and individual differences in their occurrence have been found (McKibbin et al., 2011). We examined a possible connection between rape-avoidance behaviors and affective temperaments to investigate other individual differences in women's rape avoidance behaviors. We predicted that rape avoidance behaviors would correlate positively with cyclothymic, generalized anxious, and depressive temperaments. We also predicted that rape avoidance behaviors would correlate negatively with hyperthymic temperaments. We administered the Temperament Evaluation of Memphis, Pisa, Paris and San Diego Autoquestionnaire (TEMPS-A; Akiskal & Akiskal, 2005), the Rape Avoidance Inventory (RAI; McKibbin et al., 2009), and the Multidimensional Personality Questionnaire-Brief Form (MPQ-BF; Tellegen, 1982) to a sample of women (n = 134). Our results indicate that there is a significant negative correlation ($p < 0.01$) between both cyclothymic and depressive temperaments and rape avoidance behaviors. Discussion provides possible explanations for these connections.

92. **When are ovulating women especially attracted to attractive men?: Adaptive mating psychology in a pathogen prevalent ecology**

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SCHALLER

Guided by the Strategic Pluralism Model (Gangestad & Simpson, 2000), we tested how perceived pathogen prevalence influences preferences for physically attractive mates across 3 experiments. Drawing on the evolutionary implications of differential minimal parental investment, this model predicts that women should be especially inclined to prefer mates who appear more likely to produce offspring genetically endowed with better immunocompetence. In Experiment 1, women (but not men) who read an article highlighting a recent rise in contagious diseases indicated an increased importance of physical attractiveness in a potential mate. Experiment 2 replicated this finding with a different methodology and revealed that this effect is specific to physical attractiveness, and it does not extend to other desirable traits. Experiment 3 tested whether the findings of the first two experiments are attributable to a “good genes” explanation by examining women’s preferences for attractive short-term mates across the ovulatory cycle. The results revealed that women who were exposed to a pathogen threat when at high fertility in their cycles displayed an increased preference for attractive mates. These findings suggest that women—but not men—place a higher priority on attractiveness when pathogens are prevalent, possibly because physical attractiveness is a signal of genetic fitness.

93. Engagement Rings as Costly Signals

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The current study sought to integrate costly signaling theory with research concerning human mate preferences to predict that (1) men will choose a more expensive engagement ring when proposing to an attractive than unattractive woman and (2) women will desire a more expensive engagement ring when given by an unattractive than attractive man. Heterosexual men and women were presented with a photograph of an opposite-sex individual, pre-rated to be of high or low attractiveness. Male participants were shown five engagement rings that varied in carat weight and price and were asked to choose the ring that they would use to propose to the target woman. Conversely, female participants were asked to choose the least expensive engagement ring that they would be satisfied with receiving from the target man. Analysis of the data supported both hypotheses. Furthermore, perceptions of target attractiveness were positively correlated with the size/cost of the engagement ring chosen by male participants and negatively correlated with the size/cost of the engagement ring required by female participants. The latter finding suggests that women use a mate’s resources to compensate for decrements in his physical attractiveness.

94. Neoteny in Evolution and Psychology

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Three to four decades ago the importance of neoteny in human evolutionary development and possible implications of “psychological neoteny” are widely discussed, with many conjectures. Stephen Jay Gould wrote at considerable length, in *Phylogeny and Ontogeny*, and in his popular writings. He relied considerably on the writings of Louis Bolk from early 20th Century. Even popular culture was affected, it could be argued, for example, in the movies *Close Encounters of the Third Kind* and *Amadeus*. The latter was a restatement of Arthur Schopenhauer’s essay “On Genius” in mid 19th Century. But this was probably unintentional, since the creators of this film were probably unaware. In the 1980s and 1990s, Ashley Montagu and Weston LaBarre wrote about neoteny and also conjectured about psychological and cognitive implications. Clive Bromhall wrote in a similar vein a decade ago. All of the above were in anthropology, paleontology or zoology. With a few notable exceptions, these considerations seem to be neglected in the main body of psychology. Evolution psychology does recognize an interface between disciplines, and some may see some relevance here. Gould credited K selection (and extreme K selection) for the appearance of neoteny and this could have implications for psychology of moderns, of course. And it is plausible that neoteny produced ultimate selective advantages. But proximate causes/selection pressures may remain unclear. Same sex (male/male) sexual selection will be again suggested as contributing to increased neotenzation, especially in the last 100K years.

95. He said, she said: Power and the shared nature of fertility decision making in intimate couples

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Research shows that fertility intentions shift as a function of relationship experience. The research is split regarding how couples share fertility decision-making power. This work uniquely investigates the use of phrases indicative of shared or inequitable social power regarding fertility discussions. We predicted that more egalitarian attitudes, equivalent levels of education, and equivalent levels of career-orientation would be associated with greater compromise and agreement, compared to persuasion and concession, in couple’s fertility negotiations. Couples’ (N = 120, mean age = 21, SD age = 4.96, 50% female) discussions were transcribed and coded for statements of family-focused, career-focused and relationship-focused values; positive and negative desires; persuasive statements, concessions, agreement, and disagreement; child timing and number intentions. Trends in the data suggest that couples with more similar career-orientation scores were more likely to mention phrases coded as compromise and agreement. We also found that individuals with higher education levels had greater social power—they were more likely to mention phrases coded as persuasion and disagreement—regarding fertility planning. We also found that men and women were equally likely to use phrases coded as compromise and agreement, and persuasion and disagreement (i.e.

decision-making power was shared equally between the sexes). Implications are discussed in the context of a social power perspective on fertility decision-making practices.

96. Sports Talk: An Alternative Definition of Co-Rumination in Social Relationships

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Co-rumination (Rose, 2002) is a construct with a female-biased definitional emphasis on the excessive verbal discussion of negative “social problems.” It has, to date, failed to take into account different types of social behaviors under discussion in friendships. The current study examined an expanded definition of co-rumination to include coalitional behaviors using sports and thus more inclusive of male-typical behaviors). A broader definition of this construct based on evolutionary theories of sex differences in social behaviors (Geary, 2010) allows a better understanding of co-rumination in male same-sex friendships. Male participants completed questionnaires examining traditionally defined co-rumination and sports co-rumination behaviors with their best/closest friend. Results showed that although the two types of co-rumination were significantly correlated, other behaviors (e.g., number of hours watching sports and sports analyses television) were not significantly correlated with traditional co-rumination. These data suggest that although these general behaviors may be related, they may have different emphases. This supports the hypothesis that co-rumination may necessitate an expanded definition to be more inclusive of male-typical co-rumination behaviors, which may better elucidate the causes and consequences of co-rumination in same-sex and cross-sex friendships.

97. Stereotypes of Dominance Track Actual Dominance

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Faces tend to get judged on two main personality dimensions: trustworthiness and dominance (Todorov et al., 2008, Trends in Cognitive Sciences). Such judgments turn out to be inaccurate for trustworthiness (Rule et al., 2013, Journal of Personality and Social Psychology). Emerging evidence suggests that dominance judgments, however, appear to have some accuracy (Schubert & Sell, 2014, Evolutionary Psychology). Here, we aim to (a) further describe how well dominance judgments track actual dominance, and to (b) showcase a technical method for mapping face images onto one another. A total of 300 face images from Todorov’s face database were marked in over 100 locations using Fantamorph, allowing us to extract X and Y coordinates. These 300 images had been rated on perceived dominance. In addition, facial marking was accomplished for an image reflecting high dominance, based on ten actually

dominant males morphed together. We conducted a two-dimensional regression analysis to map each of the 300 face images onto the one dominant male face. The indices of similarity between the 300 faces from Todorov and the actually-dominant face turned out to be positively correlated with the judgments of dominance. These results support the idea that dominance judgments are accurate to some extent.

98. Effects of Dominance on Mate-Choice Copying

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Humans use information about the mate choices of others to inform their own mate choices. This is called mate-choice copying (MCC). Characteristics of the model being copied (e.g. age and attractiveness) are known to influence how much an observer copies the model's choice. We predict that dominance may also have an effect: Males who copy the mate choice of a more dominant male are at risk of incurring physical harm or of being cuckolded. To test the effects of dominance on MCC in males, we show videos of real speed-dating interactions to male participants and have them rate the female (target) daters' attractiveness before and after seeing her interact with a male (model) dater, whose dominance they also rate. Results showing an inverted U-shaped relationship between the model's dominance and the change in attractiveness of the target would suggest that, while the mate choices of dominant males may be more useful to the observer, the cost of copying dominant males may deter such copying. We also predict a positive correlation between dominance and trait-based MCC toward new women with similar traits to the targets, where copying costs are absent.

99. The Effects of Target Mate Value, Sex, and Relationship Status on Perceived Sexual Interest

CARIN PERILLOUX (TEXAS STATE UNIVERSITY, CARINP@GMAIL.COM)

Research on sexual interest perception has focused more on naturally-occurring individual differences and less on experimental manipulation. The current study incorporated an experimental manipulation of the quality of the target to determine the effect of this variable on perceived sexual interest. Heterosexual participants (N = 378) viewed a dating profile of a member of the opposite sex consisting of the individual's traits as supposedly rated by other users on the dating website. These profiles were manipulated to numerically depict low, medium, or high mate value. After viewing their randomly-assigned profile, participants read a neutral email the target supposedly wrote to another user and were asked to imagine the target had written it to them and to rate the target's sexual interest. Results indicated that the higher the mate value of the target profile, the more sexual interest participants inferred, regardless of sex. There was also a significant interaction of sex and relationship status: mated men inferred less sexual interest than single men, while women showed the

reverse pattern. These results, along with recent research in this area, suggest that sexual inference mechanisms might function differently in men and women.

100. Sex Differences in the Focusing Illusion

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The term “focusing illusion” is used to describe the tendency for people’s evaluations of their life satisfaction to be affected by prior exposure to questions about their standing on a specific life domain. In the current research, we tested the hypothesis that men and women succumb to the focusing illusion at different rates depending on context. We used a 4 (context) x 2 (gender) x 2 (question order) between-subjects expericorr design (N=318) to test the predictions that men’s and women’s evaluations of their overall happiness are (1) differentially affected by engaging in prior evaluations of their physical attractiveness ($W > M$), ambition ($M > W$), and short-term mating success ($M > W$); and (2) similarly affected by prior evaluations of their desirability as a potential romantic partner ($M = W$). In the experimental conditions, participants evaluated themselves on one of the four domains and then reported their life satisfaction. In the control conditions, domain-specific evaluations occurred after people reported their life satisfaction. Analyses revealed no focusing illusion effects for either sex in any context. Because focusing illusion effects have been revealed in numerous previous studies, we suggest that the non-significant effects in the current study are due to restricted range in participants’ life satisfaction ratings and domain-specific self-evaluations.

101. Sex-ratios of top friends differ between males and females

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Humans form and maintain friendships with opposite-sex conspecifics. We attempted to investigate whether there is a sex difference in the number of opposite-sex friends people have. Using data collected from n=49,270 users of a social networking site and their top-8 publicly advertised friends we look at the number of users’ top-8 friends that are same-sex. The distribution of males’ same-sex friends showed a monotonic increase from one male friend to eight male friends. The distribution of females’ same-sex friends looked like a normal distribution with very fat tails, such that they were most likely to have an even distribution of male and female friends, but only slightly less likely to fall on either end of the spectrum, with mostly male or mostly female friends. We categorized users into those with same-sex vs. opposite-sex best friends. Males with male best-friends had the typical male pattern, whereas males with female best-friends had a female-like pattern. Females with female best-friends were more likely to have all females in their top-8, whereas females with male best

friends were more likely to have all males in their top-8. Males and females seem to be using different friendship strategies, possibly necessitating several functional explanations of friendship.

102. Are Life History Variables Sensitive to Priming?: A multi-level meta-analysis of 62 studies

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Experimental methods, specifically priming, may help evaluate causative links between environmental cues and human life history strategies (LHS). Current research has used a range of prime content (e.g. mortality salience), prime media (e.g. photographs), and potential LHS variables (e.g. preferred family size). Here we present quantitative multi-level meta-analyses on 62 studies to test (i) the efficacy of priming LHS, (ii) which prime media and contents are more effective, and (iii) which LHS variables are most sensitive to priming, in order to better understand causes of variation in individual LHS. Results indicate a significant overall effect of priming on LHS (weighted $d=0.59$, 95% CI=0.21-1.00, $k=62$), with no significant variation across prime media or content. However, studies that evaluated the effect of priming on time discounting had stronger overall effects (weighted $d=0.90$, 95%CI=0.37-1.47, $k=13$) than those measuring other potential LHS variables (weighted $d=0.50$, 95%CI=0.16-0.84, $k=49$). We detected no significant publication bias. These results suggest that priming can affect measures of LHS, and help clarifying causative pathways. The lack of variation across prime contents supports LHS being influenced by multiple cues. Some components of LHS being more easily manipulated through priming than others, may explain greater observed variation in LHS in varying environments.

103. Precision limb landing in complex arboreal topologies as a pre-adaptation for complex symbolic communication systems

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Humans perceive, manipulate, modify, and create numerous complex objects as a part of everyday life. Our evolved analytical perception capacities for identification of complex shapes and classification of objects enable us to use tools and communicate symbolically. The abundance of diverse tools in our environment has even been suggested as underlying the many parts of speech and prepositions that comprise our complex grammar. Recently, researchers have theorized that complex tool use may have emerged in recently terrestrialized primates who have re-purposed anatomy evolved for handling arboreal supports. Studies of complex tool use and symbolic culture are now being extended to observations of non-human Anthropoids. I hypothesize that our sophisticated symbolic communications have cognitive roots in the early Cenozoic when survival of emerging primates depended upon rapid recognition

of complex branch shapes during locomotion involving precision limb landing. Leaping and arboreality substantially reduced the effectiveness of olfactory signaling, however, and may have additionally necessitated an increase in the complexity of vocal communication. Inspection of the vocalizations of leaping and brachiating primates suggests complex vocal gestures could have initially evolved as signals of visual acuity—an ancient relationship which may underly the strong overlap between auditory and visual language systems in humans.

104. Declination and the Spread of Antisocial Behavior

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We hypothesized the existence of an emotion, *declination*, that actively motivates antisociality upon exposure to cues of antisocial behavior indicating that local levels of cooperation and prosocial norm-enforcement are low. *Ceteris paribus*, antisocial behavior is adaptive in such social contexts as selfish behavior is unlikely to be punished, and cooperative behavior is likely to be exploited. In two online experiments, participants viewed brief video montages of either i) neutral behavior, ii) antisocial behavior, or iii) prosocial behavior; a fourth condition displayed hazardous situations absent human antagonists in order to induce fear as a negatively-valenced control. Participants self-reported their affective states following the video, and were then presented with memory tasks that actually presented an opportunity for antisocial cheating. As predicted by the declination hypothesis, in both experiments, relative to participants in the other conditions, participants exposed to others antisocial behavior a) reported a constellation of qualia and cognitions opposite to those previously reported for the prosocial emotion elevation, and b) were more likely to lie for money. These results provide initial evidence that declination is a coherent experience elicited by exposure to antisocial behavior and associated with subsequent enactment of antisocial behavior.

105. Traditions: The Bridge From the “Primitive Tribe” to the Ethnographic Present

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In his book *Primeval Kinship*, Chapais presents a plausible model of the “primitive tribe” of our early or pre-human ancestors in which two or more relatively stable residential clusterings create cooperative intergroup ties of kinship by exogamy, pair-bonding, and the identification of kinship relations through the observation of interactions between individuals. The goal of our “poster” (i.e., short film) is to encourage researchers modelling the process that led from this form of “primitive tribe” to the kinship behavior of the ethnographic present to shift from models based on groups, within or between which selection takes place, to models based on individual ancestors leaving

descendants over many generations by transmitting unilineal descent names and associated traditions. This reconception, based on the realization that clans can only come to exist via the transmission of traditional behaviors, has the advantage of accounting for three fundamental aspects of the ethnographic record not easily accounted for by group-based models: 1) the fluidity and flexibility of forager residential gatherings, 2) the constant discrepancy between clan membership and any of these fluid residential gatherings, and 3) the inclusion in residential gatherings of individuals so distantly related that they are sometimes misclassified as non-kin.

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Apparel & Accessories

Absolute Vintage	923 E. Broadway	875-8440
Acme	15 S. Ninth St.	817-2263
American Shoe	816 E. Broadway	442-6811
Bingham's	827 E. Broadway	442-6397
Blackberry Exchange	22 S. Ninth St.	499-0420
Breeze	906 E. Broadway	814-2262
Britches	130 S. Ninth St.	499-1401
Dreamcatcher	1020 E. Broadway	499-1313
Dryer's Shoe Store	7 N. Ninth St.	442-7984
Dungarees	504 E. Broadway	443-2565
Elly's Couture	914 E. Broadway	499-4401
Envy	814 E. Broadway	442-0712
Glick's	921 E. Broadway	256-4505
House of Van Sickle	1023 E. Walnut #3-4	442-1859
Impressions	20 S. Ninth St.	442-4877
Jock's Nitch	16 S. Ninth	474-2690
Leo's Old Clothes	9 N. Ninth St.	449-2001
Little Owl Boutique	27 N. Tenth	442-3690
Maude Vintage & Costume	818 E. Broadway	441-1683
Merle Norman	917 E. Broadway	449-3367
My Sister's Circus	1110 E. Broadway	443-5618
New Beginnings Consignment	7 S. Tenth St.	449-5722
Swank Boutique	913 E. Broadway	256-4795
Rally House	808 E. Broadway	397-5033
Tiger Spirit/Greek Exchange	111 S. Ninth St.	449-0608

Entertainment

Déjà Vu	405 Cherry St.	443-3216
Eastside Tavern	1016 E. Broadway	256-1500
Missouri Theatre Center for the Arts	203 S. Ninth St.	875-0600
Mojo's	1013 Park Ave.	875-0588
Ninth Street Video	10 Hitt St.	875-4112
Penguins Piano Bar	1025 E. Broadway	449-8005
Ragtag Cinema	10 Hitt St.	441-8504
Sideshow	1205A E. Broadway #C	777-7737
SoCo Club	119 S. Seventh	499-9483
The Blue Fugue	120 S. Ninth St.	815-9995
The Blue Note	17 N. Ninth St.	874-1944
The Bridge	1020 E Walnut	442-9645
Theatre NXS / Berlin Theatre	220 N. Tenth St.	639-0889
Tonic	122 S. Ninth St.	256-6633

Galleries

Alleyway Arts	1107 E. Broadway Ste B	489-0469
Artlandish	1019 E. Walnut St.	442-2999
Bluestem Missouri Crafts	13 S. Ninth St.	442-0211
Columbia Art League	207 S. Ninth St.	443-2131
Missouri Art Gallery	9 N. Tenth St.	443-5010
Orr Street Studios	104 Orr St.	268-5858
Poppy	922 E. Broadway	442-3223
PS: Gallery	812 E. Broadway	442-4831
North Village Arts Studios	1019 E. Walnut St (Below)	442-2999

Gift & Specialty Shops

Aardvarx	17 N. Tenth St.	874-8600
Adams Walls of Books	214 N. Eighth St.	443-5350
Allen's Flowers	111 S. Ninth St. #170	443-8719
Alpine Shop	1102 E. Broadway	817-2955
Barnhouse's Crazy Music Store	125 S. Eighth St.	445-0000
Calhoun's	911 E. Broadway	443-3614
Candy Factory	701 Cherry St.	443-8222
Columbia Photo	111 S. Ninth	443-0503
D&M Sound	201 S. Eighth St.	449-3933
Downtown Appliance	1104 E. Broadway	874-3333
Eye Candy	814 E. Walnut	875-2244
Frugal Finds	104 S. Providence	777-4353
Get Lost Bookstore	8 S. Ninth St.	449-4493
Gotcha	819 E. Walnut	442-2540
Grassroots Smoke Shop	203 N. Tenth St.	443-7662
Guitarfinder	113 N. Ninth St.	817-5710
Iron Tiger Tattoo	11 N. Tenth St.	499-1200
Jon's Pipe Shop	12 S. Eighth St.	449-8713
Kent's Floral Gallery & Gifts	919 E. Broadway	443-0232
Living Canvas	520 E. Broadway	442-8287
Makes Scents	19 S. Ninth St.	445-1611
McAdams' Ltd.	32 S. Providence Rd.	442-3151
Merle Norman Cosmetics	910 E. Broadway	449-3367
Mud Room	1103 E. Walnut	449-6155
Mustard Seed Fairtrade	25 S. Ninth St.	449-6166
My Secret Garden	823 E. Broadway	443-1546

Peace Nook	804C E. Broadway	875-0539
Rock Bottom Comics	1029 E. Walnut	443-0113
Roll On	1203 E. Broadway	443-7655
Slackers CDs & Games	1010 E. Broadway	442-3133
Studio Home	1025 E. Walnut #B	886-8991
T's Etc	1 S. Fourth St.	446-1694
Tallulah's Kitchen Tabletop & Home	812 E. Broadway	442-9550
The Bead Gallery	110 Orr St #103	356-4915
The Butterfly Tattoo	5 S. Ninth St.	443-6688
The Canvas on Broadway	706 E. Broadway #100	443-2222
The Frame Shop	110 Orr St.	442-7333
The Textbook Game	904 E. Elm #212	819-8970
Williams Fine Art & Solldiday Antiques	11 South Ninth Street	442-7525

Grocery

A&Y Grocery	15 N 4th St	875-8724
Break Time	200 N. Providence	443-0621
Chong's Oriental Market	701 Locust St.	443-1977
Dande's Gluten-Free Cafe	110 Orr Street, Suite 101	442-8740
Hitt Street Mini Market	111 Hitt St.	443-6114
Good Nature	910 Alley A	442-4242
Root Cellar Organic Foods	1023 E. Walnut	808 3553
North Village Nutrition	1013 E. Walnut	442-4075

Salons & Spas

Art of Hair	518 E. Broadway	442-2332
Bellelune Massage Therapy	23 S. Fourth St.	639-9303
Blanc Studio	918 E. Broadway	825-7518
Captain's Quarters	25 N. Tenth St.	449-2629
Cherry Hill Massage	307 Locust St.	446-3376
Hair Works	111 S. Ninth St.	442-6819
Kelani Salon & Spa	1100 E. Walnut	449-4931
Life is Sweet Massage Therapy	1005 E. Cherry #218	808-2894
Moonvalley Massage	920A E. Broadway #201	673-8087
Salon MIR	1110 E. Broadway, #B	443-4661
Salon Nefisa	825 E. Walnut	256-1220
Serenity Therapeutic Massage	908 E. Walnut	442-8511
Something New Hair Clinic	416 E. Broadway	874-7895
The Beach Salon	110 Orr St.	875-0060
The Buzz Barbershop	9 N. Eighth St.	424-3749
The Clip Joint	1001 E. Cherry, #101	443-8711
The Marc	32 N. Eighth St.	449-7900
Tiger Barber Shop	118 S. Ninth St.	449-5951
Varsity Clips	904 Elm St.	449-3333

Jewelry

Bryant's Campus Jewelry	402 E. Broadway	443-8076
Buchroeder's	1021 E. Broadway	443-1457
Diamond Banc	26 N. Ninth St.	442-0712
L.C. Betz Associates	601 E. Broadway, #303	449-1070
Monarch Jewelry	101 Orr St., #A	875-6673
Tucker's Fine Jewelry	100 N. Providence #103	817-1310

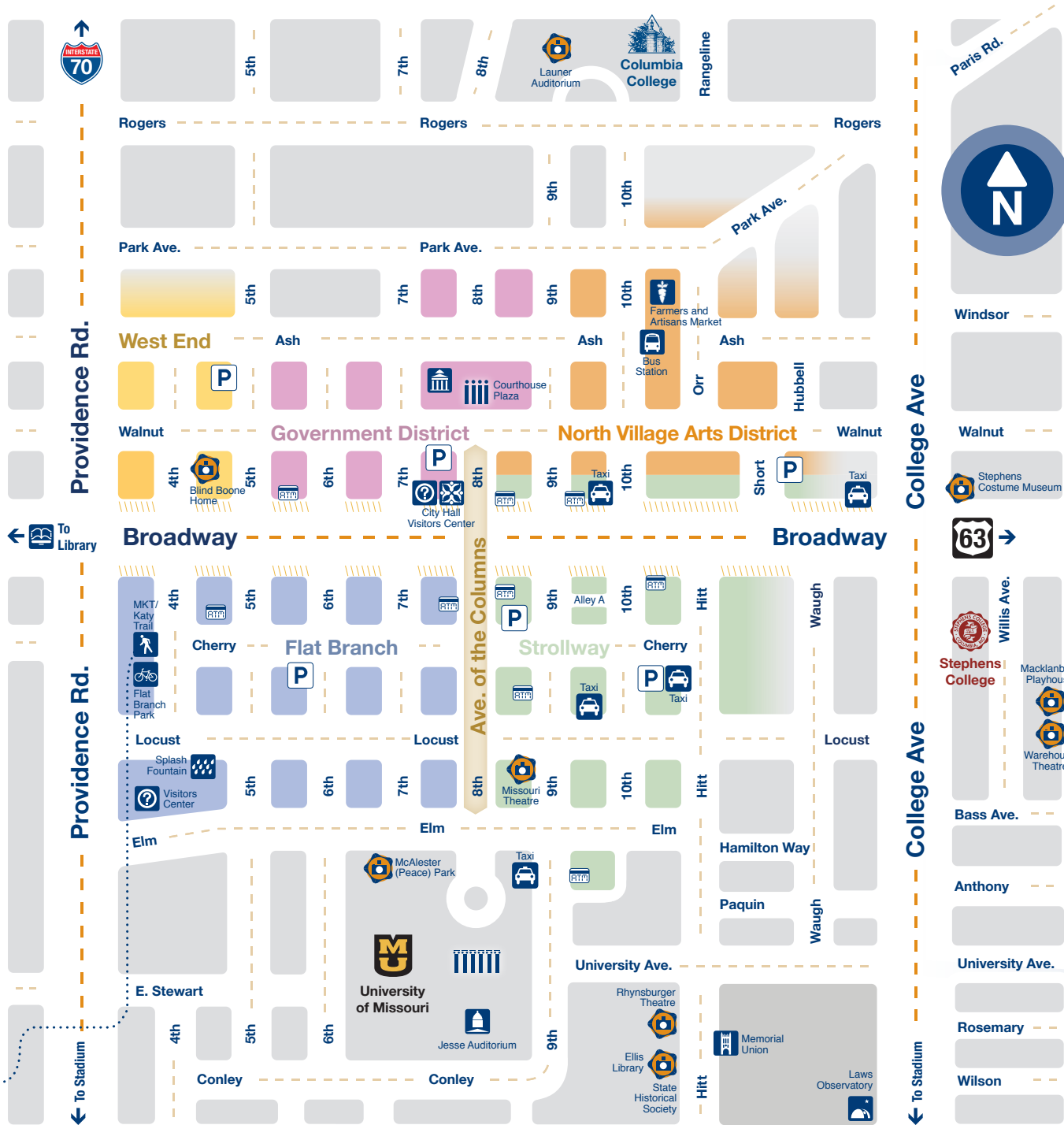
Restaurants & Bars

Addison's	709 Cherry St.	256-1995
Aladdin Hookah Lounge	12 S. Ninth	214-0500
Bambino's Italian Café	929 E. Broadway	817-2378
Bangkok Gardens	811 Cherry St.	874-3284
Bengal's Bar & Grill	227 S. Sixth St.	875-2337
Billiards on Broadway	514 E. Broadway	449-0116
Bleu	811 E. Walnut	442-8220
Booche's	110 S. Ninth St.	874-9519
Broadway Brewery	816 E. Broadway	449-2337
Broadway Diner	22 S. Fourth St.	875-1173
Café Berlin	220 N. Tenth St.	441-0400
Campus Bar & Grille	304 S. Ninth St.	817-0996
Casablanca Mediterranean Grill	501 Elm St.	442-4883
Cattle Drive	7 N. Sixth St.	817-2000
Chim's Thai Kitchen	201 N. Tenth St.	355-9590
Chinese Wok Express	422 E. Broadway	443-5099
Chipotle	306 S. Ninth St.	876-6622
CJ's	704 E. Broadway	442-7777
Coffee Zone	11 N. Ninth St.	449-8215
Cold Stone Creamery	904 Elm St.	443-5522
Coley's American Grill	15 S. Sixth St.	442-8887
Crazy Noodle	904 E. Broadway	474-0155
El Rancho	1014 E. Broadway	875-2121
Ernie's Cafe	1005 E. Walnut St.	874-7804
Field House	1107 E. Broadway	442-5213
Flat Branch Pub & Brewing	115 S. Fifth St.	499-0400
Formosa Restaurant	913A E. Broadway	449-3339

Geisha Sushi	804 E. Broadway	777-9997
Gumby's Pizza	1201A E. Broadway	874-8629
Hardee's & Red Burrito	200 S. Providence Rd.	442-3198
Harpo's	29 S. Tenth St.	443-5418
Hot Box Cookies	1013 Broadway	777-8269
India's House	1101 E. Broadway	817-2009
Ingredient	304 S. Ninth St.	442-1502
International Cafe	26 S. Ninth St.	449-4560
Jimmy John's Gourmet Sandwiches	1019 E. Broadway	815-0043
Jingo's Chinese	1201 E. Broadway	874-2530
Kaldi's Coffeehouse	29 S. Ninth St.	874-2566
Kampai Sushi & Lounge	907 Alley A	442-2239
Klik's	205 N. Tenth St.	449-6692
Kui Korean BBQ	22 N. Ninth St.	442-7888
La Siesta Mexican Cuisine	33 N. Ninth St.	449-8788
Lakota Coffee Company	24 S. Ninth St.	874-2852
Lollicup Tea Zone	23 S. Ninth St.	256-1933
Lucy's Corner Café	522 E. Broadway	875-1700
Mackenzie's Prime Seafood & Steaks	131 S. Tenth St.	514-4755
Main Squeeze Natural Foods Cafe	28 S. Ninth St.	817-5616
McNally's Irish Pub & Grill	7 N. Sixth St.	441-1284
Muse Cafe & Gallery	110 Orr St.	875-0840
On The Rocks	1011 E. Broadway	875-1590
Panera Bread Co	102 S. Ninth St.	442-4455
Papa John's Pizza	1205 E. Broadway	442-7272
Pickleman's	1106 E. Broadway	875-2400
Quinton's Deli and Bar	124 S. Ninth St.	815-1047
Red Mango	1009 E. Broadway	442-8066
Room 38	38 N. Eighth St.	449-3838
Saigon Bistro Vietnamese	912 E. Broadway	442-9469
Sake Japanese Bistro	16 S. Tenth St.	256-7252
Shakespeare's Pizza	225 S. Ninth St.	449-2454
Shiloh Bar & Grill	402 E. Broadway	875-1800
Smashmouth Subs	916 E. Broadway	348-1762
Snapper's	12 S. Seventh St.	256-4901
Sparky's Homemade Ice Cream	21 S. Ninth St.	443-7400
Starbucks	304 S. Ninth St. #103	442-4802
Sub Shop	209 S. Eighth St.	449-1919
Subway	30 S. Ninth St.	874-1467
Sycamore	800 E. Broadway	874-8090
Taj Mahal	19 N. Fifth St.	256-6800
Tellers Gallery and Bar	820 E. Broadway	441-8355
Thai Kitchen Regency Grill	1111 E. Broadway	499-0385
The Chez Chandelle	100 Hitt St.	443-2440
The Rome	114 S. Ninth St.	876-2703
The Shot Bar	100 S. Ninth	442-4998
The Upper Crust	904 Elm St.	874-3033
The Velvet Cupcake	23 S. Eighth #102	875-8888
The Wine Cellar & Bistro	505 Cherry St.	442-7281
Tonic	122 S 9th St	256-6633
Tony's Pizza Palace	17 N. Fifth St.	442-3188
Top Ten Wines	111 S. Ninth St.	442-2207
Trey Restaurant	21 N. Ninth	777-8654
Tropical Liqueurs	515 E. Broadway	442-8098
U Knead Sweets	808 E. Cherry	777-8808
Uprise Bakery	10 S. Hitt St.	256-2265
Vault Speakeasy	23 S. Eighth St.	875-8888
Which Wich	304 S. Ninth St. #102	441-2345
Willie's Pub & Pool	1109 E. Broadway	449-1800
Wise Guys Pizza	7 N. Sixth St.	443-7777
Yogoluv	201 S. Ninth St.	321-3780

Sports & Fitness

Alleycat Yoga	23S. Fourth St.	864-4132
Cyclextreme	19 S. Sixth St.	874-7044
Dancearts of Columbia	110 N. Tenth	874-1569
Elm Street Yoga	904 Elm St. #210	441-8566
Magic Tan	904 Elm St. #206	499-4826
Meditation Station	32 N. Ninth St.	876-0008
Moonbelly Dance Studio	300 Saint James St.	777-0917
Open Studio Pilates	300 St. James #102	474-3600
The Martial Arts Center	1110 E. Broadway #A	999-3986
Transformational Fitness Coaching	1107 E. Broadway #B	268-9690
Unwind	300 St. James #101	356-6128
Wilson's Fitness	111 Orr St.	777-6700
Yoga Sol	300 Saint James St.	356-0162



Parking Garage Hours:

8th & Walnut Garage
8:00 a.m. and 6:00 p.m.

8th & Cherry Garage
8:00 a.m. and 6:00 pm.

6th & Cherry Garage
8:00 a.m. and 6:00 p.m.

10th & Cherry Garage
8:00 a.m. and 6:00 p.m.

5th & Walnut Garage
8:00 a.m. and 6:00 p.m.

Short and Walnut Garage
8:00 a.m. and 6:00 p.m.

*Garages free after 6:00 p.m. and on Saturdays, Sundays, and holidays.

Parking Meter Hours:

8:00 a.m. and 6:00 p.m.

*Free after 6:00 p.m. and Sundays and holidays.

Color-Coded Meter Limits:

- YELLOW 24 minutes
- RED 1 Hour
- GREY 2 Hours
- PURPLE 4 Hours
- ORANGE 5 Hours
- GREEN 10 Hours

The District Office
11 S. Tenth Street
Columbia, Missouri 65201
DiscoverTheDistrict.com

Schedule at a Glance

Wednesday, May 27

8:30 AM–11:00 AM	Publications Meeting	S207
11:30 AM–2:00 PM	Executive Council Meeting	S207
12:00 PM–5:00 PM	Conference Registration	Memorial Union North
12:00 PM	Posters can be put up	S2 & S3
2:30 PM–4:00 PM	Plenary: Raymond Hames	S107
4:00 PM–4:20 PM	Coffee Break	Memorial Union North
4:20 PM–5:40 PM	Sessions and Symposia 1 (p. 3)	S107, S110, S1, Parker
5:40 PM–7:00 PM	Dinner	On your own
7:00 PM–8:30 PM	Welcome Reception	Missouri Theater
8:30 PM–9:30 PM	Plenary: Alison Gopnik	Missouri Theater

Friday, May 29

8:00 AM–9:00 AM	Plenary: Lisa DeBruine	Missouri Theater
9:30 AM–10:50 AM	Sessions and Symposia 6 (p. 11)	S107, S110, S1, Parker
10:50 AM–11:10 AM	Coffee Break	Memorial Union North
11:10 AM–12:30 PM	Sessions and Symposia 7 (p. 13)	S107, S110, S1, Parker
12:30 PM–2:00 PM	Lunch	On your own
12:30 PM–2:00 PM	HBES Business Meeting	S207
2:00 PM–3:20 PM	Sessions and Symposia 8 (p. 15)	S107, S110, S1, Parker
3:20 PM–3:40 PM	Coffee Break	Memorial Union North
3:40 PM–5:00 PM	Sessions and Symposia 9 (p. 17)	S107, S110, S1, Parker
4:00 PM	Posters must be taken down	S2 & S3
5:30 PM–6:30 PM	Plenary: Gregory Clark	Missouri Theater
6:30 PM–9:30 PM	BBQ	Peace Park

Thursday, May 28

8:00 AM–9:00 AM	Plenary: Richard McElreath	Missouri Theater
9:30 AM–12:30 PM	Conference Registration	Memorial Union North
9:30 AM–10:50 AM	Sessions and Symposia 2 (p. 5)	S107, S110, S1, Parker
10:50 AM–11:10 AM	Coffee Break	Memorial Union North
11:10 AM–12:30 PM	Sessions and Symposia 3 (p. 7)	S107, S110, S1, Parker
12:30 PM–2:00 PM	Lunch	On your own
12:30 PM–2:00 PM	Student Mentoring Lunch	S1, S207, S107
2:00 PM–3:00 PM	Plenary: Christopher Kuzawa	Missouri Theater
3:30 PM–4:50 PM	Sessions and Symposia 4 (p. 8)	S107, S110, S1, Parker
4:50 PM–5:10 PM	Coffee Break	Memorial Union North
5:10 PM–6:10 PM	Sessions and Symposia 5 (p. 10)	S107, S110, S1, Parker
6:10 PM–7:30 PM	Dinner	On your own
7:30 PM–9:30 PM	Poster Session	S2 & S3

Saturday, May 30

8:00 AM–9:20 AM	Sessions and Symposia 10 (p. 19)	S107, S110, S1, S2, S3
9:20 AM–9:40 AM	Coffee Break	Memorial Union North
9:40 AM–11:00 AM	Sessions and Symposia 11 (p. 21)	S107, S110, S1, S2, S3
11:00 AM–11:20 AM	Break	
11:20 AM–12:40 PM	Sessions and Symposia 12 (p. 23)	S107, S110, S1, S2, S3
12:40 PM–2:00 PM	Lunch	On your own
2:00 PM–3:00 PM	Plenary: Daniel Nettle	Missouri Theater
3:00 PM–3:20 PM	Coffee Break	Missouri Theater
3:20 PM–4:20 PM	New Investigator Talks (p. 25)	Missouri Theater
4:20 PM–4:30 PM	Quick Break	
4:30 PM–5:30 PM	Postdoctoral Talks (p. 26)	Missouri Theater
6:00 PM–7:30 PM	Banquet Dinner	Kimball Ballroom
8:00 PM–9:30 PM	Keynote: Bernard Chapais	Missouri Theater