

# HUMAN BEHAVIOR & EVOLUTION SOCIETY

## 33rd ANNUAL MEETING



## HBES 2022

## STILL VIRTUALLY EVERYWHERE

# Welcome to HBES 2022 Still Virtually Everywhere!

Alas. Because I would much rather have met you live. I am therefore a sort of blue Norwegian. Rather than pining for the fjords, though, as I live among the fjords, I am upset that I do not get to hang in real, live settings with some of the greatest minds in the field. And drink beer with you! It is no exaggeration to say that many of our research projects are a result of meeting colleagues at HBES and drinking beer with them.

But it is nice to see you all virtually or virtually nice to see you all. It is so much better than letting the conference slip. While the live event is something we may long for and need to get back to as soon as possible, there are aspects of the conference that are important to uphold while the live event is dormant. For many young researchers presenting their work to the HBES community and competing in the competitions and getting experience with presentation and feedback is part of their professional development. This online event will therefore hopefully be an academic steppingstone for our young researchers, helping them develop their networks, promote their research and thus aid their careers, in the way physical HBES meetings have done for all of us in the past. This is my major motivation for hosting this conference. This is why we need to keep the HBES conference going despite the consequences of the pandemic.

Another thing that I have attempted to influence since being cajoled by David's sweet-talking me into saying yes to hosting this event, is to take full advantage of the global availability of the online event. I have attempted to focus recruitment of committee members and volunteers outside of North America, as HBES tends to be a rather North American dominated organization—to the organization's detriment I fear, at least it sometimes feels that way from my perch in the fjords. Paradoxically an online event will be early in Asia and Australia and late in Europe, with the Americas being the Goldilocks. But despite the constraints I hope this conference actually is virtually everywhere! And that international participation is high!

I need to thank so many people already. The program committee chaired by Bernhard Fink has done a brilliant job, and Bernhard has assisted us throughout! Also, I must thank the ten volunteers, from literally everywhere, and especially Tara DeLecce, secretary to the host committee, and Tiffany Lussier, head online support coordinator. Also, Coren Apicella, Chris von Rueden and Nicole Barbaro from last year's organizers have provided invaluable assistance. Finally, I have had two wonderful members serve with me on the host committee: Jarka Varela Valentova and Norman Li—what a dream team!

So welcome to HBES 2022. We are Still Virtually Everywhere. And I hope we will enjoy meeting virtually—and learn a lot. Nevertheless, I am already looking forward to meeting you all live next year. And having beers. Cheers!

Leif Edward Ottesen Kennair  
Host committee chair

# Welcome to HBES 2022 Still Virtually Everywhere!

Our HBES conference is, at its heart, a time of scholarly community. For many of us it is our academic home away from home. Each year at our conference we bring together a wide variety of scholars and their tools from dozens of evolutionary sub-disciplines, allowing us to continuously learn from each other, providing us new opportunities for sparks of connection to be made across disciplines. I've found exploring evolutionary issues with "every tool available" is where the scholarly magic happens. I look forward to seeing you all and learning some new scholarly magic at HBES 2022 all this week.

David Schmitt,

HBES President

## Conference Contacts

General questions: Leif Edward Ottesen Kennair [kennair@ntnu.no](mailto:kennair@ntnu.no)

Tech support: Saeed RezvaniNejad [saeed.f.t.93@gmail.com](mailto:saeed.f.t.93@gmail.com) and Tiffany Lussier [tiffany.lussier@ntnu.no](mailto:tiffany.lussier@ntnu.no)

Presentations: Jaroslava Varella Valentova [jarkavalentova@gmail.com](mailto:jarkavalentova@gmail.com) and Tiffany Lussier [tiffany.lussier@ntnu.no](mailto:tiffany.lussier@ntnu.no)

Posters: Leif Edward Ottesen Kennair [kennair@ntnu.no](mailto:kennair@ntnu.no)

# Acknowledgements

## Host Committee:

Leif Edward Ottesen Kennair (Chair), Norman Li, Jaroslava Varella Valentova

## Program Committee:

Kelly Asao, Khandis Blake, Michelle Escasa-Dorne, Katrin Schaefer, Joseph Manson, Joshua Tybur, Bernhard Fink (Chair)

## Poster Award Committee:

To be announced after competition

## New Investigator Award Committee:

To be announced after competition

## Post-Doctoral Research Award Committee:

To be announced after competition

## Student Mentor Event Organizer:

Summer Mengelkoch

## Grievance committee:

Bobbi Low, Martin Daly, Catherine Salmon, Jaimie Krems, Karthik Panchanathan, Summer Mengelkoch, Michael Barlev

## Volunteers:

Tara DeLecce - Secretary to the Host Committee, Tiffany Lussier - Head Online Support Coordinator, Saeed Rezvani Nejad- Tech Support, Per Helge Haakstad Larsen, Angelica Nascimento de Oliveira, Caio Silva, Lynn Tan, Kane White, Bernardo Ubaldo Seixas, and Andreza Souza Tavares

HBES and its membership

## Sponsors

Oakland University ([www.oakland.edu](http://www.oakland.edu))

Center for Evolutionary Psychological Science  
(<https://www.oakland.edu/psychology/center-for-evolutionary-psychological-science/>)

Office of the President (<https://www.oakland.edu/president/>)

Office of the Provost (<https://www.oakland.edu/provost/>)

Dean of the College of Arts and Sciences (<https://www.oakland.edu/cas/>)

The University of Michigan ( <https://www.umich.edu> )

Evolution and Human Adaptation Program (<https://sites.lsa.umich.edu/ehap/>)



## HBES Officers

Past President: Leda Cosmides

Acting President: Dave Schmitt

President Elect: H. Clark Barrett

Treasurer: Jessica Hehman

Secretary/Archivist: Lisa Welling

Communication Officer: Nicole Barbaro

Student Representative: Summer Mengelkoch

Council Members at Large (2023): Pat Barclay and David Puts

## HBES Meetings + Affiliated Events

All affiliated social events will be held on the ohyay platform in the social rooms.

**Publications Committee Meeting** (*closed*) Thursday, June 23rd, 3pm-4pm UTC. Zoom [Contact Deb Lieberman]

**Business Meeting** (open to all): Saturday June 25th, 3pm-4pm UTC. Zoom: <https://bruneluniversity.zoom.us/j/91783818223> Meeting ID: 917 8381 8223; Passcode: 7934075377 [Contact: Dave Schmitt [David.Schmitt@brunel.ac.uk](mailto:David.Schmitt@brunel.ac.uk)]

**HBES Student Mentoring Event:** Saturday, June 25th, 3:45pm-5pm UTC. [Contact: Summer Mengelkoch [S.MENGELKOCH@tcu.edu](mailto:S.MENGELKOCH@tcu.edu)]

**Women in the Evolutionary Behavioral Sciences (WEBS):** Friday, June 24th, 4pm-5:30pm UTC. Please RSVP for this event using the following link: <https://forms.gle/abEaynsCKrSgK38JA>. [Contact: Kristin Snopkowski [kristinsnopkowski@boisestate.edu](mailto:kristinsnopkowski@boisestate.edu)]

**LGBTQ+ & Friends Networking Event:** Friday, June 24th, 9:30pm - on, UTC. [Contact: Michael Barlev [mlbarlev@gmail.com](mailto:mlbarlev@gmail.com)]

**HBES Networking Event for Undergraduate Students:** Thursday, June 23rd, 3:45pm-5pm UTC. [Contact: Amanda Kirsch [apkirsc1@asu.edu](mailto:apkirsc1@asu.edu)]

# HBES Code of Conduct

Attendees at HBES events must agree to the following as a condition of registration:

- Treat all participants, HBES staff, and vendors with courtesy and consideration.
- Be respectful and collaborative, critiquing ideas rather than individuals.
- Abuse, intimidation, discrimination, and sexual harassment are unacceptable. Sexual advances, requests for sexual favors, or sexually directed remarks constitute sexual harassment when such conduct (1) persists despite rejection, (2) is grossly inappropriate, or (3) is made to a subordinate who might reasonably fear that their position would be jeopardized if those advances were rejected. More information on what constitutes sexual harassment can be found in the full policy description:  
<https://tinyurl.com/HBESCOG>
- Be mindful of your surroundings and of your fellow participants, and alert a member of the HBES grievance committee if you need assistance or notice a dangerous situation or someone in distress. Members of the grievance committee can be identified by their green-bordered name badges. The current members of the grievance committee are: Bobbi Low, Martin Daly, Catherine Salmon, Jaimie Krems, Karthik Panchanathan, Summer Mengelkoch, and Michael Barlev. You may also contact the grievance committee through the main HBES website (<https://www.hbes.com/grievance/>). The grievance committee may offer advice and may attempt to mediate disputes, and will report formal complaints to the Executive Council. The Council may, at its discretion, issue warnings, ask violators to leave the HBES meeting, or, for serious or repeated violations, revoke membership in the society. The investigative procedure is described in the full policy description:  
<https://tinyurl.com/HBESCOG>
- Respect the rules and policies of the meeting venue, hotels, and any HBES-contracted facility.

Please see the full statement of the HBES Code of Conduct and related policies at:  
<https://www.hbes.com/conference>

## [The HBES 2022 Store!](#)

Visit the HBES 2022 store for swag, like supersoft tees! All proceeds go to HBES for supporting its membership.



### ABOUT

The 2022 Human Behavior and Evolution Society Conference store #HBES2022



### HBES 2022 Conference Apparel (Large Logo)



**Schedule**

## Wednesday, June 22nd

5pm-6pm UTC	<b>Conference Welcome, remarks from HBES President and Conference organizers, Awards</b> ohyay room: <i>The Main Stage</i>		
6pm-7pm UTC	<b>Plenary: Jan Willem van Prooijen, VU Amsterdam: "THE EVOLUTIONARY ROOTS OF CONSPIRACY THEORIES"</b> ohyay room: <i>The Main Stage</i>		
Session 1	<b>COVID, Disease Psychology, and Politics</b> ohyay room: <i>Trondheim</i>	<b>Aggression, Bullying, and Abuse</b> ohyay room: <i>Reine</i>	<b>Psychoneuroendocrinology</b> ohyay room: <i>Geiranger</i>
7pm-7:20pm UTC	Pathogen disgust sensitivity but not disease avoidance motive predicts immigration attitudes during a pandemic	Anger and hatred evolved distinct behavioral strategies	Food, sex, and hormones: Assessing trade-offs between appetite and sexual interests
7:20pm-7:40pm UTC	Beyond pathogens: The role of coalitional psychology in pandemic politics	Is adolescent bullying an evolutionary adaptation? A 10 year review	Hormonal and cycle phase predictors of within-women shifts in self-perceived attractiveness
7:40pm-8pm UTC	Pathogen avoidance motivations and opposition to religious and racial outgroups	Untangling the temporal relationship between pubertal development and bullying victimization in a longitudinal sample of US adolescents	The effects of exogenous testosterone on men's dehumanization of women: Men given testosterone dehumanize both conservatively dressed and sexualized women
8pm-8:20pm UTC	The less we care, the less we microbe-share: social devaluation may explain reduced microbe sharing toward the elderly and the obese	Meeting an overlooked challenge in friend competition via social venting	Hormonal contraceptives as disruptors of competitive behaviour: Theoretical framing and review
8:20pm-8:40pm UTC	What activates the behavioral immune system during a global pandemic? Perceived, but not objective risk	The role of mating-relevant factors in the perpetration of digital dating abuse	Do changes in testosterone regulate sexual desire? Evidence from daily within-subject sampling
8:40pm-9pm UTC	Responses to political partisans are calibrated by a COVID-sensitive behavioral immune system		Testosterone and behavior in males and females: Myths and misconceptions
9pm-9:10pm UTC	Break		
Session 2	<b>New Investigator Competition</b> ohyay room: <i>Trondheim</i>		
9:10pm-9:30pm UTC	Summer Mengelkoch: More than just a pretty face? The relationship between immune function and perceived facial attractiveness		

9:30pm-9:50pm UTC	Elena Brandt: An evolutionary perspective on the global reproductive slowdown across humans societies
9:50pm-10:10pm UTC	Paul Deutchman: Children use common knowledge to solve coordination problems
10:10pm UTC on	<b>Social Hour</b>

### Thursday, June 23rd

3:45pm-5pm UTC	<b>HBES Networking Event for Undergraduate Students (via Zoom)</b>		
5pm-6pm UTC	<b>Plenary: Anne Pusey, Duke University: "HOW DOES KINSHIP SHAPE CHIMPANZEE SOCIETY? INSIGHTS FROM 60 YEARS OF RESEARCH AT GOMBE"</b> ohyay room: <i>The Main Stage</i>		
Session 3	<b>Family and Parenting I</b> ohyay room: <i>Trondheim</i>	<b>Cooperation and Social Networks I</b> ohyay room: <i>Reine</i>	<b>Mating and Sexual Behavior I</b> ohyay room: <i>Geiranger</i>
6pm-6:20pm UTC	Does allomothering improve child growth in a rural region of the Gambia?	Do animals have a sense of fairness? A meta-analysis	Mating with multi-armed bandits: Reinforcement learning models of mate perception, search, and choice
6:20pm-6:40pm UTC	Fostering, adoption, and parental absence in Vanuatu	Friends near and afar, through thick and thin: Similarity in help between close- and long-distance friends	The evolutionary origins of same-sex attraction: The weak negative selection pressures hypothesis
6:40pm-7pm UTC	Arranged marriage, partner traits and parental investment: A test of the reproductive compensation hypothesis in humans	Institutionalized punishment serves to restore dyadic cooperation in three small-scale societies	Influence of fertility cycle on attraction preferences of sex typicality in heterosexual and homosexual women
7pm-7:20pm UTC	Why do parents react negatively to their offspring's sexual orientation disclosures? An inclusive fitness cost perspective	Human social organization during the Late Pleistocene: Beyond the nomadic-egalitarian model	Consensually non-monogamous individuals present specific sociosexual and attachment profile compared to monogamous individuals and singles
7:20pm-7:40pm UTC		When minds meet: Twin study of tacit coordination	Using machine learning to predict sexual orientation and gender identity in a large LGBTQ+ sample
7:40pm-7:50pm UTC	<b>Break</b>		
7:50pm-8:50pm UTC	<b>Plenary: Cas Soper, Private Practice; "CHOOSING SURVIVAL: THE EVOLUTION OF LIFE WORTH LIVING"</b> ohyay room: <i>The Main Stage</i>		

8:50pm-11pm UTC	<b>Poster Session</b>	<b>Poster Finalist Flash Talks ohyay room:</b>
-----------------	-----------------------	--

## Friday, June 24th

4pm-5:30pm UTC	<b>Women in the Evolutionary Behavioral Sciences (WEBS) Networking Event (via Zoom)</b>		
Session 4	<b>Life History Theory I (Development) ohyay room: <i>Trondheim</i></b>	<b>Cooperation and Social Networks II ohyay room: <i>Reine</i></b>	<b>Mating and Sexual Behavior II ohyay room: <i>Geiranger</i></b>
6pm-6:20pm UTC	Ecology stereotypes are manifest in judgments of personal spaces, and are associated with independently assessed mortality risk	The influence of language on the evolution of cooperation	Evolution of artistic propensities: Testing of intersexual selection and intrasexual competition
6:20pm-6:40pm UTC	The chance ignoring bias: failure to account for chance outcomes leads to erroneous performance judgement		Sex and appearance affect trust toward strangers, but not trustworthiness
6:40pm-7pm UTC	Prenatal programming for 'helpers at the nest'? Mothers' prenatal distress speeds adrenal pubertal development in female offspring	Why help those who help others: Indirect reciprocity and reputation-based partner choice	She's a guys' girl: Characteristics and consequences of women's preferences for cross-sex friends
7pm-7:20pm UTC	Illuminating biological aging with W.D. Hamilton's ignored sibling replacement concept	Childhood environmental adversity leads to lower cooperativeness? Not so fast	Using speed-dating and simulation data to explain inconsistent findings on the relation between stated and revealed preferences
7:20pm-7:40pm UTC	Variation in individual capital can explain behavioral syndromes in the fast-slow continuum		Modern mating markets, misogyny, and the involuntary celibacy (Incel) movement
7:40pm-7:50pm UTC	Break		
7:50pm-8:50pm UTC	<b>Plenary: Debra Lieberman, University of Miami: "THE RELATIONSHIP BETWEEN DISGUST AND MORALITY" ohyay room: <i>The Main Stage</i></b>		
Session 5	<b>Cross-Cultural Research and Socioecology ohyay room: <i>Trondheim</i></b>	<b>Development and Emotions ohyay room: <i>Reine</i></b>	<b>Family and Parenting II ohyay room: <i>Geiranger</i></b>
8:50pm-9:10pm UTC	Do agriculturalists really have more children? Assessing the relationship between subsistence and fertility in 26 societies	What is the expected human childhood? Insights from evolutionary anthropology	Inferred parental motivations through sexually dimorphic facial features

9:10pm-9:30pm UTC	Cross-cultural rules for oral story transmission: implications for the evolution of cumulative culture	Exploring features infants use to identify plants	Modeling the conditions of adaptive allocare
9:30pm-9:50pm UTC	Cultural evolution of fake news	Value computation in humans	Women's pregnancy disclosure to blood versus affinal relatives, and role of miscarriage
9:50pm-10:10pm UTC	Effects of voice pitch on social perceptions vary with relational mobility and other socioecological variables	Jealousy as a protection of significant attachments in close relationships	Does the death of a close relative influence effort in looking after health?
10:10pm-10:30pm UTC	Incel activity on social media linked to local mating ecology	An evolutionary hypothesis for the unusual sensory experiences reported by the bereaved	
10:30pm UTC on	<b>HBES LGBTQ+ Networking and Social Event (via Zoom)</b>		

## Saturday, June 25th

3:45pm-5pm UTC	<b>HBES Student Mentoring Event (via Zoom)</b>		
5pm-6pm UTC	<b>Keynote: Peter R. Grant and Rosemary Grant, Princeton University: "UNDERSTANDING BIODIVERSITY THROUGH ADAPTIVE RADIATIONS"</b> <i>ohyay room: The Main Stage</i>		
Session 6	<b>Postdoctoral Award Competition</b> <i>ohyay room: Trondheim</i>		
6pm-6:20pm UTC	Scott Claessens: The non-independence of nations and why it matters		
6:20pm-6:40pm UTC	Ashley J. Thomas: Early concepts of intimacy: Young humans use saliva sharing to infer close relationships		
6:40pm - 7pm UTC	Adar Eisenbruch: Why warmth matters more than competence: A new evolutionary approach		
7pm-7:10pm UTC	Break		
Session 7	<b>Life History Theory II (Reproduction)</b> <i>ohyay room: Trondheim</i>	<b>Morality and Conservatism</b> <i>ohyay room: Reine</i>	<b>Underexplored Topics in Female Sociality</b> <i>ohyay room: Geiranger</i>

7:10pm-7:30pm UTC	Timing of sexual maturation correlated among members of married dyads	When forgiveness is not divine: People's evaluations of third-party forgivers	Women's affiliation across the menstrual cycle
7:30pm-7:50pm UTC	Lifetime reproductive success is an imprecise but largely unbiased predictor of long-term genetic contributions in historical humans	Harm hypervigilance in public reactions to scientific evidence	A story of us: A new view of human evolution
7:50pm-8:10pm UTC	Homosexual courtship in young capuchin monkeys	Motivated moral decisions: Target acceptability in warfare	Perceptions of father absent women's sociosexual orientation and mating standards
8:10pm-8:30pm UTC	Voluntary sterilization prevalence explained by parental investment tradeoffs, but differently for women and men	Physical strength as a heuristic cue of political conservatism	Female orgasm: A tactic for partner choice
Session 8	<b>Social Perception</b> ohyay room: <i>Trondheim</i>	<b>The Psychology of Kinship</b> ohyay room: <i>Reine</i>	<b>Cooperation and Social Networks III</b> ohyay room: <i>Geiranger</i>
8:30pm-8:50pm UTC	Associations between subjective social status and human immune function	Differences in aggression between siblings and non-kin	What a disaster? Using evolved heuristics to prevent catastrophe
8:50pm-9:10pm UTC	Methodological issues when using face prototypes: A case study on the Faceaurus dataset	Kin care, cognition, and the different kinds of information that adults want to know about adults and children	Epistemic vigilance as a driver of reliable communication: An Indirect reciprocity model for the evolution of honesty
9:10pm-9:30pm UTC			Cognitive specializations for collaboration: Cues of a shared goal and coordination regulate equitable sharing decisions
9:30pm-9:50pm UTC	The evolution of visual appearance modification behavior: A review of current research and avenues for future work	Homicide in New Zealand families	The effect of "virtual cold-shouldering" depends on how the shoulder is turned: When evolved friendship psychology meets social media
9:50pm-10:10pm UTC	Rational data selection in welfare-tradeoff cognition		
10:10pm-10:30pm UTC	<b>Closing Remarks, Conference Awards</b> ohyay room: <i>The Main Stage</i>		
10:30pm UTC on	<b>Social Hour</b>		

# Keynote Address

## Understanding Biodiversity Through Adaptive Radiations

Dr. Peter R. Grant & Dr. B. Rosemary Grant

**Abstract:** In the “Origin of Species” Charles Darwin established the scientific basis for understanding how evolution occurs by natural selection. To explain how new species form he envisioned a three-step process involving colonization of a new area, divergence through natural selection, and the formation of a barrier to interbreeding between divergent lineages. The challenge for us is the same as the challenge for Darwin, to reconstruct evolutionary history and interpret it. A productive strategy is to combine the fields of genetics, ecology, behavior, and genomics in laboratory and field investigations. We illustrate how this research program can be carried out with our research on the adaptive radiation of Darwin’s finches in the Galápagos archipelago. Eighteen species diverged morphologically and ecologically from a common ancestor in the last 1-2 million years. Our 40-year study on Daphne Major Island, combined with genomic research with collaborators, has shown that (1) species evolve in beak traits and body size when the environment changes, (2) competitors are an important part of their environment, (3) species occasionally exchange genes by hybridizing, and (4) hybridization can lead to the formation of a new genetic lineage, on the way to becoming a new species.



**Peter and Rosemary Grant** have been studying Darwin’s finches on the Galápagos islands since 1973. The fieldwork is designed to understand the evolutionary causes of an adaptive radiation. It combines analyses of archipelago-wide patterns of evolution with detailed investigations of population level processes on two islands, Genovesa and Daphne. The work is a blend of ecology, behavior and genetics. The research has been published in four books, most recently *How and Why Species Multiply* (2008) and *40 years of Evolution* (2014), both published by Princeton University Press. The research contributions have been recognized by separate elections to the Royal Society of London, the Royal Society of Canada, the U.S. National Academy of Sciences and the American Philosophical Society, and by the joint award of the Balzan Prize in population biology (2005), the Kyoto Prize in evolutionary biology (2009) and the BBVA Foundation Prize in ecology and conservation (2018).

Peter Grant is the Class of 1877 Professor Emeritus in the Department of Ecology and Evolutionary Biology at Princeton University, having trained at Cambridge University and the University of British Columbia. Before joining Princeton in 1986 he taught at McGill University and the University of Michigan. Rosemary Grant is Research Scholar and Professor Emerita in the same Department. She received her training at Edinburgh University and Uppsala University and taught at Princeton University.

# Plenary Addresses

## The Evolutionary Roots of Conspiracy Theories

Dr. Jan-Willem van Prooijen

**Abstract:** Conspiracy theories are widespread, and have a genuine impact on human behaviors that are considered detrimental to health, safety, and well-being. What are the distal, evolutionary roots of conspiracy theories? Based on an error-management approach, I propose that the suspicious feelings that give rise to conspiracy theories have been adaptive in an ancestral past to protect against the dangers of hostile coalitions, that is, real conspiracies. In support of this proposition, I propose that conspiracy theories are common across times and cultures. Furthermore, conspiracy theories originate from fast and intuitive mental processes (i.e., System 1) more so than from slow and deliberative mental processes (System 2). Finally, conspiracy theories are associated with direct and indirect cues suggesting an increased likelihood of intergroup conflict, with extremist, conflict-seeking ideologies, and a readiness for extremist violence. While the mental systems that produce conspiracy theories may have been adaptive in an ancestral environment, conspiracy theories are mostly maladaptive in a modern environment.



**Jan-Willem van Prooijen** received his PhD from Leiden University in 2002. Currently he is Associate Professor at the Department of Experimental and Applied Psychology of VU Amsterdam, Senior Researcher at the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR), and Endowed Professor of Radicalization, Extremism, and Conspiracy Thinking at the Department of Criminal Law and Criminology of Maastricht University. His current research interests include conspiracy theories, populism, extremism, and unethical behavior.

## Choosing Survival: The Evolution of Life Worth Living

Dr. C. A. Soper

Abstract: It is very bad to be killed, as Buss and Duntley have pointed out. It can be readily acknowledged that homicide—infanticide, assassination, warfare—brings dire fitness consequences for victims, likely posed a recurring fitness threat in our evolutionary past, and presumably drove the selection of special defensive countermeasures. Soper argues that the same dynamic applies to suicide—deliberate self-killing. Indeed, more so: suicide appears to be an adaptive problem at least as severe, in prevalence and impact, as death by interpersonal violence. For an animal smart enough to imagine the idea, self-accomplished death offers such complete relief from aversive affect that it needs to be explained why so few capable humans do take their own lives. Humans are likely protected by special-purpose anti-suicide devices, as yet little recognised as such, that obstruct this mode of escape. These adaptations may help to explain many puzzling features of human psychology, and play a central role in human behaviour and evolution.



**Clifford (“Cas”) Soper** is an independent scholar based in Lisbon, Portugal. He has degrees from the University of Cambridge and the University of London, and won his PhD at the University of Gloucestershire in 2017 for a thesis, “Towards Solving the Evolutionary Puzzle of Suicide.” This formed the basis of a textbook published by Springer, “The Evolution of Suicide” (2018), and a more recent book, “The Evolution of Life Worth Living: Why We Choose to Live” (2021), which extends the thesis and addresses a general readership. As a

therapist, Soper’s interest in human evolution arose from a search for better ways to help clients, particularly those dealing with addictions, depression, suicidal thoughts, and the sequelae of loved ones’ suicides.

## How Does Kinship Shape Chimpanzee Society? Insights from 60 Years of Research at Gombe

Dr. Anne Pusey

**Abstract:** Kinship can exert opposing effects on social behavior. On one hand, kin selection often favors prosocial behavior among relatives. On the other hand, inbreeding depression selects for avoidance of association and breeding between kin of the opposite sex. Many social mammals live in societies in which females remain in their natal social groups, surrounded by their female relatives, while males join other groups before breeding. In contrast, in chimpanzees, like some human societies, males are philopatric, remaining for life in their natal group and cooperating to aggressively defend the group territory, while most females join other groups at adolescence. Natal dispersal of either sex is an effective inbreeding avoidance mechanism but leaves open the question which sex disperses. Does this depend on the relative importance of prosocial behavior to each sex? Continuous observation of the chimpanzees at Gombe National Park, Tanzania, over the last 6 decades has allowed us to examine the social relationships of different classes of kin and gain understanding of the unusual settlement and dispersal patterns in this species.



**Anne Pusey** is James B. Duke Professor Emerita of Evolutionary Anthropology at Duke University. She is a behavioral ecologist interested in the evolution of social behavior. She gained her BA at Oxford University and her PhD at Stanford University. As Director of the Jane Goodall Institute's Center for Primate Studies (University of Minnesota), and the JGI Research Center (Duke), she conducted research and managed the archive of the study of chimpanzees at Gombe National Park, Tanzania, initiated by Jane Goodall in 1960. She also studied the Serengeti lions (1978-1991). She has authored or co-authored over 150 publications. She received a John Simon Guggenheim fellowship and is a fellow of the Animal Behavior Society, the American Academy of Arts and Sciences, and the U.S. National Academy of Sciences.

## The Relationship Between Disgust and Morality

Dr. Debra Lieberman

Abstract: Disgust evolved to navigate three separate ancestral challenges: what to eat, what to touch, and with whom to have sex. In this talk, I posit features of the information-processing structures required to address each challenge and discuss three plausible internal regulatory variables associated with disgust: expected value of consumption, which reflects the fitness value of consuming an item and regulates consumption behaviors; expected value of contact, which reflects the fitness value of physical contact, and regulates behavior associated with touching individuals and surfaces; and expected sexual value, which reflects the fitness costs of a particular sexual partner, and regulates sexual motivations. Disgust is the experience that occurs when any of these three regulatory variables generates a very low expected value. This model of disgust diverges from previous models in that (1) there is no existential threat based “animal reminder” disgust, (2) pathogen disgust is conceived as two separate adaptations and, (3) there is no proper domain of “moral disgust”. Instead, the three regulatory variables of disgust are a subset of inputs used by moral systems guiding coalitional and exploitative behaviors.



**Debra Lieberman** is Professor and Assistant Chair of Psychology at the University of Miami. She earned her PhD at the University of California Santa Barbara at the Center for Evolutionary Psychology. Dr. Lieberman studies a range of topics including kin detection, cooperation, mate choice, disgust, gratitude, and morality. She currently serves as the Editor-in-Chief of *Evolution and Human Behavior*, and is co-author with Dr. Carlton Patrick of *Objection: Disgust, Morality, and the Law*, 2018, Oxford University Press.

# Symposium Presentations

Session 1: Wednesday, June 22nd 7pm - 9pm UTC

*COVID, Disease Psychology, and Politics*

## **Pathogen disgust sensitivity but not disease avoidance motive predicts immigration attitudes during a pandemic**

*Fan, Lei; Tybur, Joshua M. <[l.fan@vu.nl](mailto:l.fan@vu.nl)>*

Intergroup biases are thought to partially emerge from the behavioral immune system. The current longitudinal study (assessed at three time points of the COVID-19 pandemic – May 2020, N1 = 998; February 2021, N2 = 711; October 2021, N3 = 549) tested whether attitudes toward immigrants: (1) changed across the pandemic; (2) related to explicit disease concerns and/or disgust sensitivity; and (3) varied as a function of features of a specific immigrant with different wealth, prosociality, and assimilation to the local culture. Results revealed that: (1) explicit disease concerns were higher when the pandemic was in a more severe stage, but disgust sensitivity did not vary across time points; (2) between-person – but not within-person – variation in disgust sensitivity related to negativity toward immigrants, but explicit disease concerns and assessment time in the pandemic did not; (3) the relation between disgust sensitivity and negativity toward immigrants applied when an immigrant was described as being poor, but not when an immigrant was described as being wealthy. In total, results suggest that stable individual differences in disgust sensitivity – but not time of the pandemic or any subsequent changes in disgust sensitivity or explicit disease concerns – relate to attitudes toward immigrants, and especially poor ones.

## **Beyond pathogens: The role of coalitional psychology in pandemic politics**

*Petersen, Michael Bang <[michael@ps.au.dk](mailto:michael@ps.au.dk)>*

While pathogen avoidance motivations are clearly relevant for understanding behavior during the COVID-19 pandemic, other factors beyond pathogen avoidance played a surprisingly large role. Many of these factors relate to aspects of coalitional psychology such as partisanship and other political cleavages. In this presentation, I will summarize findings from a large-scale research project (The HOPE or "How Democracies Cope with COVID-19" project), where we continuously collected cross-national data on people's behavior and attitudes during the pandemic. In the talk, I will also discuss why other factors seemingly trumped pathogen avoidance motivations in explaining individual-level behavior and attitudes, despite the fact that a pandemic could reasonably be seen as the most likely situation for the predictive power of pathogen avoidance.

## **Pathogen avoidance motivations and opposition to religious and racial outgroups**

Aarøe, Lene <[leneaaroe@ps.au.dk](mailto:leneaaroe@ps.au.dk)>

Individuals high in pathogen avoidance motivation are more opposed to immigrants. Yet, we still have a limited understanding of the underlying psychological mechanisms. This study tests two explanations: The first explanation claims that contact with foreign populations could increase the risk of encountering pathogens to which one has little or no immunity. From this perspective, cues indicating that an individual comes from a different ecology should be particularly powerful triggers of opposition to immigrants among individuals high in pathogen avoidance motivation. The second hypothesis argues that at the cultural level some deep local norms and rules (such as e.g., norms pertaining to hygiene, food preparation, physical contact with non-kin) evolved to counter local pathogen threats by regulating behaviour. From this perspective, cues indicating that an individual subscribes to a different set of cultural norms should be particularly powerful triggers of opposition to immigrants. Testing these explanations, we focus on race as a central heuristic cue to presumed home ecology and religious group membership as a cue of cultural practices. Using large-scale cross-national survey experiments (n > 4600) including both non-obtrusive visual cues as well as vignettes, I test the effect of racial and religious group cues on the association between individual differences in pathogen avoidance motivation and opposition to immigration.

## **The less we care, the less we microbe-share: social devaluation may explain reduced microbe sharing toward the elderly and the obese**

*Costa-Neves, Bernardo; Garcia-Marques, Leonel; Tybur, Joshua M.*  
<[bcostaneves@campus.ul.pt](mailto:bcostaneves@campus.ul.pt)>

The extent to which people avoid contact that exposes them to the microbe-laden body fluids of others depends on the trade-off between the costs of pathogen exposure and the benefits of interpersonal contact. Accordingly, people avoid contact with individuals bearing pathogen-induced changes in body morphology, but engage in microbe-sharing acts with friends or strangers likely to cooperate with them. Here, we examined the extent to which aversion to microbe-sharing contact with individuals bearing signs of aging or excessive fat accumulation, which are uninformative to the presence of communicable pathogens, is explained by these individuals being interpersonally devalued. Across two studies, we found that people are less comfortable with microbe sharing toward older or obese targets than their younger or healthy-weight counterparts. Notwithstanding, these effects were small, especially after controlling for social closeness and interpersonal value, which together explained the largest proportion of the variance in contact comfort. This work corroborates previous findings that aversion toward another person's microbes discourages affiliation when the expected benefits of contact are low relative to the potential risk of infection. This mechanism may underlie the avoidance of individuals with body phenotypes that are non-diagnostic of infectiousness, yet carry information about their value as relationship partners.

## **What activates the behavioral immune system during a global pandemic? Perceived, but not objective risk**

*Mitchell, Benjamin J.; Taber, Jennifer M.; Thompson, Clarissa A.; Sidney, Pooja G.; Coifman, Karin G. <[bmitch27@kent.edu](mailto:bmitch27@kent.edu)>*

Disgust motivates the avoidance of pathogen-related cues. However, no research has examined how disgust responses in daily life vary in accordance with indices of perceived and objective Covid-19 risk. Two pre-registered studies tested whether objective or perceived risk for Covid-19 predicted reported disgust during a 10-day experience sampling diary early (March 2020) and one year (February 2021) into the pandemic. In study 1,  $n=625$  adults across the U.S. completed ten diaries reporting daily disgust and perceived susceptibility to Covid-19. The Pandemic Vulnerability Index (PVI; Marvel et al., 2021) was used as an objective index of each participant's county-level risk at that time. Results indicated subjective perceptions of risk ( $B=0.21$ ,  $p<.001$ ), but not local objective risk, predicted reported disgust. In study 2,  $n=812$  U.S. adults completed similar procedures. Again, subjective risk ( $B=0.09$ ,  $p=.010$ ), but not objective risk, predicted reported disgust, though the association was relatively weaker in study 2. These findings highlight the importance of considering both ecological and subjective indices of risk information in disgust-motivated avoidance and the behavioral immune system during an urgent health crisis, such as a global pandemic.

## **Responses to political partisans are calibrated by a COVID-sensitive behavioral immune system**

*Ko, Ahra; Neuberg, Steven L.; Pick, Cari M.; Varnum, Michael E. W.; Becker, D. Vaughn <[ahrako@asu.edu](mailto:ahrako@asu.edu)>*

How do natural changes in disease avoidance motivation shape thoughts about and behaviors toward ingroup and outgroup members? Using a longitudinal design to leverage changes in COVID-19 infections across time, we investigated the functional flexibility of the behavioral immune system (BIS)—an evolved suite of psychological mechanisms designed to detect cues to infection and then engage specific computations, cognitions, emotions, and behaviors to avoid infection. Given that political party affiliation has been a strong predictor of COVID-related behaviors, attitudes, and opinions in the United States, we tested how BIS responses (e.g., perceived disease threat, disgust, avoidance) were calibrated using others' political affiliation as a diagnostic cue to infection threat. Beyond powerful effects of in-party favoritism/out-party derogation, individuals dispositionally high in disease avoidance motivation reported greater BIS responses to Republicans than Democrats. Importantly, within persons, COVID-sensitive increases in disease avoidance motivation predicted greater perceived infection threat by Republicans and lower levels of disgust toward and desire to avoid Democrats—even for Republican participants. These findings provide evidence of an ecologically-attuned, within-person calibration of disease psychology—a process long presumed and now demonstrated.

## *Aggression, Bullying, and Abuse*

### **Anger and hatred evolved distinct behavioral strategies**

*Sell, Aaron N.; Lopez, Anthony; Scrivner, Colton; Landers, Mitchel* <[asell@heidelberg.edu](mailto:asell@heidelberg.edu)>

Evolutionary-psychological theories have claimed that anger and hatred are distinct adaptations that evolved from separate selection pressures. The recalibrational theory of anger claims that anger evolved primarily to bargain for better treatment by recalibrating the welfare tradeoff ratio of the target, i.e. to make the person behave better in the future. The neutralization theory of hatred (Sell & Lopez 2020) claims that hatred evolved primarily to nullify the negative externalities that stem from a target with a negative association value, i.e. to weaken or kill a target whose continued existence is bad for you. Three studies with 1000 subjects from three English-speaking countries (US, England & India) randomly assigned subjects to think of either a person they were very angry at (but did not hate), or the person they hated most in the world. Subjects then indicated behaviors they wanted to engage in, and what outcomes they were seeking from the target (e.g. apologies, better treatment, physical suffering). Results showed that - consistent with both theories - angry subjects sought recalibration (e.g. apologies, better future treatment, more information about the target's motives), while hateful subjects sought neutralization (e.g. suffering, death, removal). Crucially, the more hateful the subjects felt, the less they sought recalibrational-strategies, indicating that hatred is not simply an extreme form of anger.

### **Is adolescent bullying an evolutionary adaptation? A 10 year review**

*Volk, Anthony; Dane, Andrew; Al-Jbouri-Elizabeth* <[tvolk@brocku.ca](mailto:tvolk@brocku.ca)>

Bullying is a serious behavior that negatively impacts the lives of tens of millions of adolescents across the world every year. The ubiquity of bullying, and its stubborn resistance towards intervention effects, led us to propose in 2012 that adolescent bullying might be an evolutionary adaptation. In the intervening years, a substantial amount of research has arisen to address this question. In this talk I review historical, cross-cultural, cross-species, genetic, reproductive, developmental, and personality evidence for the adaptive nature of adolescent bullying. This review reveals consistent and strong support for the hypothesis that adolescent bullying was, and remains, a facultative adaptation that is conditionally adaptive, subject to cost-benefit analyses, and relates to at least five evolutionarily relevant functions (the Five "Rs"): Reputation, Resources, deteRrance, Recreation, and Reproduction. From a theoretical perspective, the depth and breadth of evidence for bullying as an evolved adaptation offers potential avenues for research into other evolutionary adaptations. From an applied perspective, I will discuss how an evolutionary theory of bullying compliments alternative theories of adolescent bullying rather than conflicting or competing with them. An interdisciplinary approach to bullying that includes evolutionary theory is thus likely to afford stronger options for both research and prevention efforts.

## **Untangling the temporal relationship between pubertal development and bullying victimization in a longitudinal sample of US adolescents**

*Marino, Jessica; Davis, Elysia; Glynn, Laura; Sandman, Curt; Hahn-Holbrook, Jennifer*  
<[jmarino2@ucmerced.edu](mailto:jmarino2@ucmerced.edu)>

Experiencing peer aggression can relay information about one's social status and access to mates, food, protection, and alloparents. Given access to group resources underlies reproductive success, research in non-human primates suggests that there is often a bidirectional relationship between peer harassment and puberty timing, with early puberty leading to more peer harassment, and peer harassment leading to altered reproductive maturation due to stress. However, there have been no studies that examine this potentially bidirectional relationship in humans. To fill this gap, we followed 265 adolescents (47% female) who self-reported on peer victimization, adrenal and gonadal puberty status, and gave salivary DHEA-S and testosterone at three waves (Mage: T1 = 9.6, T2 = 12, T3 = 14.4). Multilevel modeling revealed that females who were farther along in self-report adrenal puberty at age 9 were more likely to report victimization at age 12. There was no relationship between early peer victimization and changes in pubertal development for either sex. Overall, this suggests that adrenal, but not gonadal, puberty status predicts peer victimization in females, a distinction that has not been previously explored. Future studies should examine the specific changes associated with adrenal puberty, such as physical or social behavior changes, to better understand how adrenal puberty cues relay information to peers about social status, usage of group resources, and reproductive success.

## **Meeting an overlooked challenge in friend competition via social venting**

*Krems, Jaimie; Merrie, Laureon; Williams, Keelah* <[jaimie.krems@okstate.edu](mailto:jaimie.krems@okstate.edu)>

People often air grievances about one mutual friend to another (social venting). If, contrary to a Freudian catharsis account, social venting does not alleviate anger, what function might it serve? Whereas much partner competition has focused on all-or-nothing competition (e.g., with strangers) for exclusive romantic partners, we focus on a likely recurrent and lesser-studied challenge in friend competition: Competing for a focal friend's affections against the focal friend's other friends. Compared to better-studied tactics of partner competition, social venting may be well-suited to meet this challenge. In eight experiments, we find that both social venting and more overt derogation, which communicate the same negative information about a mutual friend (target), (1) harm target reputation and (2) harm receivers' alliances with targets. But venting's focus on oneself (versus target transgressions) (3) obscures perceptions that actors intend to harm targets, thus (4) buffering actors from being deemed aggressive—an undesirable trait in close friends. Social venting additionally (5) strengthens the receiver-actor alliance. Such venting (6) predictably backfires, however, when conducted by targets' rivals (who are deemed motivated to harm targets), and (7) when receivers are much closer to targets than to venters.

## **The role of mating-relevant factors in the perpetration of digital dating abuse**

*Bhogal, Manpal; Tudor, Courtney; Hira, Simran* <[m.s.b2@wlv.ac.uk](mailto:m.s.b2@wlv.ac.uk)>

Previous research has explored offline intimate partner violence from an evolutionary perspective, primarily focusing on the role of individual differences in perpetration and victimization. However, a current form of intimate partner violence is digital dating abuse, which involves abuse toward a romantic partner, occurring online using electronic communication technology. This form of abuse differs from offline abuse, in that physical proximity is not required. Recent research has focused on evolutionary mating-relevant factors that drive the perpetration of digital dating abuse. Here, we extended and replicated previous work by reporting two studies (study 1,  $n = 114$ ; study 2,  $n = 162$ ) which explored the roles of mate value discrepancy, intrasexual competition, and relationship-contingent self-esteem in the perpetration of digital dating abuse. We found that mate value discrepancy (studies 1 and 2) and intrasexual competition (study 2) positively predicted the perpetration of digital dating abuse. To our knowledge, this article is the first to provide support that those who report high intrasexual competition, engage in greater levels of digital dating abuse, thus furthering theoretical advancements in this field by showing digital dating abuse is a mate retention tactic. Our findings further our understanding of online behavior in romantic relationships through an evolutionary psychological lens.

### *Psychoneuroendocrinology*

#### **Food, sex, and hormones: Assessing trade-offs between appetite and sexual interests**

*Dinh, Tran; Emery Thompson, Melissa; Gangestad, Steven* <[trandinh@unm.edu](mailto:trandinh@unm.edu)>

Previous work shows that naturally cycling women's appetite diminishes when they are conceptive—specifically, when their estradiol levels are elevated and their progesterone levels are low. Functionally, these hormonal associations may reflect trade-offs. When conceptive, interest in food may compromise (a) ability to focus on opportunities to conceive, (b) ability to search for new mates, and/or (c) ability to optimally regulate fertility. In this study, we examined within-woman hormonal associations with appetite, as well as within-woman associations between appetite and sexual interests. 213 romantically involved women participated in up to 4 sessions. For each session, estradiol and progesterone levels were estimated with urinary assays. Consistent with past research, women's appetite negatively covaried with estradiol levels. Women's sexual interests in their partners (in-pair sexual attraction and initiation of sex), however, were positively associated with appetite. Associations between women's appetite and their sexual interests in men other than partners (extra-pair attraction and interest in extra-pair sex) ran in negative directions, though typically non-significantly. Moderation analyses showed that the negative association between women's estradiol levels and their appetite was driven by women who possessed relatively little sexual interest in their partners. These results constrain functional interpretations of women's mid-cycle drop in appetite.

#### **Hormonal and cycle phase predictors of within-women shifts in self-perceived attractiveness**

Gupta, Goirik; Simmons, Zachary; Roney, James <[goirikgupta@ucsb.edu](mailto:goirikgupta@ucsb.edu)>

Do women feel more attractive during the fertile phase of ovulatory cycles? What are the functions of any such shifts in self-perceived attractiveness (SPA), and do ovarian hormones regulate them? Saliva samples from 43 women collected across 1-2 menstrual cycles were assayed for estradiol, progesterone, and testosterone; daily diary reports on SPA and other variables were collected on corresponding days. Contrary to prior large-scale studies, we did not find a significant effect of fertile window timing on SPA. However, within-cycle fluctuations in progesterone were significantly negatively associated with shifts in SPA, with marginally positive associations between SPA and estradiol. Women's sexual desire and SPA were positively associated, and the two variables fluctuated in very similar ways across the cycle, suggesting that SPA is a component of women's sexual motivation. Third-party ratings of women's photos taken throughout cycle regions provided no evidence that women's SPA simply tracked actual changes in their visible attractiveness. Finally, for partnered women, SPA was more strongly correlated with shifts in in-pair than extra-pair attraction. Our study provides novel evidence for the hormonal predictors of SPA and suggests that SPA changes in concert with other hormonally regulated shifts in women's motivational priorities.

### **The effects of exogenous testosterone on men's dehumanization of women: Men given testosterone dehumanize both conservatively dressed and sexualized women**

Luberti, Francesca R.; Proietti, Valentina; Geniole, Shawn N.; Bird, Brian M.; Ortiz, Triana L.; Watson, Neil V.; Carré, Justin M. <[francesl@nipissingu.ca](mailto:francesl@nipissingu.ca)>

Men dehumanize sexualized women more than non-sexualized women, which is partly due to men's sex goal activation. In this pre-registered experiment, we tested whether testosterone contributes to men's dehumanization of women. We gave 120 healthy young men (18–38) intranasal testosterone gel in one experimental session and placebo gel in another session (double-blind, within-subject design). In both sessions, men watched a video of a woman in conservative clothing, or a video of the same woman in sexualized clothing (between-subjects design). After the video, we measured men's emotion-based, personality-based, and implicit dehumanization of the woman. Men who watched the 'sexualized-clothing' video reported that the woman could feel non-uniquely human emotions more than human emotions (i.e., they dehumanized the woman) both when they had testosterone and placebo. Instead, men who watched the 'conservative-clothing' video reported that the woman could feel non-uniquely human emotions more than human emotions only when they had testosterone. There were no effects on other measures of dehumanization. While sexualized women are always at risk of emotion-based dehumanization, increased testosterone also decreases the extent to which men attribute human emotions to conservatively dressed women, suggesting that testosterone might be a contributing proximal mechanism of men's dehumanization of women.

### **Hormonal contraceptives as disruptors of competitive behaviour: Theoretical framing and review**

*Arthur, Lindsie; Casto, Kathleen; Blake, Khandis* <[lindsie.arthur@student.unimelb.edu.au](mailto:lindsie.arthur@student.unimelb.edu.au)>

Despite the notable benefits of hormonal contraceptive (HC) use for women worldwide, emerging evidence suggests that these commonly used medications could adversely impact psychological outcomes through alterations in neurophysiology. Less is known, however, about the functional impact of HC use on social behaviours. This talk will introduce a theoretical framework for HCs as disruptors of steroid hormone modulation of competition for reproductive, social, and financial resources. Guided by a substantive review of 50 studies (n = 19,637), this talk explores the disruptive quality of HCs on mating related competition (e.g., self-perceived attractiveness, jealousy, mate preferences and intrasexual competition) and how, under certain contexts, HC use also disrupts competitive decision making and suppresses achievement-based competitive motivation. We invite the audience to engage in discussion regarding the proposed theoretical framing and recommendations for future research.

### **Do changes in testosterone regulate sexual desire? Evidence from daily within-subject sampling**

*Catena, Tikal; Roney, James* <[tikalcatena@ucsb.edu](mailto:tikalcatena@ucsb.edu)>

Testosterone plays a number of important roles in the regulation of reproductive behavior and cognition across species. It is unclear, however, to what extent testosterone fluctuations in the typical adult range affect human sexual desire. The common belief that men's desire tracks shifts in their testosterone appears to drive marketing of testosterone supplements as treatments for low desire. However, only one study has examined within-person changes in men's testosterone and desire, finding null results, and none have analyzed day-to-day changes. Here, we collected daily testosterone samples from 41 adult men for one month, and self-reports of each day's sexual desire and other relevant states or events. We analyzed concurrent relationships between within-person changes in testosterone and desire, and lagged relationships that emerged when modeling within-person testosterone and desire as continuous-time functions. Our analyses found no significant relationship between testosterone and sexual desire, strongly discrediting the notion that changes in eugonadal men's testosterone affect sexual desire. However, follow-up analyses indicated a positive relationship between testosterone and courtship effort, particularly on days participants interacted with potential partners. We propose that testosterone may regulate human reproductive effort by promoting courtship-oriented behaviors more so than by promoting increases in sexual desire.

### **Testosterone and behavior in males and females: Myths and misconceptions**

*Casto, Kathleen* <[kcasto@ncf.edu](mailto:kcasto@ncf.edu)>

Testosterone is a steroid hormone that is produced in adult males and females, but in males, drastically higher exposure to this hormone during critical periods of development organizes behaviors relevant to reproduction. Levels in adulthood are thought to coordinate the energetic and behavioral investment in mate pursuit and competition for mates, at the cost to other

survival priorities. Others suggest that testosterone more broadly affects general status-seeking and dominance within relevant contexts. Yet, the relationship between testosterone and behavior is often misunderstood in both scientific literature and the media, partly due to the conflation of the organizational and more transient effects. With a focus on homo sapiens, I will briefly discuss updated understandings of testosterone and behavior with respect to 1) long-term exposure during critical windows, 2) sex differences in circulating levels in adulthood, 3) reactivity to social interactions and 4) oral/hormonal contraceptive use in women. Additionally, I will present folk-wisdom and misconceptions about testosterone alongside contrasting empirical evidence, drawing primarily from data collected with over 600 participants in my lab. Finally, I will discuss this knowledge in light of important and timely social-political issues about testosterone as a marker of “biological sex” and sex/gender inclusivity in testosterone research.

## Session 2: Wednesday, June 22nd 9:10pm - 10:10pm UTC

### *New Investigator Competition*

#### **More than just a pretty face? The relationship between immune function and perceived facial attractiveness**

*Mengelkoch, Summer; Gassen, Jeff; Prokosch, Marjorie; Boehm, Gary; Hill, Sarah*  
<[s.mengelkoch@tcu.edu](mailto:s.mengelkoch@tcu.edu)>

It has long been hypothesized that attractiveness provides a cue to a target's health and immunocompetence. However, much of the research testing this hypothesis has relied on a small number of indirect proxies of immune function and the results of this research have been mixed. Here, we build on this past research, examining the relationship between target attractiveness and: (a) self-reported health, (b) in vivo measures of inflammation and white blood cell count / composition, and (c) in vitro tests of targets' immune function, including (c1) leukocyte proliferation in response to immunological stimulants, (c2) phagocytosis of *Escherichia coli* bioparticles, (c3) NK cell-mediated lysis of target tumor cells, and (c4) *Staphylococcus aureus* growth in isolated plasma. Results revealed multiple, sometimes sex-differentiated, relationships between targets' immune function and others' perceptions of their attractiveness. Together, the results of this work suggests complex, often sex-differentiated relationships between immune function, health, and attractiveness.

#### **An evolutionary perspective on the global reproductive slowdown across humans societies**

*Brandt, Elena; Maner, Jon* <[brandt@psy.fsu.edu](mailto:brandt@psy.fsu.edu)>

Demographers are alarmed by an increasing trend: people all over the world are having fewer children and doing so later in life. Dubbed “the global fertility crisis,” the trend has been particularly pronounced in socially and technologically advanced societies, including the United

States where fertility rates have recently fallen below the population replacement level. The human reproductive slowdown is most often explained by social factors: contraceptive prevalence, access to education, and more women joining the workforce. Our research offers a different perspective grounded in evolutionary theory: most animal species respond to environments with lower morbidity and mortality by adopting a “slower” reproductive strategy marked by fewer offspring and older age of parturition. Multiple regression and random forest analyses of global economic, demographic, and psychological data from 217 countries provide evidence for similar links in human societies, and those links hold over and above conventional social/economic factors. Moreover, similar links are observed for cultural attitudes pertaining to reproductive behaviors, such as attitudes to abortions, divorce, non-heterosexuality, and moral obligation to have children. The results contribute to a deeper understanding of the ultimate evolutionary drivers behind the global fertility crisis, as well as the global cultural shift from “traditional” to “progressive” values.

### **Children use common knowledge to solve coordination problems**

*Deutchman, Paul; McAuliffe, Katherine* <[deutchma@bc.edu](mailto:deutchma@bc.edu)>

Recent work suggests that common knowledge is an important cognitive mechanism for coordinating prosocial behavior, in part because it reduces uncertainty about others' cooperative behavior. However, it remains unclear whether children also rely on common knowledge to solve coordination problems. Here we examined whether 6-9-year-old children were more likely to attempt to coordinate when they had common knowledge about a joint payoff. Participants saw three vignettes that modeled the structure of a two-player coordination problem and were provided with common knowledge, secondary knowledge, or private knowledge about the mutually beneficial, but risky, joint payoff. By 6-years of age, participants were more likely to attempt to coordinate when they had common knowledge than secondary knowledge, and secondary knowledge than private knowledge. Participants were also most likely to expect the other player to coordinate, and were most certain in their predictions, when there was common knowledge. Results indicate that, by middle childhood, children are able to solve coordination problems by relying on common knowledge, in part because it increases their certainty in others' cooperative behavior. Overall, findings suggest that common knowledge is an important cognitive mechanism for coordinating behavior and that it does so by reducing uncertainty about others' cooperative behavior.

**Session 3: Thursday, June 23rd 6pm - 7:40 pm UTC**

*Family and Parenting I*

### **Does allomothering improve child growth in a rural region of the Gambia?**

*Spake, Laure; Hassan, Anushé; Badjie, Jainaba; Sear, Rebecca; Shenk, Mary K.; Sosis, Richard; Shaver, John H.* <[laure.spake@otago.ac.nz](mailto:laure.spake@otago.ac.nz)>

Allomothering is assumed to improve the outcomes for children. However, recent research suggests that the relationship between allomothering and child health is less clear than previously assumed. In this presentation, we use high resolution data on children aged birth through 16 years, born to mothers across the West Kiang region of the Gambia, to test the effect of allomothering on child growth, measured via height-for-age (HAZ) and weight-for-age (WAZ) z-scores. We examine two categories of direct allomothering, physical care and child provisioning, along with indirect allomothering as measured by other types of support provided to the mother (e.g., loans or gifts of money, help with work, gifts of food not meant for the child). Data were analyzed using Bayesian mixed effect models building random effects for the village of residence, the mother, and then stratifying the analysis by age group of the child (0-4y and 5-16y). Physical care and indirect allomothering had no impact on child growth. Child provisioning improved children's HAZ, but did not have a clear impact on WAZ. Our results consolidate previous findings that the relationship between allomothering and child growth is complicated, even when using more fine-grained information on allomothering than previously available.

### **Fostering, adoption, and parental absence in Vanuatu**

*Brandl, Eva; Emmott, Emily H; Mace, Ruth* <[eva\\_brandl@eva.mpg.de](mailto:eva_brandl@eva.mpg.de)>

Alloparenting is a key aspect of human social behaviour. In Oceania, many children are adopted or fostered, meaning they are transferred out of the natal home to live with custodial alloparents. However, little is known about how these arrangements come about today, how they affect children, and who provides care. Here, we report findings from a survey carried out with the caregivers of N = 282 children in Vanuatu. Children who lived with custodial alloparents were more likely to live with extended kin than unrelated caregivers, with a strong preference for maternal relatives (83.7%). Contrary to previous suggestions, we did not find that fostering serves to modify large family sizes; instead, the most common reasons for fostering were that the parents had separated (16.7%), were engaging in labour migration (27.1%), or a combination of both (27.1%). Results for children's educational outcomes (engagement in home reading, school performance, and truancy) were ambiguous. Our findings are consistent with a kin selection account of fostering and suggest that this practice helps families adapt to socio-economic and demographic changes. Living with maternal kin may protect ni-Vanuatu children against some of the adverse outcomes that are associated with parental absence in other settings.

### **Arranged marriage, partner traits and parental investment: A test of the reproductive compensation hypothesis in humans**

*Hasnain, Annemarie; Snopkowski, Kristin* <[kristinsnopkowski@boisestate.edu](mailto:kristinsnopkowski@boisestate.edu)>

Both sexes choose mates based on qualities that will enhance offspring viability and quality. The Reproductive Compensation Hypothesis (RCH) predicts that parents who mate under constraint will increase their reproductive effort and investment in offspring to compensate for lowered

offspring viability. One possible type of mate choice constraint in humans is arranged marriage in which parents or others choose mates. In order to test the RCH in humans, we examine whether there are differences in partner traits, parental investment, and alloparental help between women in arranged marriages and those in self-choice marriages using data from the Indonesian Family Life Survey. The rate of arranged marriage has declined from approximately 34% of marriages in 1993 to only 11% in 2015. Except for education level and the personality trait of originality, no differences were found in mate characteristics between the husbands of women in self-choice compared to arranged marriages. Marriage type did not significantly correlate with parental investment except for number of live births where women in self-choice marriages had more offspring (controlling for marriage duration) than woman in arranged marriages, counter to predictions. It is possible that arranged marriage is not a constraint on mate choice in humans.

### **Why do parents react negatively to their offspring's sexual orientation disclosures? An inclusive fitness cost perspective**

*DelPriore, Danielle; Ronan, Olivia*

Adolescents and young adults who disclose a minority sexual orientation (“come out” as gay, lesbian, or bisexual) to their parents often are met with negative reactions. The current work aims to understand the causes of such negative reactions among parents. Specifically, this work evaluates a hypothesis derived from evolutionary logic: that variation in the quality of parental reactions to their offspring's sexual orientation disclosures is driven, in part, by parents' implicit or explicit concerns related to the reproductive success of their offspring. Across three studies (total N = 493), we tested whether daughters' and sons' perceptions of parents' negative reactions to their sexual orientation disclosures co-varied with the potential cost to parents' inclusive fitness, as indexed by parent gender, sexual orientation disclosed, offspring number, and disclosure age. This perspective received partial support among daughters, who reported more negative reactions among their mothers (versus fathers), particularly in response to lesbian (versus bisexual) disclosures. Reactions to sons' disclosures did not vary across parent gender, sexual orientation disclosed, offspring number, or disclosure age. This work suggests that fitness-relevant concerns may lead mothers to respond negatively to their daughters' lesbian orientation disclosures.

### *Cooperation and Social Networks I*

### **Do animals have a sense of fairness? A meta-analysis**

*Ritov, Oded; Völter, Christoph J.; Brosnan, S.F.; Raihani, Nichola J.; Engelmann, Jan M.*  
<[oded.ritov@berkeley.edu](mailto:oded.ritov@berkeley.edu)>

The notion that animals have a sense of fairness is one of the most influential and hotly contested prospects in the behavioral sciences. Beginning with Brosnan and de Waal's (2003) seminal report of inequity aversion in capuchin monkeys – operationalized as a refusal to accept

a less valuable reward than a conspecific in exchange for the same labor – researchers have published a series of studies attempting to replicate and build on their findings. In species from corvids to chimps, findings seemed to support the idea that a sense of fairness is an ancestral trait. At the same time, the evolutionary logic behind these claims has been questioned, alternative explanations for the observed behavior have been put forth, and a series of failed replications has been published. We conducted one of the largest animal behavior meta-analyses to date, synthesizing the data from 71,526 observations of 18 species using a series of pre-registered and exploratory mixed-effects models. We find little evidence for a sense of fairness in nonhuman animals. Instead, the data favors disappointment-based accounts, which explain the observed behavior without recourse to social comparison. I will conclude by discussing these alternative hypotheses and their implications for the evolution of fairness.

### **Friends near and afar, through thick and thin: Similarity in help between close- and long-distance friends**

*Smith, Kristopher; Pisor, Anne; Aron, Bertha; Bernard, Kasambo; Fimbo, Paschal; Kimsera, Rose; Borgerhoff Mulder, Monique* <[kristopher.m.smith@wsu.edu](mailto:kristopher.m.smith@wsu.edu)>

Humans form and maintain friendships across long distances. Long-distance friends provide access to non-local resources and buffer risk during times of need, providing support against large shocks that affect the entire local community. However, long-distance friends may be less likely to reciprocate help than close-distance friends because monitoring for defection is more difficult at greater distances, and thus help between long-distance friends may be more explicitly contingent than between close-distance friends. We interviewed 918 fishery users from 21 coastal villages in Tanzania whether they had received help in the form of a gift or loan from a friend living in their village and a friend living in a neighboring village. As there are local expectations that loans will be repaid but gifts will not, we predicted that close-distance friends would be more likely to help with gifts, whereas long-distance friends would be more likely to help with loans. Contrary to our predictions, help between close- and long-distance friends was similar in kind and amount, though close-distance friends provided more help generally. These results indicate that long-distance friends are an important, and likely robust, strategy for managing risk in high-variance environments.

### **Institutionalized punishment serves to restore dyadic cooperation in three small-scale societies**

*Fitouchi, Léo; Singh, Manvir* <[leo.fitouchi@gmail.com](mailto:leo.fitouchi@gmail.com)>

Fines, corporal beatings, and other forms of institutionalized punishment recur across small-scale societies. While they are often assumed to enforce group norms, we propose that these punitive procedures function to restore dyadic cooperation, and curtail conflict between offender and victim, following violations of reciprocal obligations. We test this account's predictions against the punitive systems of three small-scale societies. We code ethnographic

reports of 97 transgressions cases among the Kiowa bison hunters (North America); analyze a sample of 302 punishment cases in the Mentawai horticulturalists (Indonesia); and review retributive procedures documented among the Nuer pastoralists (South Sudan). In line with a cooperation-restoration function, we find that third-party punishment is rare; that most third-party involvement aims at resolving conflicts; that costs paid by offenders serve to achieve forgiveness by repairing victims; and that punishment is accompanied with ceremonial procedures aimed at limiting conflict and restoring goodwill. Although much rarer, we find some instances of third-party punishment among the Kiowa (6.6% of offenses), consistent with a norm-enforcement function. Most often, however, punitive procedures serve the dyadic function to appease victim's urge for revenge while not overly harming offenders' interests to ensure reconciliation.

### **Human social organization during the Late Pleistocene: Beyond the nomadic-egalitarian model**

*Singh, Manvir; Glowacki, Luke* <[manvir.manvir@gmail.com](mailto:manvir.manvir@gmail.com)>

Many researchers assume that until 10-12,000 years ago, humans lived in small, mobile, relatively egalitarian bands. This “nomadic-egalitarian model” suffuses the social sciences. It informs evolutionary explanations of behavior and our understanding of how contemporary societies differ from those of our evolutionary past. Here, we synthesize research challenging this model and articulate an alternative, the diverse Pleistocene model, to replace it. We review the limitations of using recent foragers as models of Late Pleistocene societies and the considerable social variation among foragers commonly considered small-scale, mobile, and egalitarian. We review ethnographic and archaeological findings covering 34 world regions showing that non-agricultural peoples often live in groups that are more sedentary, unequal, large, politically stratified, and capable of large-scale cooperation and resource management than is normally assumed. These characteristics are not restricted to extant Holocene hunter-gatherers but, as suggested by archaeological findings from 27 Middle Stone Age sites, likely characterized societies throughout the Late Pleistocene (until c. 130 ka), if not earlier. These findings have implications for how we understand human psychological adaptations and the broad trajectory of human history.

### **When minds meet: Twin study of tacit coordination**

*Segal, Nancy L., Marelich, William D., Pratt-Thompson, Elizabeth* <[nsegal@fullerton.edu](mailto:nsegal@fullerton.edu)>

Schelling (1960) defined tacit coordination (TC) as circumstances in which “two parties have identical interests and face the problem not of reconciling interests but only of coordinating their actions for their mutual benefit when communication is impossible.” Hamilton's (1964) inclusive fitness theory would predict that coordinated actions should occur more frequently between individuals sharing higher proportions of genes than those sharing relatively fewer. Support for this hypothesis comes from studies showing greater altruism/cooperation between monozygotic (MZ) than dizygotic (DZ) twins. The current report extends an ongoing study of TC at CSU

Fullerton. The current sample includes 72 MZ twin pairs and 47 DZ twin pairs, 12-72 years of age. Zygosity was assessed by a standard questionnaire or DNA analysis. Twins independently answered a series of questions (Self Condition; e.g., name a color), then repeated this task, but were instructed to produce “the same answer as their co-twin” (Coordination Condition). Using GLM analysis, zygosity had a significant effect [ $F(1,115)=13.72$ ,  $p<.001$ ], with MZ twins significantly outperforming DZ twins in both conditions, consistent with expectation. A significant effect also emerged for condition [ $F(1,115)=14.78$ ,  $p<.001$ ] with higher scores occurring during Coordination. The present findings refine theories concerning contributions to partner coordination and success.

### *Mating and Sexual Behavior I*

#### **Mating with multi-armed bandits: Reinforcement learning models of mate perception, search, and choice**

Conroy-Beam, Daniel <[dconroybeam@ucsb.edu](mailto:dconroybeam@ucsb.edu)>

Most models of mate choice assume that mate value can be perceived directly, veridically, and for free. However, in reality, mate perception is noisy and requires investment of finite search resources (e.g., time). Mate seekers thus face a dilemma: they must balance, within a finite search budget, pursuit of known and seemingly good partners with exploration of less-known but potentially superior alternatives. Reinforcement learning provides a body of tools useful for navigating exactly these kinds of exploration-exploitation tradeoffs. Here I will argue that mate search can be usefully modeled as a multi-armed bandit problem. Furthermore, I apply couple simulation to a sample of  $k = 522$  American dyads to test the suitability of reinforcement learning algorithms as models of mate search. Results indicate that reinforcement learning algorithms can successfully support mate choice even under constraints on search budgets and limits on mate perception. Additionally, mate search in this sample appears best approximated by an upper confidence bound algorithm that balances exploration and exploitation by implementing a form of optimism under uncertainty.

#### **The evolutionary origins of same-sex attraction: The weak negative selection pressures hypothesis**

Apostolou, Menelaos <[m.apostolou@gmail.com](mailto:m.apostolou@gmail.com)>

More than one in 10 adult individuals experience some degree of same-sex attraction. This high prevalence constitutes an evolutionary paradox, because same-sex attraction is associated with a direct reproductive cost i.e., a reduced number of biological children. I present evidence from a study where I analyzed two large nationally representative datasets ( $N = 15,208$ ) from the USA, and I have found that same-sex attraction was associated with considerable direct reproductive costs. However, when same-sex attraction was coupled with heterosexual orientation, these costs were relatively low. I further review anthropological and historical evidence, which suggests that these costs had been considerably lower in ancestral human

societies. Accordingly, I propose that alleles that predispose for same-sex attraction had experienced very low negative selection pressures, especially when they are found in a heterosexual individual, which had allowed them to be in a relatively high prevalence in the gene pool. In effect, weak negative selection pressures explain the observed high prevalence of same-sex attraction in contemporary populations.

### **Influence of fertility cycle on attraction preferences of sex typicality in heterosexual and homosexual women**

*Coe, Jennifer; Grenfell-Essam, Rachel; Cavenagh, Penny; Rieger, Gerulf*  
<[jennifer.coe@uos.ac.uk](mailto:jennifer.coe@uos.ac.uk)>

Previous research has demonstrated that during peak times of fertility women shows an increased attraction to masculine males. Historically this has been examined in heterosexual women. However, if this is a robust evolutionary pattern, then an increased preference for male masculinity during peak fertility could also happen in homosexual women, even if homosexual women prefer, on average, female femininity over male masculinity. I assessed heterosexual and homosexual women on their attraction to masculine and feminine male and female faces, during high fertility and low fertility (via urinary samples detecting luteinizing hormone). Heterosexual women preferred masculine male faces more so than homosexual women, but unexpectedly, heterosexual women's preference for masculine male faces was stronger during times of low fertility. Homosexual women preferred in some analyses feminine female faces more so than heterosexual women, however, women in general, and heterosexual women, showed decreased attraction to feminine female faces during high fertility. Overall, results did not suggest that fertility increases women's attraction to male masculinity, regardless of their sexual orientations, nor was there compelling evidence that women's fertility increases any preferences based on sexual orientation. Results are in line with recent studies which show no significant evidence that fertility cycles influence attraction preferences.

### **Consensually non-monogamous individuals present specific sociosexual and attachment profile compared to monogamous individuals and singles**

*Valentova, Jaroslava; Moraes, Alexandre; Varella, Marco* <[jaroslava@usp.br](mailto:jaroslava@usp.br)>

In evolutionary research, relationships are frequently divided into short- vs. long-term, and individuals into singles vs. coupled. These categories differ in a number of mating strategies, personality, life-history, etc. However, different types of relationships can be distinguished, such as monogamous and consensually non-monogamous (CNM), with the latter combining short- and long-term mating strategies and differing in several aspects from monogamous relationships. Here we tested for possible differences in attachment style and sociosexuality among different relationship types. We recruited 5,584 Brazilian men and women (singles=2,512; monogamous=2,592; CNM=480), who reported online their sociosexuality and attachment style. Multivariate linear model showed higher Secure and Fearful attachment styles among monogamous than singles, and higher Preoccupied and Dismissing among singles than

monogamous. CNM shared higher Dismissing style with singles and higher Secure attachment with monogamous. Further, CNM had significantly higher sociosexual behavior, attitudes, and desires than single and monogamous individuals. Interactions showed some significant shifts in sex differences as a function of relationship type. Thus, in attachment style, CNM exhibit aspects of both single and monogamous individuals, while sociosexuality distinguishes them from both groups. Studying diverse relationship types can shed more light on the evolved repertoire of mating strategies.

### **Using machine learning to predict sexual orientation and gender identity in a large LGBTQ+ sample**

*Walter, Kathryn; Gelbart, Benjamin; Mixner, Selina; German, Tamsin; Conroy-Beam, Daniel*  
<[kwalter@ucsb.edu](mailto:kwalter@ucsb.edu)>

Most human mating research focuses exclusively on the mating psychology of heterosexual cisgender individuals. The limited literature on LGBTQ+ mating psychology is scattered, often underpowered, and typically contains inconsistent results across studies. Thus, it remains unknown whether there are distinct mating psychologies across diverse sexual orientations and gender identities. Here, we examine mating psychology within a large sample of American LGBTQ+ and cisgender heterosexual people across several classic mating psychology measures, including sociosexuality, mate preferences, interest in sexual variety, and jealousy. Analyses of pilot data, using machine learning techniques, suggests that mating psychology distributes more according to sex rather than gender identity or sexual orientation. The only exception to this is for transgender participants, for whom mating psychology aligns more with gender identity than with sex assigned at birth. In this talk, we will focus on analyses of a large follow-up sample. If replicated, these results suggest that, at least along classically studied dimensions, mating psychology is somewhat sexually dimorphic but is not as specific to sexual orientation.

Session 4: Friday, June 24th 6pm - 7:40pm UTC

*Life History Theory I (Development)*

### **Ecology stereotypes are manifest in judgments of personal spaces, and are associated with independently assessed mortality risk**

*Manson, Joseph H.; Chua, Kristine J.; Spector, Rebekah J.; Lukaszewski, Aaron W.*  
<[jmanson@anthro.ucla.edu](mailto:jmanson@anthro.ucla.edu)>

People living in harsher ecologies are commonly stereotyped as higher, compared to individuals living in safer ecologies, in a bundle of “fast” pace-of-life (PoL) traits, e.g. impulsivity. Separately, research has shown that judgments of personality traits based on “behavioral residue” in target individuals’ personal spaces, e.g. offices, are accurate for some personality traits. We created

stimuli (N = 83) of targets' personal spaces from still images. The individuals were replaced by gray silhouettes. Separate groups of raters judged the imagined inhabitants of these spaces on each of 10 PoL-linked traits. Two traits (short- and long-term mating orientation) failed to show adequate inter-rater reliability. The remaining traits (makes plans; values organization, cleanliness, education, a healthy environment; is emotionally supportive of partner and children; spends quality time with own children; and makes risky decisions [reverse-keyed]) were substantially inter-correlated ( $\alpha = 0.91$ ), yielding a "slow" PoL stereotype composite. Life insurance risk ratings were collected as a proxy for objective mortality risk. After controlling for target gender and perceived SES, PoL stereotype was associated with risk rating: individuals whose personal spaces were rated as indicating a "faster" PoL tended to be judged by the underwriting process as likely to have a higher mortality risk.

### **The chance ignoring bias: failure to account for chance outcomes leads to erroneous performance judgement**

*Hong, Ze* <[ze\\_hong@g.harvard.edu](mailto:ze_hong@g.harvard.edu)>

We demonstrate a bias where people either misperceive or ignore chance information when evaluating the performance of technological practices with binary outcomes (success/failure), leading to errors in performance judgement. Specifically, we take advantage of the fact that "success by chance" of some technological practices can be objectively known (e.g., 50% in fetal sex prediction) and examine the extent to which such chance information is ignored or misperceived. We show that a substantial proportion of our subjects 1) fail to recognize that random guessing of fetal sex is expected to achieve 50% success record, and 2) when they do recognize this chance information, they often fail to use it as a baseline to evaluate some technological performance. We close by discussing how this cognitive bias may have contributed to the persistence of ineffective technologies in human societies.

### **Prenatal programming for 'helpers at the nest'? Mothers' prenatal distress speeds adrenal pubertal development in female offspring**

*Fox, Molly, Hahn-Holbrook, Jennifer, Marino, Jessica; Sandman, Curt; Glynn, Laura M.; Davis, Elysia P.* <[mollyfox@anthro.ucla.edu](mailto:mollyfox@anthro.ucla.edu)>

Prenatal life is a largely-overlooked modulator of life history plasticity, specifically, we posit that prenatal maternal mood disturbance may serve as a summary signal of extrinsic risk and resource availability. In a prospective, longitudinal study of 247 California mother-child dyads followed for more than a decade, we investigate the relation between maternal psychological distress during pregnancy and child age at adrenarche and gonadarche, assessed by maternal and child Pubertal Development Scale (PDS) reports, as well as children's dehydroepiandrosterone sulfate (DHEA-S) and testosterone levels. We found that elevated maternal psychological distress across a variety of indicators (depressive symptoms, perceived stress, and anxiety) predicted earlier adrenarche and higher DHEA-S levels in adolescent girls (but not boys). Moreover, birth-order moderated our results, so that first born girls exposed to

elevated maternal distress started adrenal puberty earlier than subsequent female offspring. As adrenal cortex endocrinology regulates skeletal growth and sexual maturation, prenatal distress may help to calibrate life-history trade-offs at the nexus of growth and reproduction. We theorize that there may have been adaptive benefits for pregnant mothers in high-stress environments to speed adrenarche-related social development in female offspring in order to have a 'helper at the nest' to assist with subsequent offspring.

### **Illuminating biological aging with W.D. Hamilton's ignored sibling replacement concept**

*Leake, David* <[leake@hawaii.edu](mailto:leake@hawaii.edu)>

Proximate research on early life adversity (ELA) typically finds accelerated "biological aging" associated with later ill health and early death. The predominant "ultimate" explanation states individuals adopt a "live fast, die young" life history strategy to beat the odds against reproduction in harsh environments, siphoning energy from bodily maintenance leading to later ill health. This theory, however, has come to be doubted due to contrary evidence from non-WEIRD populations and longitudinal primate studies, lacking energy trade-off evidence, and unaccounted confounders. Missing, however, is viable alternative evolutionary theory, although W.D. Hamilton (1966) provided one possible answer in his novel concept of sibling replacement. In sexually reproducing iteroparous species, offspring should develop propensities to promote their inclusive fitness by exiting life early when detecting they have relatively low reproductive value, so their parents can "replace" them with fitter offspring, while parents should preferentially direct resources to offspring with higher reproductive value – and the earlier these selective processes, the better for inclusive fitness. We find evidence prenatally in intensive maternal selecting out misfit fetuses, with those surviving but distressed born already on a course of accelerated aging towards ill health and early death, although such effects can be reversed in eustressful environments.

### **Variation in individual capital can explain behavioral syndromes in the fast-slow continuum**

*Boon-Falleur, Mélusine; André, Jean-Baptiste; Baumard, Nicolas*  
<[melusineboonfalleur@gmail.com](mailto:melusineboonfalleur@gmail.com)>

Life history theory is increasingly invoked in psychology as a framework for understanding behavioral strategies. In particular, evolutionary human scientists tend to assume that, along with reproductive strategies, several behavioral traits, such as cooperation and risk-taking behavior and, in its broadest version, a range of psychological and personality traits also cluster into 'fast' and 'slow' life histories. However, the inclusion of such a wide range of traits in a life history strategy is founded on relatively little theoretical justification. Beyond environmental factors such as mortality risk, we argue that quantitative changes in capital can lead to qualitative changes in people's priorities and psychology. People use the product of their capital - either embodied, physical and social - to make different investments. We show that depending on the total amount of capital, the optimal investment pattern will differ, leading to the empirically

observed pyramid of needs. Individuals with access to less productive capital will focus on the needs with the highest marginal fitness benefit, while individuals with more capital can afford to fulfill needs with lower fitness benefits. In addition, the amount of capital that is available to them will shape people's risk and time preferences, which in turn will affect a whole suite of behaviors such as cooperation.

## *Cooperation and Social Networks II*

### **The influence of language on the evolution of cooperation**

*Bishop, Megan E.; Lerch, Brian A.* <[mlbishop@live.unc.edu](mailto:mlbishop@live.unc.edu)>

Humans are unique amongst animals in their sophisticated language system and ability to freely cooperate with non-relatives. Verbal arguments have asserted that language, in particular, facilitated the evolution of extreme cooperation – but the specific mechanisms by which language influences cooperation have not been tested in formal models. Here we develop a mathematical model that explicitly considers three possible influences of language on the evolution of cooperation: 1) increasing the payoff of cooperative interactions, 2) allowing cooperation to succeed with fewer cooperators in the group, and 3) assisting the positive assortment of cooperators and defectors. Our results show that the role of language in the evolution of cooperation is not as straightforward as often believed. When language decreases the number of cooperators needed to successfully reach a positive group payoff, the equilibrium frequency of cooperators actually decreases. Only when language leads to higher payoffs does it favor the evolution of cooperation independent of other parameters. Finally, language can facilitate the evolution of cooperation in a population of only defectors, but only when it leads to positive assortment during group formation. Overall, our results demonstrate that the way that language alters cooperative interactions determines its effect on social evolution.

### **Why help those who help others: Indirect reciprocity and reputation-based partner choice**

*Roberts, Gilbert* <[gilbert.roberts@yahoo.co.uk](mailto:gilbert.roberts@yahoo.co.uk)>

When one individual helps another, it benefits the recipient but may also benefit itself by gaining a reputation for being cooperative. The best known way in which such reputations may pay is indirect reciprocity, in which a third party pays a cost to benefit the original helper. Indirect reciprocity is a leading explanation for large-scale human sociality. Here I critically review empirical tests of indirect reciprocity and find that whilst studies show that helping improves reputation, they do not show that indirect reciprocity is the mechanism for achieving benefits. I go on to show how systems of 'helping those who help others' can be explained by relatedness rather than by reciprocity. Those expressing the behaviour of 'helping those who help others' will tend to help others of their own type. Hence this behaviour can spread through genetic or cultural transmission even if it has a net cost to individuals. Finally I discuss how signalling theory provides an alternative to indirect reciprocity by proposing that individuals make a strategic investment in changing receiver behavior. These theories are confused in the literature

so I clarify the different mechanisms by which developing cooperative reputations can be adaptive.

### **Childhood environmental adversity leads to lower cooperativeness? Not so fast**

Kam, F. C. <[chk809@g.harvard.edu](mailto:chk809@g.harvard.edu)>

Human cooperation has been explained mainly with the theory of reciprocal altruism, in which return is essentially delayed. A body of life-history-informed psychology literature, therefore, articulates that individuals who grew up in harsher ecologies should be less cooperative. However, little to no supportive evidence has been yielded, especially in the domain of dyadic cooperation. Reconsidering the risk-pooling utility of the system of reciprocity and related theoretical findings, the present pre-registered study explores a untested alternative possibility: while environmental unpredictability may undermine the incentive to cooperate, harsh but stable ecologies foster cooperative phenotypes. A sex-balanced sample of 800 young adults (age=20.7) was recruited to participate in a one-shot prisoner's-dilemma. Consistent with existing reports, across all experimental conditions, childhood environmental harshness, childhood environmental unpredictability, and their interaction do not predict cooperation. While the effects do not reach statistical significance ( $p$ s=.064 and .085), harshness has been correlated to increased cooperation and perceived unpredictability has been correlated to decreased cooperation in the low unpredictability group and in the high harshness group accordingly, in non-priming conditions. Interestingly, those who grew up in harsh but stable ecologies also reacted uniquely when primed with an adverse cue.

*Mating and Sexual Behavior II*

### **Evolution of artistic propensities: Testing of intersexual selection and intrasexual competition**

Varella, Marco; Štěrbová, Zuzana; Bártová, Klára; Fisher, Maryanne; Valentova, Jaroslava <[macvarella@usp.br](mailto:macvarella@usp.br)>

We tested the ornament/armament functions of artisticity investigating the relationship between self-perceived talent/expertise in 16 artistic and 2 sports modalities, and proxies of intersexual selection (mate value, mating/parenting efforts, sociosexuality, and number of sexual partners) and intrasexual competition (aggressiveness, intrasexual competitiveness) in heterosexuals. Participants were 82 Brazilian men, 166 Brazilian women, 146 Czech men, and 458 Czech women (Mage=26.48, SD=7.12). Factor analysis revealed five factors: Literary-arts (creative writing, humor, acting/theatre/film, poetry, storytelling), Visual-arts (painting/drawing, sculpting, handcrafting, culinary arts, architecture design), Musical-arts (playing/instruments, singing, dance, whistling), Circus-arts (juggling, acrobatics), and Sports (individual and collective). In women, literary and musical-arts were related to elevated inter- and intrasexual selections proxies; visual and circus-arts were related to elevated intersexual selection proxies; sports were related to intrasexual selection proxies. In men, literary-arts and sports were related to elevated inter- and intrasexual selections proxies; musical-arts were related to intrasexual

proxies, and circus-arts were related to intersexual proxies; visual-arts did not have predictors. Thus, there were more relationships in women than in men, and intersexual selection was predominant in women while intrasexual selection was more prevailing in men.

### **Sex and appearance affect trust toward strangers, but not trustworthiness**

*Rostovtseva, Victoria; Butovskaya, Marina, Mezentseva, Anna; Weissing, Franjo*  
<[victoria.v.rostovtseva@gmail.com](mailto:victoria.v.rostovtseva@gmail.com)>

The ability to trust other individuals is a prerequisite for human cooperation. However, trust is not indiscriminate. Apparently, humans use subtle cues for judging partners' trustworthiness. We report on an experiment addressing the impact of sex and appearance on trust and trustworthiness.

The subjects in our experiment (predominantly Dutch students) played a Trust Game with strangers. Under "anonymous" conditions, they did not receive any information on their interaction partner; under "personalized" conditions they watched a brief silent video of their partner. The facial appearance was investigated with geometric morphometrics using full-face photographs.

Our results revealed that already under anonymous conditions the level of trust and trustworthiness was high. No sex differences under anonymous conditions were revealed. Under personalized conditions, females elicited a higher degree of trust in partners of both sexes. Females with more feminine facial shape elicited less trust in both males and females, whereas males with more masculine faces were more trusted by females, but less trusted by males.

Our results demonstrate that sex and appearance of interaction partners have a clear effect on eliciting trust in strangers. However, these cues do not seem to be reliable predictors of actual trustworthiness. The study was supported by RSF (18-18-00075).

### **She's a guys' girl: Characteristics and consequences of women's preferences for cross-sex friends**

*Bradshaw, Hannah; Hurwitz, Julia; Cunningham, Katja; Hill, Sarah* <[hbradshaw@washjeff.edu](mailto:hbradshaw@washjeff.edu)>

Past research suggests women who form cross-sex friendships reap benefits in the mating domain, but little research has examined how these friendship preferences might relate to women's interpersonal relationships with same-sex peers. The current research investigated this question across six studies. Studies 1-2 examined the factors that predict women's friendship preferences, showing women who prefer cross-sex (vs. same-sex) friends have greater mating success, but place less trust in female friends, hold more hostility towards other women, and report higher levels of aggression from female peers. Studies 3-5 showed that women who prefer cross-sex (vs. same-sex) friends are viewed as less trustworthy by female (but not male) perceivers. This lack of trust was predicted by inferences that women preferring cross-sex friends are sexually unrestricted, possess socially undesirable traits, and are hostile towards women. Study 6 examined whether high levels of masculinity (vs. femininity) might

ameliorate female perceivers' distrust of women who prefer cross-sex friends. Results revealed women who prefer cross-sex friends are distrusted by other women, regardless of gender typicality. Together, these findings demonstrate women who prefer cross-sex friends both distrust and are distrusted by other women, illuminating the potential costs of cross-sex sociality for women.

### **Using speed-dating and simulation data to explain inconsistent findings on the relation between stated and revealed preferences**

*Zhao, Amy; Zietsch Brendan; Sidari, Morgan; Lee, Anthony* <[amy.zhao@uq.net.au](mailto:amy.zhao@uq.net.au)>

Speed-dating studies have yielded little evidence of a relationship between stated preferences and revealed preferences, casting doubt on the assumption that stated ideal partner preferences guide human mate selection. We conducted a high-powered speed-dating study (n=1145) and found only one out of the nine assessed traits provided evidence of a correspondence between stated and revealed preferences. In Study 2, we tested an alternative explanation for such null results. We conducted an agent-based modelling simulation according to the constraints of Study 1's speed-dating design. We demonstrated that if speed-daters use a substantial number of traits to evaluate a potential partner, stated preferences for any one trait can be only minimally related to revealed preference for that trait. As more traits were used to evaluate mates and as preference measures became more noisy, the maximum association of a stated and revealed preference for a trait decreased rapidly. Therefore, with realistic assumptions about measurement error and number of traits used to evaluate mates, past studies like ours would have been underpowered to detect these associations, calling into question the previous interpretations of null findings. Altogether, our findings suggest that stated preferences may meaningfully drive revealed preferences while remaining difficult to statistically detect.

### **Modern mating markets, misogyny, and the involuntary celibacy (Incel) movement**

*Costello, William; Rolon, Vania; Thomas, Andrew; Schmitt, David* <[william@costello5.com](mailto:william@costello5.com)>

There exists a dearth of primary data collected from self-identified incels (involuntary celibates), the sub-culture of men who build their identity around their perceived inability to form sexual or romantic relationships. The incel community operates almost exclusively online, providing an outlet to express misogynistic hostility, frustration and blame toward society for a perceived failure to include them, and recent years have seen growing concerns about potential threats of violence from incels. In order to fill a gap in the literature, this study compared a sample (n = 151) of self-identified incels with non-incels (n = 365) across a range of measures, including interpersonal victimhood, self-perceived mate-value, reasons for being single, sociosexual-desire, depression, anxiety, loneliness, and life satisfaction. Incels' accuracy in predicting heterosexual female mate preferences were compared to the reported preferences of a sample of heterosexual women, highlighting some cognitive distortions. Moderation analyses were used to consider interactions between incel-status and sociosexual desire on wellbeing,

while cross tabulation was used to explore demographic differences between the two groups of men in ethnicity, political affiliation, and likelihood of being NEET (not in education employment or training). Results suggest that incels represent a newly identified “at-risk” group to target for evolutionary-psychology-informed mental-health interventions.

## Session 5: Friday, June 24th 8:50pm - 10:30pm UTC

### *Cross-Cultural Research and Socioecology*

#### **Do agriculturalists really have more children? Assessing the relationship between subsistence and fertility in 26 societies**

*Page, Abigail E., Ringen, E., Berbesque, C., Koster, J., Moya, C., Borgerhoff Mulder, M., Kramer, K., Greaves, R., Sum, C., Lui, R., Shenk, M., Stieglitz, J., Ziker, J., Lew-Levy, S., Boyette, A., Collieran, H., Kiabiya Ntamboudila, F., Ross, C., Scelza, B., Prall, S., Towner, M., Blumenfield, T., Migliano, A B., Smith, D., Dyble, M., Salali, G.D., Chaudhary, N., Derkx, I., Starkweather, K., Gurven, M., Winterhalder, B., Cortez, C., Pacheco-Cobo, L., Schacht, R., Macfarlan, S. J., Du, J., Leonetti, D., French, J. and Sear, R. <[abigail.page@lshtm.ac.uk](mailto:abigail.page@lshtm.ac.uk)>*

Anthropologists, archaeologists and demographers have long debated whether agriculturalists have higher fertility than foragers. Previous studies have been limited by 1) use of population averages, limiting statistical power and discarding intra-population variation and 2) reliance on subsistence typologies. We re-assess this question by exploring the relationship between fertility and subsistence using a large, individual-level dataset of 10,000 women from 27 societies with diverse subsistence strategies. Using Bayesian multi-level modelling we first assessed whether fertility corresponds to traditional subsistence categories and market integration, and then examined these associations using individual-level subsistence measures – circumventing our reliance on subsistence typologies. Preliminary findings highlight substantial variation in individual women’s fertility across populations, but variation within populations exceeds variation between. Variation in individual fertility did not correspond to subsistence type: hunter-gatherer average completed family size (CFS) was not clearly differentiated from others. However, fertility did vary with market integration - populations with low integration had an average CFS = 6.47, compared to CFS = 4.52 in the most integrated. Results indicate that while some aspects of subsistence are important for fertility, we find no evidence for consistent differences in fertility between classic subsistence typologies.

#### **Cross-cultural rules for oral story transmission: implications for the evolution of cumulative culture**

*Michelle Scalise Sugiyama and Kieran J. Reilly <[mscalise@uoregon.edu](mailto:mscalise@uoregon.edu)>*

For most of human evolution, accumulated cultural knowledge has been stored in memory and transmitted orally. This presents a twofold problem: accurate storage and accurate transmission. One solution, which appears to be universal, is to embed knowledge in narrative, a highly

memorable format. However, this strategy depends on accurate performance of the story. Significantly, some forager cultures have rules regulating story performance, but the extent of this phenomenon is unknown. We hypothesize that these rules subserve high-fidelity transmission across generations. If so, we would expect them to be widespread across forager populations and to constrain storytelling events in ways that support faithful transmission. For example, we would expect rules to mandate transmission by experts under low-distraction conditions with multiple individuals in attendance, and include means of identifying and correcting mistakes. Accordingly, we searched the forager ethnographic record for descriptions of performed narrative, and coded them for prescriptions/proscriptions regarding performative context, narrator/audience demographics, story modifications, and rule violations. Results indicate that, across forager cultures, rules regulating story performance are widespread and characterized by features that reduce the likelihood of copy errors. We conclude that storytelling rules are an anthropogenic “ratchet” invented to help prevent the loss of accumulated cultural knowledge.

### **Cultural evolution of fake news**

*Nascimento de Oliveira, Angelica; Barclay, Pat*      <[nascimea@uoguelph.ca](mailto:nascimea@uoguelph.ca)>

Cultural evolution occurs when some ideas spread and accumulate at the expense of others. Some features of a message may increase its chances of being shared. The present study investigated whether the degree of exaggeration affected the chances of headlines being passed using a serial transmission protocol from cultural evolution. We predicted that exaggerated stories would be preferentially transmitted over non-exaggerated ones. First, we pre-tested a story bank with 160 headlines that varied in terms of topics and degree of exaggeration. Then, participants (N = 200) were randomly assigned to one of 10 chains of transmission. They received 40 headlines and were asked to share 20 with the next participant in their chain. We found a significant effect of exaggeration, such that the exaggerated versions were transmitted more often than the true and understated versions. This resulted in a higher proportion of wildly exaggerated headlines in the last generation compared with the initial generation. If we understand how information is communicated and evolves over repeated episodes, we can better inform the literature and design future interventions to fight misinformation in society.

### **Effects of voice pitch on social perceptions vary with relational mobility and other socioecological variables**

*Aung, Toe; Hill, Alexander K.; Hlay, Jessica K.; Hess, Catherine; Hess, Michael; Johnson, Janie; Doll, Leslie Doll; Carlson, Sara M.; Magdinec, Caroline; González-Santoyo, Isaac; Walker, Robert S.; Bailey, Drew; Arnocky, Steven; Kamble, Shanmukh; Vardy, Tom; Kyritsis, Thanos; Atkinson, Quentin; Jones, Benedict; Koster, Jeremy; Palomo-Vélez, Gonzalo; Tybur, Joshua; Muñoz-Reyes, José; Choy, Bryan K. C.; Li, Norman P.; Klar, Verena; Batres, Carlota; Bascheck, Patricia; Schild, Christoph; Penke, Lars; Pazhoohi, Farid; Kemirembe, Karen; Valentova, Jaroslava Varella; Varella, Marco Antonio Correa; Silva, Caio Santos Alves da; Borrás-Guevara,*

*Martha; Hodges-Simeon, Carolyn; Ernst, Moritz; Garr, Collin; Chen, Bin-Bin; Puts, David*  
<[toea96@gmail.com](mailto:toea96@gmail.com)>

We manipulated fundamental frequency (fo) to examine how pitch affects key social perceptions, and how socioecological variables modulate these effects. In 2,647 listeners across 22 nations, low male fo increased men's perceptions of formidability and prestige especially in societies with higher relational mobility, where rapid identification of high-status competitors may be exigent, and in societies with higher homicide rates, where male intrasexual competition may be more intense. Lower societal health and food security and higher historical pathogen prevalence weakened women's preferences for low male fo in short-term mating contexts, challenging the hypothesis that female preferences for male traits function to recruit heritable immunocompetence for offspring. High female fo increased women's perceptions of flirtatiousness where relational mobility was lower and threats to mating relationships may be greater. These results show that the influence of fo on social perceptions depends on socioecological variables, including those related to competition for status and mates.

### **Incel activity on social media linked to local mating ecology**

*Blake, Khandis; Russo-Batterham, Daniel; Brooks, Rob* <[khandis.blake@unimelb.edu.au](mailto:khandis.blake@unimelb.edu.au)>  
Young men with few prospects of attracting a mate have historically threatened internal peace and stability of societies. In some contemporary societies, such involuntary celibate — or Incel — men perpetrate much online misogyny and real-world violence. We test the prediction that online Incel activity arises via local 'real world' mating market forces that affect relationship formation. From a database of 4 billion Twitter posts (2012-2018), we geolocated 321 million to 582 commuting zones in the continental U.S.A., of which 3649 tweets used words peculiar to Incels and 3745 were about Incels. We show that such tweets arise disproportionately within places where mating competition among men is likely to be high due to male-biased sex ratios, few single women, high income inequality, and small gender gaps. Our results suggest a role for social media in monitoring and mitigating factors that lead young men toward antisocial behavior in real-world societies.

### *Development and Emotions*

### **What is the expected human childhood? Insights from evolutionary anthropology**

*Frankenhuis, Willem; Amir, Dorsa* <[w.e.frankenhuis@uu.nl](mailto:w.e.frankenhuis@uu.nl)>

In psychological research, there are often assumptions about the conditions that children expect to encounter during their development. These assumptions shape prevailing ideas about the experiences that children are capable of adjusting to, and whether their responses are viewed as impairments or adaptations. Specifically, the expected childhood is often depicted as nurturing and safe, and characterized by high levels of caregiver investment. Here, we synthesize evidence from history, anthropology, and primatology to challenge this view. We integrate the findings of systematic reviews, meta-analyses, and cross-cultural investigations on

three forms of threat (infanticide, violent conflict, and predation) and three forms of deprivation (social, cognitive, and nutritional) that children have faced throughout human evolution. Our results show that mean levels of threat and deprivation were higher than is typical in industrialized societies, and that our species has experienced much variation in the levels of these adversities across space and time. These conditions likely favored a high degree of phenotypic plasticity, the ability to tailor development to different conditions. This body of evidence has implications for recognizing developmental adaptations to adversity, for cultural variation in responses to adverse experiences, and for definitions of adversity and deprivation as deviation from the expected human childhood.

### **Exploring features infants use to identify plants**

*Annie E. Wertz, Camille Rioux, & Karola Schlegelmilch* <[wertz@mpib-berlin.mpg.de](mailto:wertz@mpib-berlin.mpg.de)>

Recent research has shown that infants possess selective behavioral and social learning strategies for plants. For example, infants are reluctant to touch plants, exhibit increased social information seeking behaviors when confronted with plants, and selectively learn about plant properties like edibility. These findings come from studies that present infants with plants and control stimuli, including feature-matched novel artifacts, familiar artifacts, and non-living natural objects (e.g., stones, shells). While these studies clearly demonstrate that infants reliably distinguish plants from other types of entities, they leave open the important question of what features infants use to make this distinction. Here we present two projects attempting to address this question. The first project used a gaze-contingent eye-tracking search task with 8-month-old infants (N = 39) that compared complex naturalistic image extracts from vegetation, artifacts, and non-living natural entities, each with various computationally-assessed and human-rated visual properties. The second project is an ongoing meta-analysis of seven studies that used a time-to-touch reaching method with 5- to 48-month-olds (N = 368). We discuss the results as initial steps toward uncovering the statistical regularities that may have distinguished plants from other entities over evolutionary time.

### **Value computation in humans**

*Sznycer, Daniel* <[daniel.sznycer@okstate.edu](mailto:daniel.sznycer@okstate.edu)>

Things afford positive, neutral, or negative long-run effects on the replicative probability of the focal individual's genes. At the most general level, values are internal indices of those effects. There are many prerequisites for valuing things aptly. Here, I focus on two: the need to compute value accurately, and the need to properly integrate value information into the systems that use value information. For example, the food value imputed to an apple needs to reflect the nutrient content of the apple (accuracy); the gratitude aroused if someone gave you an apple needs to reflect the food value imputed to the apple (integration). Here, I evaluate these hypotheses with two preregistered studies. Consistent with the integration hypothesis, there are close correspondences between the food values participants impute to each of 40 food items (Study 1; goods) and the social values and social emotions that result when those food items occur as

constituents of broader social events. Similar correspondences are observed when participants evaluate each of 28 diseases and injuries (Study 2; bads). Consistent with the accuracy hypothesis, the food values, the social values, and the social emotions elicited by the food items all track the nutrient content of those food items."

### **Jealousy as a protection of significant attachments in close relationships**

*Fernandez, Ana Maria* <[ana.fernandez@usach.cl](mailto:ana.fernandez@usach.cl)>

Jealousy is an emotional response to the threat of losing a valued relationship. In this research, we evaluate the proposal that infant, friendship, and romantic jealousy are evolved responses to the threat of someone else replacing what is unique in each type of close relationship, compared to other kinds rivals. We contrasted the jealousy response of 1) children faced with loss of mother attention to a social and non-social rival (n = 45), 2) same-sex friends faced with a friendship competitor compared to another challenger (n = 305), and 3) romantic partner's jealousy towards a romantic rival in contrast to friends or relatives (n = 412). The results show preliminary support for the function of jealousy to drive away the threat of a rival replacing what is unique on each type of relationship. We discuss the implications of these findings for understanding the adaptive function of jealousy to protect close attachment bonds, and for understanding the evolved psychology of close relationships.

### **An evolutionary hypothesis for the unusual sensory experiences reported by the bereaved**

*Maxwell Altman, Mohammad Bhatti, Anvita Gupta, Paul Andrews* <[altmanm@mcmaster.ca](mailto:altmanm@mcmaster.ca)>

Bereavement is a common context in which people report unusual sensory experiences (USEs), from exceptionally vivid dreams to complete audio-visual hallucinations. We hypothesize that USEs may be an adaptation that evolved to force processing of painful thoughts and feelings through involuntary exposure. We developed a rating guide to qualitatively analyze the written accounts of 285 bereaved individuals' USEs on nine variables. These variables are based in the Bereavement Analytical Rumination Questionnaire (BARQ), an evolutionarily informed scale assessing grief-related rumination on two dimensions: root cause analysis (RCA), the analysis of the cause of the loss; and reinvestment analysis (RIA), the analysis of how to reinvest time and effort in meaningful activities. Those who reported an unusual sensory experience scored significantly higher on the BARQ. Moreover, some of our rated variables were correlated with the two BARQ dimensions in predicted directions (e.g. themes of moving on was negatively related to RCA and RIA). Our results provide preliminary support for the hypothesis that USE's are an adaptation that promote involuntary processing of important problems following the death of a loved one. We suggest that USE's in other contexts (dreams, psychedelic hallucinations, other traumatic events) might also promote involuntary processing of important problems.

*Family and Parenting II*

## **Inferred parental motivations through sexually dimorphic facial features**

*Boykin, Kaitlyn; Brown, Mitch; Drea, Kelsey; Sacco, Donald* <[kaitlyn.boykin@usm.edu](mailto:kaitlyn.boykin@usm.edu)>

In addition to providing robust cues diagnostic of prospective mates' good genes, various physical features could be similarly utilized in inferring individuals' parental abilities. This study sought to explore how variations in sexually dimorphic facial features inform perceptions of social targets as motivated to provide parental care. Participants viewed a series of male and female faces manipulated at varying degrees of sex-typicality (i.e., masculinized versus feminized versus unaltered controls), and rated the perceived motivation of each target to nurture and protect a child. Female targets were perceived as more motivated by parental care than male targets, whereas male targets were perceived as specifically motivated to protect offspring. Feminized targets were additionally perceived as more motivated by nurturance, though such inferences were apparent for both male and female targets. Findings represent an understanding of perceivers use of functional heuristics of sexual dimorphism in identifying optimal parents.

## **Modeling the conditions of adaptive allocare**

*Weitzel, Elic M.; Wilson, Kurt M.; Sear, Rebecca; Shaver, John H.; Shenk, Mary K.; Sosis, Richard* <[elic.weitzel@uconn.edu](mailto:elic.weitzel@uconn.edu)>

Allocare takes a variety of forms in human societies with alloparents investing in non-descendant children in many ways. We broadly categorize two types of alloparental investments according to their cost structures: additive and declining marginal costs. Investing resources in children often (but not always) entails an additive cost structure in which an alloparent must pay the same cost to care for an additional child. In contrast, investing time in children is often characterized by declining marginal costs which permit alloparents to care for additional children without paying the full costs for each. To investigate the conditions under which investment in allocare of either form may be adaptive, we built an agent-based model to assess fitness outcomes to populations practicing these allocare strategies. Our model indicates that when parents and alloparents have only limited resources or time, investment in forms of allocare with declining marginal costs (i.e., time) yields the highest fitness benefits. At relatively higher availability of resources or time, the cost structure of allocare matters less but allocare with additive costs (i.e., resources) performs slightly better. Our model therefore suggests that while allocare is always adaptive, the type of care provided varies according to socioecological circumstances.

## **Women's pregnancy disclosure to blood versus affinal relatives, and role of miscarriage**

*MacEacheron, Melanie; Fisher, Maryanne L.; Staley, Molly* <[mmaceac1@asu.edu](mailto:mmaceac1@asu.edu)>

Women may delay disclosure of pregnancy until noticeable, to conceal miscarriage, which can indicate low female fertility. Women might, however, benefit from relatives' support in early

pregnancy, when conditions possibly impairing resource acquisition are more likely. Conceptuses are usually as related to pregnant women's affinal as blood relatives. The latter, though, should be more likely to support her due to inclusive fitness, especially if she has fewer siblings, whether she miscarries or not: Her affines may decrease support, even encouraging her male partner to re-partner, if she appears infertile. We examined the latency ever-pregnant women (N = 312) disclosed first (and second) pregnancy to various relative classes. Order was as predicted under Differential Grandparental Solicitude theory. Planned regression showed disclosee being female, disclosee being blood relative, participant having fewer full siblings, her greater closeness to romantic partner, and disclosee's anticipated support, all at least marginally predictive of sooner disclosure to him/her. Second, planned regression substituted affinal/blood relative status of disclosee with interaction of that and whether previously miscarried: this term was significantly predictive (with greater delay to affines after miscarriage). All predictors significant in a regression like that above, adding interaction: disclosee sex X disclosee affinal/blood relative X previous miscarriage.

### **Does the death of a close relative influence effort in looking after health?**

*Mona Joly, Daniel Nettle, Jan Paul Heisig* <[mona.joly@wzb.eu](mailto:mona.joly@wzb.eu)>

Within affluent societies, socioeconomic disparities in health and mortality are large, and substantially driven by differences in behaviours. One explanation could be that disadvantaged people perceive a large part of their mortality risk to be beyond their control, making them less willing to look after their health. We hypothesise that the death of close relatives serves as a cue of perceived uncontrollable mortality risk (PUMR). We thus expect the death of close relatives to impact PUMR and health behaviours. In a first pre-registered exploratory study, we surveyed 600 representative UK adults for their family mortality history, effort in looking after health and PUMR using self-report measures. We found that the number of deaths in the close family was significantly associated with PUMR, effort in looking after health and more specifically smoking status. To remove the confounding effect of age and replicate our findings, we will further examine these associations in a second age-homogeneous larger sample (n=1000 UK participants).

### **Session 6: Saturday, June 25th 6pm- 7pm UTC**

#### *Postdoctoral Award Competition*

### **The non-independence of nations and why it matters**

*Claessens, Scott; Atkinson, Quentin D.* <[scott.claessens@gmail.com](mailto:scott.claessens@gmail.com)>

Cross-national analyses test hypotheses about the drivers of global variation in national outcomes. However, since nations are connected in various ways, such as via spatial proximity and shared cultural ancestry, cross-national analyses often violate assumptions of non-independence, inflating false positive rates. Here, we show that, despite being recognised

as an important statistical pitfall for over 200 years, cross-national research in economics and psychology still does not sufficiently account for non-independence. In a review of the 100 highest-cited cross-national studies of economic development and values, we find that controls for non-independence are rare. When studies do include controls for non-independence, our simulations suggest that commonly used methods continue to produce false positives. In reanalyses of twelve cross-national relationships, we show that half are no longer significant after controlling for non-independence using global proximity matrices. We urge social scientists to sufficiently control for non-independence in cross-national research.

### **Early concepts of intimacy: Young humans use saliva sharing to infer close relationships**

*Thomas, Ashley J. ; Woo, Brandon; Nettle, Daniel; Spelke, Elizabeth; Saxe, Rebecca*  
<[ajthomas@mit.edu](mailto:ajthomas@mit.edu)>

Across human societies, people form “thick” relationships characterized by strong attachments, obligations, and mutual responsiveness. People in thick relationships share food utensils, kiss, or engage in other distinctive interactions that involve sharing saliva. We found that children, toddlers, and infants infer that dyads who share saliva (as opposed to other positive social interactions) have a distinct relationship. Children expect saliva sharing to happen in nuclear families. Toddlers and infants expect that people who share saliva will respond to one another in distress. Parents confirm that saliva sharing is a valid cue of relationship thickness in their children’s social environments. The ability to use distinctive interactions to infer categories of relationships thus emerges early in life, without explicit teaching; this enables young humans to rapidly identify close relationships, both within and beyond families.

### **Why warmth matters more than competence: A new evolutionary approach**

*Eisenbruch, Adar; Krasnow, Max* <[adar.eisenbruch@gmail.com](mailto:adar.eisenbruch@gmail.com)>

Multiple lines of evidence suggest that there are two major dimensions of social perception, often called warmth and competence, and that warmth is prioritized over competence in multiple types of social decision-making. Existing explanations for this prioritization argue that warmth is more consequential for an observer’s welfare than is competence. We present a new explanation for the prioritization of warmth, based on our species’ evolutionary history of cooperative partner choice. We argue that the prioritization of warmth evolved because our ancestors faced greater variance in the warmth of potential cooperative partners than in their competence, but greater variance in competence over time within cooperative relationships. These each made warmth more predictive than competence of the future benefits of a relationship, but due to differences in the distributions of these traits, not due to differences in their intrinsic consequentiality. A broad, synthetic review of the anthropological literature suggests that these conditions were characteristic of the ecologies in which human social cognition evolved, and agent-based models demonstrate the plausibility of these selection pressures. We conclude with future directions for the study of preferences and the further integration of social and evolutionary psychology.

Session 7: Saturday, June 25th 7:10pm - 8:30pm UTC

*Life History Theory II (Reproduction)*

### **Timing of sexual maturation correlated among members of married dyads**

Corpuz, Randy <[randy.corpuz@umb.edu](mailto:randy.corpuz@umb.edu)>

The zeitgeist of life history (LH) theory's use in psychology has focused on individual reproductive strategies—i.e., how one's environment influences their own mating orientation ("fast" vs "slow"). Less discussion is dedicated to potential interactions of one's own life history orientation with that of their selected mate. Very basic questions (e.g., if/when we should expect "slow vs fast" orientations align between partners or if/when one's strategy may exploit the other's) arise when thinking a dyadic space. In a community sample of 179 reproductively successful dyads (first-time parents), we explored the relationship between each individual's timing of sexual maturation (i.e., age of sexual debut) and their partner's. We found a strong, positive correlation for age of sexual debut within the dyads of this sample. The same was true when looking at a dyad's female age of menarche and male age-of-first ejaculation (or nocturnal emission). Overall, there was little divergence in self-reported age of sexual maturation between partners. This study used data on sexual maturation from new parents to explore how "real" mateships unfolded downstream of each partner's timing of sexual maturation. Limitations of our sample's demographic characteristics and broader discussion concerning methodological and analytical approaches to research on LH strategies on the level of the dyad are discussed.

### **Lifetime reproductive success is an imprecise but largely unbiased predictor of long-term genetic contributions in historical humans**

Young, Euan Angus; Chesterton, Ellie; Lummaa, Virpi; Postma, Erik; Dugdale, Hannah L.  
<[e.a.young@rug.nl](mailto:e.a.young@rug.nl)>

Despite its clear importance in human evolutionary biology, we have a poor understanding of the factors determining an individual's fitness, i.e. its ability to make a contribution to the gene pool in future generations. While short-term fitness proxies, e.g. lifetime reproductive success (LRS), are commonly used to measure fitness, how well do these proxies perform? Multigenerational human genealogical data allows the estimation of individual genetic contributions (IGCs) – a fitness approximation closer to its theoretical definition – over many more years than is usually possible. Here, we estimate IGCs of 2,623 individuals after ~308 years using genealogical data from two parishes in Switzerland. We find that the number of grandoffspring predicts IGCs best, and explains 23% more variation in IGCs than LRS, which explained only 33% even when survival of offspring to adulthood is accounted for. This suggests that offspring reproductive success is a key determinant of individual fitness. Further analyses show that LRS only slightly underestimates the IGCs of offspring as family sizes increase, and hence we find little evidence for a quality-quantity trade-off. Together these findings suggest that, albeit relatively imprecise, LRS is a largely unbiased and appropriate fitness proxy in this historic human population.

## **Homosexual courtship in young capuchin monkeys**

*Delval, Irene; Fernández-Bolaños, Marcelo; Valentova, Jaroslava Varella; Visalberghi, Elisabetta; Izar, Patricia* <[irenedelval@gmail.com](mailto:irenedelval@gmail.com)>

Sexual behavior is mostly defined by genital manipulation and its reproductive function. However, non-genital and non-reproductive sexuality represents an important part of sexual repertoire. Comparative approach is crucial for understanding human sexual behavior, including its development. Same-sex sexual behavior (SSB) has been reported in many primate species. Several sociosexual functions have been proposed, including dominance assertion, practice for heterosexual copulation, tension regulation, reconciliation, and alliance formation. Capuchin monkeys are known for their rich sexual behavioral repertoire, with elaborated courtships. Although same-sex mounting and genital inspection are common in capuchins' play, same-sex courtship has been overlooked. Here we describe the first observed case of two young males (one weaning infant, one sub-adult) of wild-living *Sapajus xanthosternos*, performing a 15-minute uninterrupted sequence of sexual courtship. Two trained observers analyzed the video, using an ethogram of twenty behaviors typical for the heterosexual sexual repertoire. The two young males performed 16 of these behaviors, showing a great overlap with the adult heterosexual courtship. Thus, SSB might serve to practice for sexual behavior, strengthen the bonds and/or test the relationship between social partners. The current view of primates', including human, sexual behavior centered on genitalia and copulation behavior should be revised.

## **Voluntary sterilization prevalence explained by parental investment tradeoffs, but differently for women and men**

*Anderson, Kermyt G* <[kganders@ou.edu](mailto:kganders@ou.edu)>

In post-demographic transition societies, contraception is used to reduce fertility and maximize investment in offspring. In the US, voluntary sterilization is the modal contraceptive method for women over 35 and men over 42. Men and women face different tradeoffs between offspring quantity and quality. For unpartnered mothers, an additional child from a man who might not invest in that child may compromise her ability to invest in her existing offspring. In contrast, high-investing partnered fathers may use sterilization to prevent additional pregnancies which might impact investment in existing offspring. This life history theory framework predicts that tubal ligation will increase with parity fastest among unpartnered women and women with less education, but for men, as parity increases, vasectomy will increase fastest among partnered men or men with more education. Using data from the Behavioral Risk Factor Surveillance System (200,697 women and 95,384 men from 1998-2019), the predictions are supported for parental education: sterilization rises fastest with parity for less-educated women and for most-educated men. The prediction for partner status received mixed support, with tubal ligation increasing fastest among divorced women (as predicted), while vasectomy prevalence among divorced men is more similar to married than cohabiting men (contrary to predictions).

## *Morality and Conservatism*

### **When forgiveness is not divine: People's evaluations of third-party forgivers**

*Mitchell Landers, Juliana Schroeder, Alex Shaw <[mitchelllanders@gmail.com](mailto:mitchelllanders@gmail.com)>*

To err may be human, but is forgiveness divine? Seven studies (N = 2,296) demonstrate that the answer to this question depends on who does the forgiving. Victims are generally seen as more moral when they forgive their transgressors than when they do not, whereas third parties who forgive are seen as less moral for forgiving than when not. We propose that this “immoral forgiveness effect” is a byproduct of our evolved forgiveness psychology: forgiveness is a special right granted only to those perceived to be harmed by a transgression, and people track this harm as though it were analogous to a monetary debt. Using this moral debt hypothesis as a guide, we establish and replicate the immoral forgiveness effect and demonstrate three additional variables that moderate it by “canceling the debt”: whether the victim has already forgiven, whether the victim retaliates against the transgressor, and whether the transgressor has made amends to the victim. When transgressions occur, third parties must decide how to react to them, and with social media more frequently placing us in such social dilemmas, people may feel pressure to forgive others (or to not forgive them). Therefore, understanding the psychology underlying these forgiveness dynamics and their social consequences is of increasingly vital importance.

### **Harm hypervigilance in public reactions to scientific evidence**

*Clark, Cory; Graso, Maja; Redstone, Ilana; Tetlock, Philip <[cjclark@sas.upenn.edu](mailto:cjclark@sas.upenn.edu)>*

Based on Error Management Theory, which contends that human psychology evolved biases in favor of less costly errors (vs costlier ones), two preregistered studies (n = 1,423; one with a U.S. nationally representative sample) tested the harm-hypervigilance hypothesis in citizens' risk assessments of controversial behavioral science findings. As expected, people consistently overestimated all harmful reactions to scientific findings with a medium-to-large average effect size and underestimated all helpful ones. Additional analyses found (1) harm over-estimators were more supportive of censoring scientific research; (2) those more offended by scientific findings reported greater difficulty understanding them (“motivated confusion”); (3) social network ideological heterogeneity predicted more accurate (lower) estimates of harmful reactions (especially among ideologically extreme participants); (4) mixed evidence on whether ideological groups overestimated harms that challenged their moral concerns. Science is a relatively novel human activity, and the psychological tendencies that promoted fitness in dangerous environments many thousands of years ago are likely not optimized for scientific progress. Indeed, human hypervigilance about potential harms may interfere with scientific progress by causing the suppression of science. This may reduce the risks of (unlikely) harms from science but at the expense of truth and thus more efficient evidence-based solutions to societal problems

## **Motivated moral decisions: Target acceptability in warfare**

*Moncrieff, Michael* <[michael.moncrieff@unige.ch](mailto:michael.moncrieff@unige.ch)>

Who is an acceptable target of violence in armed conflicts? Altruistic theories of morality propose that perspective-taking and empathy explain conflict norms. An alternative interpretation of the evidence, i.e., a deterrence reading of it, holds that actions are more likely to be morally condemned when it runs counter to the condemner's enlightened self-interest. The subjective condemnation forewarns of a potential threat while supplying the grounding for the motivation to pursue welfare-enhancing behaviors, for instance, attempts to coordinate with others to benefit from the deterrence potential of such a grouping. In a preregistered experiment, participants moralized combatant actions when those actions were indicative of increased personal risk. How dangerous, unreasonable, and aggressive the perpetrator was assessed to be mattered for the moralization of the action. Moralization was not correlated to the harmfulness of the action per se, but to the level of the potential threat to the participant. Moral intuitions shaped by self-interest may better account for the emergence of warfare norms than altruistic models, which should lead to the reconceptualization of specific legal perspectives such as the 'membership approach' to targeting enemy combatants, the 'revolving-door' nature of direct participation in hostilities, and the benevolence for soldiers 'hors du combat'.

## **Physical strength as a heuristic cue of political conservatism**

*Brown, Mitch; Sacco, Donald F.; Lukaszewski, Aaron W.* <[mb103@uark.edu](mailto:mb103@uark.edu)>

Physical strength facilitates men's endorsement of aggressive interpersonal bargaining. Such bargaining often typifies modern-day conservatism, with recent findings suggesting strong men espouse more conservative attitudes that favor its codification. Given humans' perceptual acuity toward men's formidability, formidability inferences could inform perceptions of ideology. Four studies tested whether perceivers heuristically associate men's strength with conservatism. In Study 1, participants indicated the extent they perceived physically strong and weak men as conservative along fiscal and social dimensions. Study 2 extended findings to determine whether these inferences were specific to wealthy men to test competing predictions for simple and complex social bargaining models. For Study 3, we considered how formidability generalized to perceptions of moral foundations. Study 4 employed stimuli that varied in muscularity. Participants consistently perceived strong targets as more fiscally and socially conservative. These inferences further align with a simple social bargaining model; strong men were perceived as more conservative regardless of wealth. Results generalized to moral foundations, as strong targets were perceived to have their morality rooted in traditions and liberty. Muscularity was additionally central to these inferences. Findings provide evidence for an implicit theory of political affiliation through formidability.

*Underexplored Topics in Female Sociality*

## **Women's affiliation across the menstrual cycle**

*Makhanova, Anastasia; Tolliver, Mikayla D. M.; Maner, Jon K.; Jasienska, Grazyna; Marcinkowska, Urszula M. <[ammakhan@uark.edu](mailto:ammakhan@uark.edu)>*

Most research on women's behavior across the menstrual cycle focuses on ovulation and mating. In the present research, we examined whether women's affiliative motives were affected by cycle phase and levels of estradiol and progesterone. We predicted that affiliative motives would increase in the luteal phase when motives shift from mate-seeking toward social preparation for the challenges associated with pregnancy. Further, we predicted that increased affiliative motives in the luteal phase would be underpinned by higher levels of progesterone. Polish women (N=100) provided saliva samples and completed questionnaires at three time points: in the follicular, ovulatory and luteal phases. In analyses examining only cycle phase, women reported feeling more affiliative toward close others in the luteal phase. No such difference was observed for general affiliation, although a trend for lower general affiliation in the ovulatory phase emerged. Next, we examined within-woman and between-woman variability in estradiol and progesterone. Contrary to predictions, it was within-woman changes in estradiol, not progesterone, that were linked with affiliation with close others. For general affiliation, the same negative association with within-woman estradiol emerged, but there was also a trend for a positive association with within-woman progesterone.

## **A story of us: A new view of human evolution**

*Lesley Newson, Peter Ja <[lesleynewson@gmail.com](mailto:lesleynewson@gmail.com)>*

It's impossible to determine how humans evolved. We can only tell stories that are consistent with the available evidence and theory. In my recent book with Pete Richerson (A Story Us, Oxford) we proposed a new story of human evolution that places greater emphasis on the activities and problems of our female ancestors and their children. We cite evidence from a wider range of disciplines than previous stories and considers the role of gene-culture coevolution. In my talk, I will summarize some of the ideas introduced in the book and invite attendees to discuss how useful these ideas might be in helping us to understand contemporary human behaviours.

## **Perceptions of father absent women's sociosexual orientation and mating standards**

*Cunningham, Katja; Hill, Sarah E.; Krems, Jaimie A. <[katja.cunningham@tcu.edu](mailto:katja.cunningham@tcu.edu)>*

Much research finds that women exposed to low-quality or absent fathers in childhood experience accelerated sociosexual development relative to what is observed among women without such exposures. However, no work has yet assessed whether information about women's fathering experiences impacts how others perceive them. Do people assume that women with absent fathers are less sexually restricted and exhibit lower standards for

consenting to sex than their father present peers? The current work addresses this gap by measuring participants' beliefs about targets' sociosexual orientation and mating standards based on the targets' a) sex and b) exposures to father absence during childhood. Results revealed that father absent women (but not men) were rated as having lower mating standards than all other comparison groups (women exposed to mother absence, father present women). Interestingly, no differences were found in women's perceived sexual restrictedness, indicating that father absent women – although they are perceived as having lower standards for consenting to sex – are not perceived as having a greater number of sexual partners. Results indicate that father absent women may not be stereotyped as sexually unrestricted, but as sexually indiscriminate.

### **Female orgasm: A tactic for partner choice**

*Santos Alves da Silva, Caio; Varella Valentova, Jaroslava* <[caiosas@usp.br](mailto:caiosas@usp.br)>

The female orgasm may have evolved as a way of selecting long and short-term partners with advantageous characteristics for direct and indirect offspring investment. The main hypotheses argue that female orgasm is context-sensitive, allowing women to 1) Increase their chances of conceiving with men of superior genetic quality (sire choice); 2) Approach men with high investment potential psychologically and behaviorally (pair bond); 3) Identify more empathetic, less violent, and more altruistic partners (partner choice). However, empirical studies aiming to test these hypotheses are rare. We aimed to investigate a possible influence of partner's characteristics on frequency and quality of female orgasm. In total, 1027 sexually active women (mean age=27) responded online the Female Sexual Function Index (FSFI), Marital Empathy Questionnaire (MEQ) and evaluated other Partner's Characteristics. The orgasm domain of FSFI was positively associated with partner's Kindness, Intelligence, Health, and Physical Attractiveness, confirming the sire choice hypothesis. In women with long-term partners, the orgasm domain increased with MEQ, confirming the partner choice hypothesis. In general, female orgasmicity is greater with partners who possess traits that can increase reproductive success and/or relationship quality.

**Session 8: Saturday, June 25th 8:30pm - 10:10pm UTC**

### *Social Perception*

#### **Associations between subjective social status and human immune function Methodological issues when using face prototypes: A case study on the Faceaurus dataset**

*Espinosa, Matthew; Mengelkoch, Summer; Hill, Sarah* <[m.espinosa@tcu.edu](mailto:m.espinosa@tcu.edu)>

Much research finds a relationship between social status and health outcomes in both human and non-human species, with higher status predicting better health. However, although research has found these patterns to be linked to status-based differences in immune function in

non-human animal species, the role of immune system functioning in linking these variables in humans remains unclear. Here, I present the results of a study examining the association between subjective social status (SSS) and 10 measures of anti-bacterial and anti-viral immune function in humans. Guided by insights from research on non-human primates, I hypothesized that higher SSS would be associated with higher levels of anti-viral – but lower levels of anti-bacterial – immune function. Consistent with predictions, the results revealed that SSS predicted measured facets of anti-viral immune function. Specifically, we found SSS to be positively associated with natural killer cell cytotoxicity and POLY-IC stimulated PBMC proliferation. Unexpectedly, results also revealed that SSS predicted some measures of anti-bacterial immune function. Specifically, we found SSS to be positively associated with LPS and PHA stimulated PBMC proliferation. We discuss the potential social and behavioral implications of immune functioning differences among individuals with differing perceptions of their social standing.

### **The evolution of visual appearance modification behavior: A review of current research and avenues for future work**

*Davis, Adam, C.; Arnocky, Steven <[adamd@nipissingu.ca](mailto:adamd@nipissingu.ca)>*

There has been a recent surge in research from an evolutionary perspective on human appearance modification practices. Nonetheless, most research on appearance enhancement has centered on the role of sociocultural factors, such as the role of socialization agents (e.g., the media), gender roles, and sexual objectification. A coherent review of evolutionary approaches to appearance modifications practices and existing research is needed, as well as a consideration of how sociocultural factors interact with evolved psychology to produce appearance enhancement behavior. In the current review, we argue that evidence from evolutionary psychology can complement existing sociocultural models by yielding unique insight into the historical and cross-cultural ubiquity of competition over aspects of physical appearance to compete for valued social (e.g., status) and reproductive resources (e.g., mates). An evolutionary lens can help to make sense of sex and individual differences that impact appearance enhancement, as well as the context-dependent nature of putative adaptations that function to increase physical attractiveness. The complementarity of sociocultural and evolutionary perspectives is emphasized and avenues for future socioevolutionary research are proposed for scholars interested in studying self-presentation modification behavior.

### **Rational data selection in welfare-tradeoff cognition**

*Tadeg Quillien <[tadeg.quillien@gmail.com](mailto:tadeg.quillien@gmail.com)>*

One of the most important dimensions along which we evaluate others is their propensity to value our welfare: we like people who are disposed to incur costs for our benefit and who refrain from imposing costs on us to benefit themselves. The evolutionary importance of social valuation in our species suggests that humans have cognitive mechanisms that are able to efficiently extract information about how much another person values them. Here I test the

hypothesis that people are spontaneously interested in the kinds of events that have the most potential to reveal such information. In two studies, I presented participants (Ns = 216; 300) with pairs of dilemmas that another individual faced in an economic game; for each pair, I asked them to choose the dilemma for which they would most like to see the decision that the individual had made. On average, people spontaneously selected the choices that had the potential to reveal the most information about the individual's valuation of the participant, as quantified by a Bayesian ideal search model. This finding suggests that human cooperation is supported by sophisticated cognitive mechanisms for information-gathering.

### *The Psychology of Kinship*

#### **Differences in aggression between siblings and non-kin**

*Kirsch, Amanda. P.; Kenrick Douglas. T.; Ko, Ahra.; Pick, Cari. M.; Varnum, Michael. E. W*  
<[apk@asu.edu](mailto:apk@asu.edu)>

Several decades back, Daly and Wilson noted that homicides were low among biological relatives, a finding that violated previous assumptions among criminologists, but that made sense in terms of inclusive fitness. Does it follow that close relatives generally show reduced aggression toward one another? We present data from three studies in which participants were asked about their moral judgements, past behaviors, and imagined scenarios involving aggression toward siblings, friends, and acquaintances. Siblings report much higher rates of direct aggression, but much lower rates of reputational aggression, against each other than toward non-kin. Sibling aggression might be more frequent because of high levels of contact, but direct aggression is also judged much more morally acceptable between siblings than between friends and acquaintances. Sibling direct aggression also violates the general pattern of sex differences, with sisters and brothers engaging in similarly high levels of direct aggression, and low levels of reputational aggression, toward one another. Direct aggression between siblings thus is not directly predicted from principles of inclusive fitness or sexual selection, but follows from the fact that brothers and sisters are direct competitors for familial resources.

#### **Kin care, cognition, and the different kinds of information that adults want to know about adults and children**

*Schaller, Mark; Billet, Matthew I.; Hohm, Ian; Dunn, Rachel* <[schaller@psych.ubc.ca](mailto:schaller@psych.ubc.ca)>

Human children's survival to reproductive age has historically depended upon care-giving from parents, grandparents, or other close kin. Consequently, different functional considerations guide adults' cognitions about children, compared to their cognitions about adults. To illustrate, we present new research on the information that adults prioritize obtaining about another person. Previous research has shown that people prioritize information about a person's trustworthiness, interpersonal warmth, and competence. But those studies focused only on adults as targets of perception. We conducted 4 experiments (total N = 1726) in which adult

participants were presented with persons of different ages—including young children as well as adults—and indicated their interest in obtaining information about specific characteristics and traits. Results showed that when seeking information about adults, participants highly prioritized information about trustworthiness, warmth and competence (replicating past research), but when seeking information about children, they did not. Instead they more highly prioritized information about other characteristics, such as the child's health and curiosity. In conjunction with other recent research (e.g., on moral judgments about adults and children), these findings suggest that the history of kin care within human populations has important implications for basic principles of social cognition.

### **Homicide in New Zealand families**

*Perry, Gretchen; Daly, Martin <[gretchenperry@gmail.com](mailto:gretchenperry@gmail.com)>*

We present analyses of spousal and parent-offspring homicides, based on a data archive of all known cases in Aotearoa / New Zealand (NZ). Patterned variation in these killings in relation to the parties' ages, sex, age differential, and types of relationship echo those found previously in Canada and the United States. Male sexual proprietariness is a dominant theme in NZ spousal homicides and NZ has one of the largest "Cinderella Effects" (excess risk to stepchildren) yet documented. NZ is a small country (population 5 million) in which almost every homicide elicits extensive news coverage, allowing us to complement the quantitative results with detailed qualitative information.

### **Cooperation and Social Networks III**

#### **What a disaster? Using evolved heuristics to prevent catastrophe**

*Delton, Andrew W.; Andrews, Talbot M.; Kline, Reuben <[andrew.delton@stonybrook.edu](mailto:andrew.delton@stonybrook.edu)>*

Humans and many other animals are good at balancing their needs with the risks they take ("risk sensitive decisions"). For instance, a starving animal will take bigger risks to eat than will a satiated one. Research on this ability in humans studies people making decisions as individuals. We tested whether these abilities can scale up to a political problem—preventing disasters like famines or floods. Political problems like disasters are complex, require group action, and often affect other people. We used experimental economic games that simulate disaster to test whether people are willing and able to prevent disasters for others. Groups of players face a complex task in which options that might help vary in their riskiness. Importantly, although all options are reasonable, which option is most useful depends on the experimental size of disaster (the "need"). We find that players will pay to help, can identify which option is most useful across experimental conditions, and will even pay to learn how best to help. At least when a political problem matches an evolved domain, people can make good decisions in groups.

## **Epistemic vigilance as a driver of reliable communication: An Indirect reciprocity model for the evolution of honesty**

*Michelini, Matteo* <[matteo.michelini@live.it](mailto:matteo.michelini@live.it)>

Although lying may seem advantageous for individuals, communication is mostly honest and we usually trust others' words. Sperber et associates provide a solution for this puzzle, claiming that humans developed a suite of epistemic tools, which they call epistemic vigilance, that is responsible for keeping communication reliable. Yet, this idea sparked some critiques.

The aim of this paper is to test Sperber and associates' hypothesis by means of a computer simulation describing the impact of epistemic vigilance on the evolution of communication. To do so, we extend the indirect reciprocity model, considering communication as a special kind of cooperation. In particular, agents are allowed to either share reliable information, refrain from communication or lie. Moreover, they may use epistemic vigilance tools to detect lies and punish liars through the reputation system. In this sense our model is the first one that integrates epistemic vigilance in models of indirect reciprocity, taking a necessary step to understand gossip and cooperative behaviour.

Our results indicate epistemic vigilance plays a major role for reliable communication under the condition that agents are not able to verify the information they receive. In addition, they also underline the importance for group communication of the knowledge agents are able to gather by themselves."

## **Cognitive specializations for collaboration: Cues of a shared goal and coordination regulate equitable sharing decisions**

*Benkley, Dylan; Tooby, John; Cosmides, Leda* <[dbenkley@ucsb.edu](mailto:dbenkley@ucsb.edu)>

Humans are unique among great apes as collaborative foragers (Tomasello, 2009). Collaboration elicits equitable sharing decisions: when monopolizable resources are obtained by collaboration, toddlers willingly and actively share them (Hamann et al., 2011). Is collaboration regulated by a system specialized for this function, which generates different sharing intuitions than other forms of cooperation do? If so, how does the mind identify collaborative situations to activate the right system? Research suggests two potential eliciting cues: a shared goal and coordination. Two participants (one sham) interacted online in a fishing task, assembling and setting traps in a river. Cues of a shared goal and coordination were manipulated across three conditions. Participants then made a sharing decision with gained resources (Dictator Game with a Taking Option, List, 2007). Two studies show equitable sharing decisions vary with cues that the interaction was a collaboration. Effects were additive: having a shared goal increased the rate of equitable allocations—by giving and taking—and adding coordination further increased that rate. Results show that a shared goal and coordination are reliable cues in identifying collaboration, which regulates sharing decisions. This provides initial evidence that

the mind may have cognitive specializations that regulate collaboration, differently from other forms of cooperation."

### **The effect of “virtual cold-shouldering” depends on how the shoulder is turned: When evolved friendship psychology meets social media**

*Chen, Tingting; Zhang, Jinguang* <[chentt88@mail2.sysu.edu.cn](mailto:chentt88@mail2.sysu.edu.cn)>

“Virtual cold shouldering” is inaction from audiences to message senders on social media and is upsetting to many. We argue that this is because virtual cold-shouldering indicates the termination of attentional investment by a friend. Specifically, the alliance hypothesis posits that human friendship generates from the evolved psychology to assemble allies. Because loyalty is a valuable quality in allies, people are sensitive to signals of loyalty when interacting with friends. Liking someone’s posts is likely one such signal because it entails attention, the process whereby people invest their cognitive resources in some targets but not others. As predicted, we found in an online experiment with N = 609 Chinese adults that participants reported perceived significantly greater decrease in loyalty from a friend but not from an acquaintance in future interactions when they imagined the target (the friend or the acquaintance) stopped liking their posts but started to like a common friend’s posts. A second study with N = 1099 Chinese adult participants found that decreases in perceived attention from friends but not decreases in perceived interest of friends in participants significantly predicted decreases in perceived loyalty of friends. This finding suggests that it is attention-switching that renders virtual cold-shouldering unpleasant.

## **Poster Presentations**

Thursday, June 23rd 8:50pm - 11pm UTC

### **1. Omega-3 Intake and Age of Menarche**

*Acuna, Victoria; Corpuz, Randy* <[victoria.acuna001@umb.edu](mailto:victoria.acuna001@umb.edu)>

Modern diets contain relatively lower amounts of omega-3 polyunsaturated fatty acids (PUFA) than ancestral environments. Omega-3 PUFA are linked to later onset of menarche in U.S. samples. High amounts of omega-3 fatty acids (compared to omega-6) are a protective factor against inflammation. Omega-3 PUFAs now make up a small portion of the PUFAs that Western mothers ingest. This is particularly problematic in harsh contemporary environments where earlier menarche is also linked to challenging childhood environments. We explored the amount of variance that omega-3 intake (using a food frequency questionnaire) and early childhood environment (using a measure from Griskevicius et al., 2011) each contribute to age of menarche and how the

two predictors might interact. In this sample, neither Omega-3 intake nor early self-reported environmental conditions predicted age of menarche. We discuss the potential issues of using a WEIRD sample to investigate relationships between PUFA intake and age of menarche. We also speculate on the limitations of both measures used in the study.

## **2. Validating the Revised Mating Effort Questionnaire**

*Albert, Graham; Bird, Brian, M; Davis, Adam; Arnocky, Steven; Hlay, Jessica, K; Richardson, George, B; Hodges-Simeon, Carolyn, R <[grahama@bu.edu](mailto:grahama@bu.edu)>*

The Mating Effort Questionnaire (MEQ) is a multi-dimensional self-report instrument that captures factors reflecting individual effort in Upgrading from a current partner, Investment in a current partner, and Mate Seeking when not romantically paired. The current studies sought to revise the MEQ by partitioning Mate Seeking into two factors—Mate Locating and Mate Attracting—that would enable a more nuanced measurement and understanding of individual short-term mating effort. In the revised measure, the number of items was increased from 12 to 26, expanding the Mate Locating, Mate Attracting, and Partner Investment factors. In Study 1, exploratory factor analysis revealed that a four-factor solution, reflecting Partner Upgrading, Mate Locating, Mate Attracting, and Partner Investment, yielded the best fit. In Study 2, this structure was replicated using confirmatory factor analysis (CFA) in an independent sample. Based on extant studies documenting the relationships between psychopathy, short-term mating effort, and sexual risk taking, a structural equation model (SEM) indicated that trait psychopathy positively predicted Mate Locating, Mate Attracting, and Partner Upgrading, and negatively predicted Partner Investment. A separate SEM showed that Partner Upgrading was positively predictive of risky sexual behaviors, while Partner Upgrading and Mate Locating positively predicted acceptance of cosmetic surgery.

## **3. Agreeableness and neuroticism predict more concerned about COVID-19 and friends' risky behaviors**

*Ayers, Jessica D; Guevara Beltrán, Diego; Van Horn, Andrew; Cronk, Lee; Hurmuz-Sklías, Hector; Todd, Peter M.; Aktipis, Athena <[jdayers@asu.edu](mailto:jdayers@asu.edu)>*

Given the importance of friendships during challenging times and the mixed associations reported between personality traits and disease-related behaviors, we investigated the influence of personality traits on friendships during the COVID-19 pandemic and how both influenced risky behaviors. In November 2020, we asked participants about their reactions to friends' behavior as part of a larger study. We found that agreeableness and neuroticism predicted participants being more concerned about COVID-19 and bothered by friends' risky behavior, and extraversion predicted enjoying helping friends during the pandemic. Our results suggest that personality influences how individuals cope with their friends' risky behaviors. This work could be relevant for developing interventions to

reduce risk-taking during the pandemic, such as using friendships to reinforce adherence to public health guidelines.

#### 4. **Who is my Neighbor? Divine Concept and In-group Cooperation**

*Baker, Spencer* <[spencer-baker@utc.edu](mailto:spencer-baker@utc.edu)>

Religion has played a key role in the cultural organization of human societies. Religious beliefs shape individual's behavior, and more adaptive supernatural beliefs may have been selected for in the process of cultural evolution. Many speculate that morally interested gods play a role in ensuring cooperation among large-scale, nonrelated groups. If religious people fear divine retribution for breaking moral rules, they are more likely to behave for the good of the group: therefore, holding more punitive beliefs about god should increase prosocial behaviors. However, it has been debated whether religion's effects on prosociality extend to out-groups. To investigate this question, data was analyzed from the 3rd wave of the Baylor Religion Survey, which asked participants a variety of questions about religious identification, beliefs, and attitudes towards social issues. In this sample, punishing views of God were related to deeper attachment to god, more money contributed to religious organizations, and more evangelizing. At the same time, these views also predicted greater distrust of non-believers and prejudiced attitudes towards sexual minorities. These relationships remained robust when controlling for religiosity and social trust, suggesting that beliefs about god have special importance in motivating commitment to one's religious in-group to the exclusion of non-believers.

#### 5. **A Preliminary Examination of Sex Ratio Tracking in Homosexual Populations**

*Balboa, Nora; Brandner, Jordann; Brase, Gary* <[nbalboa@ksu.edu](mailto:nbalboa@ksu.edu)>

Previous research (Brandner, Dillon, & Brase, 2020) has established the encoding of sex ratio information as an automatic process related to mating strategy. Generally, it is known that mating behavior and strategy shifts as a result of being in the more or less populous sex (e.g., Kvarnemo & Ahnesjö, 1996; Schmitt, 2005), leading to sex ratio perception accuracy as a tool for assessing one's chances of finding a mate of the opposite sex. What has not yet been examined is the automaticity of sex ratio encoding in individuals whose rival and potential mate populations are the same. The current study collected data from heterosexual and homosexual men and women to assess the accuracy of serially presented sex ratio estimates. The first of two competing hypotheses suggested the automatic activation of sex ratio tracking, with individual differences such as sexual orientation not affecting accuracy. The second hypothesis suggested differential activation, wherein individual differences, such as sexual orientation, activate this cognitive mechanism, such that some people will automatically track sex frequencies, while some will not. Preliminary results indicate that both heterosexual and homosexual populations demonstrate relatively automatic and accurate encoding of sex ratio information.

**6. Early Adolescent Boys and Girls' Attitudes toward Uncommitted Sex and their Perception of Sexual Communication in Opposite-Gender Relations**

*Bendixen, Mons; Kessler, Andrea; Doebell, Anne; Rynning, Christiane; Sætersdal, Andrea; Grøntvedt, Trond Viggo; Kennair, Leif Edward Ottesen*  
<[mons.bendixen@ntnu.no](mailto:mons.bendixen@ntnu.no)>

The overall aim of this study is to gain insight into adolescents' understanding of sexual communication, the signals used to navigate sexual ambiguity, and individual factors which may affect this understanding. As part of the study, we constructed a new 5-item measurement of adolescents' attitudes towards uncommitted sexual behavior (SOI-AA) and report on the reliability and construct validity of the scale. Analyses were performed on a sample of 397 secondary school students (223 girls, 174 boys, Mean age = 14.9, Age range 13–16). Results suggest that the new SOI-AA scale was internally consistent. Relative to girls and younger students, boys and older students reported higher acceptance of uncommitted sexual behaviors (ranging from 'French' kissing to intercourse). Further, students' scores on the SOI-AA scale were significantly related to how they responded to scenarios of a girl and a boy in an intimate situation. Less restricted subjects believed: (1) that the depicted situation would develop into sex regardless of having an intimate relationship or not, and (2) that the depicted situation more often would develop into sex relative to breaking off. The results attest to the construct validity of the SOI-AA scale, and its applicability in studies of adolescents' understanding of sexual communication.

**7. The Association Between Women's Self-Promotion and the Androgenic Effects of Hormonal Contraceptives**

*Bloshinsky, Ariel S.; Tolliver, Mikayla D. M.; Makhanova, Anastasia* <[arib@uark.edu](mailto:arib@uark.edu)>

Women promote their accomplishments and competencies less frequently than men and this difference may be underpinned by androgenic endocrinological processes. Many women use hormonal contraceptives which, in addition to allowing women to delay reproduction, alter women's hormonal profiles and bind to androgen receptors in the brain. We explored whether naturally cycling women and women taking different forms of hormonal contraceptives varied on reported self-promotion. Compared to naturally cycling women, women using hormonal IUDs reported higher self-promotion. Furthermore, women using the IUD reported higher self-promotion than those taking first-generation and third-generation oral contraceptives. IUDs contain the progestin levonorgestrel, which is highly androgenic and bioavailable. Although we only had 27 women taking oral contraceptives containing levonorgestrel, those women reported descriptively higher self-promotion than women using first and third generation oral contraceptives. These findings suggest that some women may be experiencing progestin-driven effects that contribute to increases in self-promotional attitudes and behaviors. The discussion of results also considers possible self-selection effects and routes for future research to clarify the relationship between IUDs and self-promotion."

## 8. Error management and signal detection in spider and snake overperception

*Brandner, Jordann L.; Herrera Bustillos, Ana K.; Brase, Gary L.*

[<jordannbrandner@gmail.com>](mailto:jordannbrandner@gmail.com)

Error management theory (EMT) states the costs of erroneously ignoring venomous animals (snakes and spiders) are so much greater than erroneously avoiding non-venomous species that our perceptual judgments are biased to the former error rather than the later, possibly resulting in the evolution of phobias. This EMT account is an application of signal detection theory, however, and should also be generally true for all samples, not just clinically phobic people. The objective of this research was to better understand detection of spiders and snakes using SDT. Participants were briefly shown various images (snakes, trees, spiders, and flowers) in varying degrees of degradation and were asked to identify whether the image contained a snake or a spider. Experiment 1, using equal distributions of image type, found a slight conservative bias for perceiving snakes but not for perceiving spiders, and very high sensitivity (accuracy in image identification). Experiment 2 used more ecologically realistic distributions of image types (few spiders/snakes relative to other images) and again found high sensitivity and small biases. These results show that spider and snake detection is highly sensitive (accurate) and associated biases may be due to differential attention and processing of information after detection.

## 9. On being an icon: Key properties of ecologically rational aids for statistical reasoning

*Brase, Gary L.* [<gbrase@ksu.edu>](mailto:gbrase@ksu.edu)

Statistical judgments are often aided by a picture illustrating the data, but how and why different picture types help is a matter of debate. This research compared the same statistical reasoning task accompanied by pictures of the same overall shape, but different internal picture properties. Experiment 1 compared clearly distinct icons (organized), distinct icons (scattered), overlapping icons, and solid fields. Better performances occurred when people were given more ecologically realistic distinct icons (either organized or scattered), followed by overlapping icons, and the worst performance was with a picture of solid fields. Experiment 2 replicated these results with a more complex reasoning task. Performance was additionally facilitated by individual difference measures of numerical literacy and visuospatial ability. These results are consistent with an ability to better understand information presented in evolutionarily and ecologically relevant formats, and being able to translate (more evolutionarily novel) written information into an ecologically relevant information format.

## 10. Desirability of Successful Humor Displays as a Function of Men's Earning Potential

*Brown, Madeline R.; Brown, Mitch* [<mrb055@uark.edu>](mailto:mrb055@uark.edu)

Women prioritize intelligence in long-term mating contexts, with displays of humor frequently being perceived as diagnostic of this intelligence. Although humor signals interest in prospective mates, this desirability may only emerge through its successful conveyance. This study investigated whether the inferred intelligence through men's humor would heighten their desirability as long-term mates. We predicted funny men would be viewed as particularly desirable in long-term mating domains. Additionally, we considered orthogonal displays of intelligence through occupations to determine whether these displays augment their desirability. Women evaluated the short-term and long-term mating desirability of eight men with accompanying jokes and descriptions of an occupation ostensibly connoting high or low intelligence (i.e., white versus blue collar). Funny men were more desirable, with this preference being pronounced within long-term domains. White-collar targets were additionally more desirable in long-term mating, though occupation did not interact with humor. Results provide continued evidence for one evolutionary function of humor by demonstrating the importance of successful humor displays.

#### **11. Life history strategy and anxiety during the COVID-19 pandemic**

*Chambers, Ambre; Randell, J. Adam; Jeyaraj-Powell, Tephillah*  
<[Ambre.chambers@gmail.com](mailto:Ambre.chambers@gmail.com)>

Life history theory (LHT) describes how animals evolve to maximize reproductive fitness in their specific environments. Species fall along a continuum based on whether they tend towards a slow life strategy or a fast life strategy, which can be heavily influenced by the uncertainty of the environment (stable, predictable versus uncertain, hostile). Our goal was to determine whether life history strategy can predict individuals' experiences of anxiety during the pandemic. We hypothesized that slow life strategists would experience more anxiety due to the unforeseen nature of the pandemic compared to fast life strategists who are more used to uncertain environments. Participants were first assessed on their life history strategy. An experimental manipulation was used to prime half of the participants to engage in thoughts about the COVID-19 pandemic while the other half experienced a calming stimulus. State and trait levels of anxiety were measured subsequently. Hierarchical regression analyzes showed that while everyone who experienced the COVID-19 prime had higher anxiety scores, slow life strategists reported less stress than fast life strategists, which was opposite to the hypothesis. No interaction effects were observed; however, there was an overall relationship between LHT and anxiety, which requires further exploration.

#### **12. Men and Masculinity: Exploring Dominance and Men's Physical Health**

*Chavez, Heily; Corpuz, Randy* <[h.chavezgranados001@umb.edu](mailto:h.chavezgranados001@umb.edu)>

Testosterone-mediated traits in males include those associated with dominance. Hand grip strength (HGS), a measure of upper body strength, is commonly used as a proxy to measure physical dominance. In applied medical fields, HGS is used as a

measure of overall physical health with comparatively less mention of the association of HGS with other phenotypic traits. In this study, we built a latent variable for male dominance that includes HGS (dominant hand maximum grip), self-reported dominance, and 200 ratings of facial masculinity. We planned to statistically explore the relationship between our dominance latent variable and self-reported physical health (RAND-36). We did not find a relationship between our latent variable and self-reported physical health. Discussion centers on the limitations of using a non-clinical, community sample of U.S. males to explore relationships specific to health. We also speculate as to the relatively poor loadings of all three indicators on our proposed latent variable.

### 13. **The long and short of mistress relationships: Sex-differentiated mate preferences reflect a compromise of mating ideals**

*Choy, Bryan K. C.; Li, Norman P.; Tan, Kenneth* <[bryan.choy.2020@smu.edu.sg](mailto:bryan.choy.2020@smu.edu.sg)>

The mate preferences literature has been fairly muted on mate preferences for extrapair partners. In four studies, we examined mate preferences for mistress relationships--the traits that men prioritize in a mistress and that mistresses prioritize in their male partners--and compared these preferences to those of short- and long-term relationships. In studies 1a and 1b, (N = 104 and 191 respectively), we derived dimensions of mate preferences for mistress relationships through factor analyses. In studies 2 and 3 (N = 219 and 101 respectively) we employed the budget allocation paradigm to compare people's priorities for different traits for a mistress relationship (versus short- and long-term relationships). We found that men focused on fulfilling short-term mating ideals (prioritizing physical attractiveness) in a mistress relationship, but women focused on fulfilling longer-term (but also some short-term) mating ideals (prioritizing both physical attractiveness and social status) for a mistress relationship. Overall, mistress relationships may reflect a compromise of men's and women's conflicting and evolved mating ideals.

### 14. **Responses to Covid-19 Threats: An Evolutionary Psychological Analysis**

*Colarelli, Stephen M.; Mirando, Tyler J.; Han, Kyunghye; Li, Norman P.; Vespi, Carter; Klein, Katherine A.; Fales, Charles P.* <[vespi1c@cmich.edu](mailto:vespi1c@cmich.edu)>

Responses to Covid-19 public health interventions have been marginally effective. For example, only 64% of the US population has received at least two vaccinations. Because most public health interventions require people to behave in ways that are evolutionarily novel and are mismatched with evolved human perceptual and decision-making mechanisms, it is imperative that we gain a better understanding of how people respond to public health information—including how they respond under different pandemic conditions and how specific groups may differ in their responses. We conducted two studies using data from primarily public sources. We found that state-level Covid-19 threats (e.g., infection and mortality rates) had no relationships with mental health symptoms, suggesting that people were not attending to threat

information. This result is consistent with the evolutionary psychological explanation that Covid-19 threat information is insufficient to activate people's behavioral immune system. Furthermore, individual differences affected how people responded to Covid-19 threats, supporting a niche picking explanation. Finally, aggregate state IQ levels correlated positively with aggregate vaccination rates, suggesting that intelligence can partially counteract the evolutionary novelty of abstract threat information, supporting the savanna-IQ interaction hypothesis. We conclude with policy implications for improving interventions and promoting greater compliance.

#### **15. Fear of Missing Out (FoMO) is Associated with Heightened Social and Mating Competition**

*Davis, Adam, C.; Albert, G.; Arnocky, S. <[adamd@nipissingu.ca](mailto:adamd@nipissingu.ca)>*

Humans are an “ultra-social” species who display a penchant for cooperation and social affiliation. Thus, missing out on and being excluded from social events would have likely negatively impacted the survival and reproductive success of ancestral hominins. In modern society, researchers have studied feelings of apprehension that one is missing out on important social activities, labelled fear of missing out (FoMO). In previous research, FoMO has been linked with heightened social competition and deploying aggression to vie for social resources. None have approached FoMO from an evolutionary viewpoint, and it is unclear whether FoMO is associated with heightened competition for both social and mating opportunities. In the current study, we examined the associations between FoMO, intrasexual competitiveness, sociosexuality, and status-seeking in a sample of 329 heterosexual North American adults (Mean age = 36.87, SD = 10.24, range = 19–60) recruited through Amazon's Mechanical Turk. FoMO correlated positively with intrasexual competitiveness, global sociosexuality (i.e., unrestricted sociosexuality), and status-seeking. Moderation analyses indicated that these relations were sex invariant. Results show how adults higher in FoMO compete more intensely for both social (e.g., status) and reproductive resources (e.g., mates) and that they tend to employ a short-term mating strategy.

#### **16. Do children show expectations of clumpy resource distributions?**

*DeLaBruere, Gracie; Brown, Nia; Spilman, Hannah; Garcia, Yadhira; Pedersen, Steven; Han, Bang-Geul; Wertz, Annie; Barrett, Clark; Todd, Peter; Wilke, Andreas <[delabrga@clarkson.edu](mailto:delabrga@clarkson.edu)>*

A tendency to perceive illusory streaks or clumps in random sequences of data, is a human universal tied to humans' evolutionary history of foraging for clumpy resources. Our current research investigates how misperception of randomness and ecologically relevant statistical thinking develops ontogenetically. Based on our work with adults, we developed three iPad-based decision-making tasks to assess how 3-10 year-old children decide that sequential events will continue in a streak or not, their understanding of randomness, and their ability to reason in spatially dependent terms. In the first task, a

cartoon animal travels down a line of resource spots and the children have the opportunity to predict the presence or absence of food one resource spot at a time. In the second task, children create a distribution of raindrops as they expect them to fall on an outdoor basketball court. In the third task, children will be asked to place individual resources on a tree after being primed with spatially positive or negative auto-correlation conditions. Our study is run in collaboration with the SUNY Potsdam Child Care Center (SPCCC) and the North Country Children's Museum (NCCM). Funding is provided via a grant from the National Science Foundation (NSF).

#### **17. The relationship between ejaculate quality and personality using the MMPI-2**

*DeLecce, Tara; Shackelford, Todd K. <[tdelecce@oakland.edu](mailto:tdelecce@oakland.edu)>*

Previous research has investigated relationships between personality traits and ejaculate quality, producing conflicting results. Such research has often employed The Big Five or the HEXACO and has not explored how ejaculate quality may be related to psychopathological traits. The current study aims to clarify the relationship between personality traits and ejaculate quality while also extending previous research to examine psychopathological traits. We analyzed a sample of veterans (full dataset  $n = 4,462$ ) from the VES (Vietnam Experiences Study) dataset. Specifically, we investigated relationships between ejaculate quality (operationalized as sperm motility, sperm count, and sperm concentration), testes length, and personality traits as measured by the Minnesota Multiphasic Personality Inventory – 2 (MMPI-2). Results revealed positive associations between the ego strength subscale of the MMPI-2 and both sperm count and sperm concentration. There was also a positive association between testes length and the ego strength subscale. There was a negative correlation between the schizophrenia subscale of the MMPI-2 and testes length. However, these relationships largely disappeared after controlling for covariates known to affect ejaculate quality (e. g. BMI, age, smoking and drinking habits). Discussion addresses how these results fit with the literature examining relationships between ejaculate quality and personality traits.

#### **18. Examining the Overlap Between Mentorship and Parental Care Tendencies**

*Detert, Laurel; Case, Charleen. <[ljdert@umich.edu](mailto:ljdert@umich.edu)>*

Humans share a collection of fundamental motives that profoundly influence the way we feel about, think about, and behave toward conspecifics (Kenrick et al., 2010). One of those motives is to care for our genetic offspring. Scholars have suggested that individual variation in parental-care motivation can influence behavior outside of protecting and nurturing one's own kin (Schaller, 2018). We demonstrate that mentorship, a common workplace relationship, is closely associated with the parental-care motive. Across two experiments, working professionals viewed a series of faces presented in randomized same-sex pairs – one face had neotenous (“babyface”) features and the other more mature features. “Mentor” participants selected which person they would prefer as their mentee whereas “mentee” participants selected which

person they would prefer as their mentor. Afterward, all participants completed the PCAT (Buckels et al., 2016) to assess their parental-care motivation. We found that (1) mentors (but not mentees) demonstrated a tendency to select neotenous individuals, and (2) participants who imagined themselves as a mentor (versus a mentee) subsequently exhibited higher levels of parental care motivation. These and ancillary findings suggest that mentoring can activate the fundamental kin-care motive, highlighting a potentially consequential overlap between our evolved parenting motives and workplace mentorship.

## 19. Physical Strength as a Cue to Men's Capability as Protective Parents

*Donahoe, Steele; Brown, Mitch; Boykin, Kaitlyn <[srdonaho@uark.edu](mailto:srdonaho@uark.edu)>*

The selection of formidable male allies within coalitional settings is partially in the service of ensuring protection from physical threats for group members. Within these inferences could include specific judgments of formidable men as being particularly effective at providing protection for their offspring, a functional judgment that could facilitate identification of prospective fathers who could satisfy parenting goals. The current study sought to identify the specific value of men's physical strength in shaping perceptions of their effectiveness in domains of protection and nurturance of offspring. Participants evaluated physically strong and weak targets on their effectiveness in these domains. Strong men were perceived as more effective in protecting their offspring than weak men, with this advantage corresponding with strong men being perceived as less effective in nurturance. We frame results from an affordance management framework considering the role of functional inferences shaping interpersonal preferences.

## 20. Functionality of Testosterone Variation in First-Time Fathers

*Donovan, R.; Corpuz, R. <[Rylei.Donovan001@umb.edu](mailto:Rylei.Donovan001@umb.edu)>*

Testosterone (T) declines in human fathers shortly after the birth of offspring. Recent work with a U.S. sample uncovered a T "rebound" across the first year of an infant's life. Male T has been discussed as a critical hormone related to paternal investment and the nurturing of offspring. Numerous studies explore this relationship measuring T at a single time-point but this research has paid comparatively less attention to the slope of T changes across time. T and paternal investment is partially related to a male's relationship functioning with his partner. Fathers must be able to readily adapt their levels of paternal care to the dynamic nature of relationship functioning with his mate - i.e., reducing interbirth interval - as well as promote the survival of existing offspring. In the current study (N=225), we test the hypothesis that the slope of T's rebound in the postnatal period will be correlated with a male's own relationship satisfaction. Using a community sample in the U.S., we did not find support for our hypothesis. Future directions can include focusing on the relationship between a mother's relationship satisfaction and male T modulation. It is possible that variation in T results in conflicting mating efforts between parents.

## 21. How Will Complimenters View Me?

*Duarte, Krystal; Krems, Jaimie Arona; Byrd-Craven, Jennifer*  
<[krystal.duarte@okstate.edu](mailto:krystal.duarte@okstate.edu)>

Social exclusion is a common tactic of aggression that women employ intrasexually—and thus encounter—which can facilitate detriments to an excluded party's health. Among women, those seen as competitors or who are deemed “superior” are often selectively targeted for such aggression, suggesting women might often downplay their ambitions and successes to mitigate their exclusion. We examine women's awareness of this by exploring behavior related to compliments. Work suggests women (versus men) favor modest responses to compliments, implying that women might expect to incur higher costs from responding non-modestly. Participants read a vignette in which they are given a compliment from a same-gender other and imagined giving four different responses to the compliment: boasting (“I know; I am great!”) a neutral (“thank you”), deflecting (“Oh no, this old thing”), and reflecting (“I love yours”). After, participants then rated the extent to which they expected the compliment giver would view them as superior. Findings suggested that both women and men expect to be deemed least liked when boasting and best liked when reflecting a compliment. Results indicated, however, that women (versus men) expect to be seen more arrogant when boasting. These results support previous research that women disfavor competitiveness in friends.

## 22. Why Imaginary Worlds? Experimental evidence suggests that exploratory preferences explain the distribution of fictions with imaginary worlds

*Dubourg, Edgar; Thouzeau, Valentin; de Dampierre, Charles; Mogoutov, Andrei; Baumard, Nicolas* <[edgar.dubourg@gmail.com](mailto:edgar.dubourg@gmail.com)>

Imaginary worlds are present in many of the most culturally successful modern narrative fictions, be it in novels (e.g., Harry Potter), films (e.g., Star Wars), video games (e.g., The Legend of Zelda), graphic novels (e.g., One piece) and TV series (e.g., Game of Thrones). This phenomenon is global and massive (e.g., the worldwide success of Lord of the Ring, the emergence of xuanhuan and xianxia genres in China). Why so much attention devoted to such fictional worlds? Why now, and not before? Why in some societies, and not others? Why to some people, and not to everybody? We propose that imaginary worlds are popular because they trigger evolved exploratory preferences. We make predictions about the cultural distribution and success of fictions with imaginary worlds based on how exploratory preferences adaptively vary. We test synchronic predictions with experimental methods (N=350). In all, and consistent with how the human preference for exploration adaptively varies, we provide empirical evidence that imaginary worlds are overall more appealing for more explorative people, people higher in Openness to experience, younger individuals, people higher in systemizing, and people living in more affluent environments.

**23. Social Distancing as a disease avoidance mechanism: testing the assumptions of the Behavioral Immune System among pregnant women**

*Frankowska, Natalia; Szymkow, Aleksandra; Tolopilo, Aleksandra; Galasinska, Katarzyna* <[nfrankowska@swps.edu.pl](mailto:nfrankowska@swps.edu.pl)>

The behavioral immune system (BIS) represents a set of actions to avoid contracting infectious diseases (Murray & Schaller, 2012). For the reason that having contact with outgroup members entails a heightened risk of infection (Schaller & Neuberg, 2012), pathogen avoidance motives have been shown to be linked with negativity toward foreign individuals and a preference to keep a greater social distance from them (e.g., Faulkner et al., 2004; Millar et al., 2020; Szymkow, Frankowska, & Galasinska, 2021). Importantly, these effects were shown to be mediated by disgust propensity and germ aversion (Szymkow et al., 2021). Pregnant women (especially in the 1st trimester) experience immunosuppression - a reduction in the effectiveness of the immune system. The compensatory behavioral prophylaxis hypothesis assumes that during this period, women are motivated to avoid a potential threat of infection, and disgust plays a compensatory function in this process (Fessler & Navarrete, 2003; Żelaźniewicz & Pawlowski, 2015; Kankova et al., 2022). At the same time, women express elevated ethnocentrism in the first trimester of pregnancy (Navarrete, Fessler, & Eng, 2007). Here, we tested the role of pathogen disgust and germ aversion as potential mediators between gestational age (trimester) of pregnant women and preferred social distance toward in-groups and out-groups presenting signs of infection or not. We show a significant mediating role of germ aversion but not of pathogen disgust.

**24. Telomeres moderate the influence of testosterone on mating behavior of men**  
**Takikawa, Ryoko**

*Fukukawa, Yasuyuki* <[takikawar@toki.waseda.jp](mailto:takikawar@toki.waseda.jp)>

There is a growing interest in the possibility that telomere plays an important role in human reproductive success. The purpose of this study was to examine the effect of telomere as a moderator in the relationships between testosterone and mating behavior. A total of 1,851 American adult men in a database of the National Health and Nutrition Examination Survey 1999–2002 were identified for analysis. Leukocyte telomere length and testosterone levels in serum were measured from a blood sample. The number of sexual intercourse partners in the past 30 days was assessed based on a self-reported information. Multiple regression analysis showed that the interaction effect of telomere length and testosterone on the number of sexual intercourse partners was statistically significant: in men with shorter telomeres, higher testosterone predicted a higher number of sexual intercourse partners while in men with longer telomeres, higher testosterone predicted a lower number of sexual intercourse partners. The results remained significant even after controlling for subjects' age, race / ethnicity, age at first sexual intercourse, and marital status. The findings of the study may provide new insights into human, especially men's, life history strategy.

## **25. Enhanced originality during ovulation, but not for women taking contraception.**

*Galasinska, Katarzyna; Szymkow, Aleksandra* <[kgalasinska-grygorczuk@swps.edu.pl](mailto:kgalasinska-grygorczuk@swps.edu.pl)>

Creativity is one of the most desirable traits in a partner of either sex, so it may be a result of the process of sexual selection. If it is an evolved signal for mates, it should be more pronounced when the probability of conception is high. But it should not change when conception probability does not fluctuate during the ovulatory cycle. The studies we present aimed to investigate whether creative potential of women increases along with the probability of conception. We also tested women taking contraception. We found that for naturally cycling women, creative originality and flexibility was the highest during the phase of ovulation. The effect was stronger for originality and it was absent among women taking contraception. We can conclude that originality is a plausible candidate for mental ornamentation. Being boosted during the fertile phase of the cycle, it presumably increases partner attraction, potentially leading to conception. Nevertheless, it may also promote intrasexual competition to discourage competitors that interfere with one's mating goals. More contexts should be studied to confirm the hypothesis on the signaling role of creativity. We presented just one of them, showing that with no other incentives, women may manifest some signals of creativity, which may point to its evolutionary legacy.

## **26. Perceptions of Overhand Throwing Ability from Faces**

*Gallup, Andrew; Eldakar, Omar* <[gallupa@sunypoly.edu](mailto:gallupa@sunypoly.edu)>

Overhand throwing was a key feature of hominid evolution, as humans possess unmatched power and accuracy when throwing projectiles compared to other species. Due to large sex differences in this ability, however, research suggests that superior overhand throwing gave men advantages in fighting and hunting. Based on previous research showing that facial appearance is often correlated with measures of physical prowess, we had 141 undergraduates provide perceptions of overhand throwing ability for 30 men and 30 women from the Chicago Face Database. We also examined the relationship between perceived throwing ability and other ratings of athleticism, as well as measures of facial attractiveness, dominance, and masculinity. Results show remarkably high inter-rater reliability in the perceived overhand throwing ability of people when viewing just their faces (power:  $\alpha = .964$ ; accuracy:  $\alpha = .957$ ). Perceptions of throwing were robustly correlated with assessments of physical strength and formidability across individuals. Consistent with these traits being highly sexually dimorphic, perceptions of overhand throwing ability were predictive of overall athleticism and facial features among males only. These findings corroborate previous research suggesting that, due to both survival and reproductive advantages, overhand throwing power and accuracy have been under positive directional selection in men.

## **27. Do men's hormone responses to interactions with potential mates influence their expressed behavioral tactics and attractiveness?**

*Garcia, Katherine; Polito, Angela; Golden-Eddy, Amanda; Lukaszewski, Aaron; Roney, James* <[kggarcia1616@gmail.com](mailto:kggarcia1616@gmail.com)>

Potential mate exposure causes rapid endocrine responses in males and non-vertebrate species. Findings suggest that testosterone (T) and cortisol (C) responses predict “display” behaviors (e.g., perceived assertiveness and self-disclosure). However, which specific behavior dimensions correlate with men’s hormone responses is ambiguous, as is the extent to which these courtship displays increase men’s attractiveness. This study addresses these questions using hidden videos of male subjects interacting with male and female confederates, as well as data regarding changes in subjects’ T and C levels. Specifically, blind rater groups were shown these videos and asked to rate them on either behavioral attractiveness or hormone response associated behavioral dimensions. Preliminary analyses indicate male subjects’ C responses predicted their behavioral attractiveness rating, even when physical attractiveness rating from photographs were controlled. Analyses in progress will explore whether men’s hormone responses predict ratings of behavior on multiple behavioral dimensions (e.g., courtship display; Interpersonal Adjectives Scale), as prior research suggests.

## **28. Distinguishing Partner-Focused and Rival-Focused Mate Retention Behavior**

*Gelbart, Benjamin; Yang, Nicki; Conroy-Beam, Daniel* <[Bgelbart@ucsb.edu](mailto:Bgelbart@ucsb.edu)>

Retaining a long-term partner is a critical adaptive problem for any pair-bonding species. Nonetheless, mate retention behaviors vary widely across individuals and contexts, and the nature of this variability remains underexplored. Here, we propose a distinction between partner-focused and rival-focused mate retention behaviors. We examined the relationship between partner-oriented and rival-oriented mate retention behaviors and participants’ infidelity attributions in ambiguous scenarios. Across two samples (total N = 406), beliefs that a partner initiated infidelity significantly predicted intentions to employ partner-oriented behaviors (e.g., acting in a kinder manner toward a partner), whereas beliefs that a rival initiated the infidelity significantly predicted intentions to employ rival-oriented behaviors (e.g., asking a partner to avoid interacting with a rival). These findings suggest that beliefs about the initiator of an act of infidelity are associated with distinct forms of mate retention behavior.

## **29. Are women’s use of social allies as bodyguards perpetrator specific?**

*Hahnel-Peeters, Rebecka; Buss, David* <[rebeckahahnel@gmail.com](mailto:rebeckahahnel@gmail.com)>

One critical adaptive problem for women is the avoidance of sexual violence. Research has yet to fully identify how successful strategic solutions are shaped by both context and individual differences. One hypothesized strategy to avoid sexual violence includes women’s use of bodyguards. Wilson and Mesnick’s (1997) bodyguard hypothesis posits that women benefit from a reduced risk of sexual violence through

forming romantic pair-bonds. The present research broadens the previously narrow conceptualization of bodyguards to include a wide array of social allies – such as kin, friends, and romantic partners. We asked women to nominate self-protective behaviors they would use against five threats of sexual violence (i.e., from a stranger, acquaintance, date-rape, partner, and unspecified). We predicted women would spontaneously nominate different bodyguards in response to different perpetration threats. Data will speak to the context-specificity of women's bodyguard psychology – a key hypothesized defense to protecting against the costs of sexual violence.

### 30. Is memory adapted for survival or mating?

*Johnson, Matthew; Sheets, Virgil* <[mjohnson153@sycamores.indstate.edu](mailto:mjohnson153@sycamores.indstate.edu)>

Evolutionary researchers have argued that human memory is an adaptation designed to enhance survival. In support of this, past research has shown retention is enhanced for material encoded for its impact on survival versus using traditional mnemonics. The current study evaluated retention for material encoded for its impact on reproductive fitness (short- and long-term mating) versus survival and a control condition. Participants were asked to think about words as they relate to survival in an unfamiliar locale, as they support getting a long-term mate, as they support getting a short-term sexual partner, or without any particular encoding strategy. Afterward, participants were asked to identify the words in free recall and cued-recall tasks. In free recall, survival subjects recalled more words than the other groups (though differences were only marginally significant between survival and mating conditions). In cued-recall, survival and short-term mating subjects identified more words than control and long-term mating subjects. Despite the social and reproductive functions underlying much of human psychology and physiology, these results imply that memory serves our more basic fight against the environment.

### 31. The lies we tell our children

*Klitgaard, Sophie E.; Rucas, Stacey L.* <[srucas@calpoly.edu](mailto:srucas@calpoly.edu)>

Cross-cultural observations indicate that parents occasionally and intentionally deceive their children. Despite the commonness of this behavior, evolutionary research is lacking, and thus the ultimate functions of parent-child deception are yet under-explored. This work proposes that it may be situationally advantageous to lie to children over telling the truth under specific fitness related conditions, whereby lies serve distinct evolutionary functions as the benefits of the falsehood outweigh the costs of the child believing the lie. We collected data using ethnographic interviews that cataloged lies parents recall telling their children and those they recall their own parents telling them during childhood. Evolutionary themes of reported parental deceptions (N=819) and topics avoided (N=321) were created following content analysis, with lies coded according to the fitness function of each deceptive category. This study generated data that suggests parents mostly employ lying to maximize trade-offs and allocation of

parental investments that save time. It also found parents lie to children in ways that promote their mental and physical health, preserve their access to physical and social resources, promote the acquisition of lie detection skills, and enculturate them into the costly signaling beliefs of their group.

### **32. Earlier First Birth Is Associated with Higher Fertility Regardless of Childhood Harshness among Contemporary Japanese Women**

*Kometani, Atsushi; Ohtsubo, Yohsuke* <[ats.kometani@gmail.com](mailto:ats.kometani@gmail.com)>

The association between low socioeconomic status (SES) during childhood and earlier age at first birth (AFB) among women is often explained as an adaptive phenotypic plasticity: Childhood harshness predicts later environmental harshness or poor somatic status, and thus expediting reproductive schedule is adaptive. An implicit assumption underlying this thesis is that earlier reproductive initiation increases fitness among those who experienced childhood harshness but not among those who did not experience childhood harshness. However, the childhood harshness × early reproductive timing association may be a byproduct of enrollment in higher education: Family financial affluence, which is relatively stable over time, may facilitate children's enrollments in higher education that in turn delays reproductive timing. In this study, we tested these adaptive and non-adaptive explanations with a cross-sectional data from 480 Japanese women aged 45–50 years. The positive correlation between childhood SES and AFB was not statistically significant, while education level was positively associated with AFB. More importantly, AFB was negatively correlated with the number of children in their late 40s irrespective of the level of childhood SES. Contradictory to the adaptive phenotypic plasticity explanation, but congruent with the result of baboon study (Weibel et al., 2020), earlier AFB unconditionally increased reproductive success.

### **33. The Evolutionary Etiology of ADHD**

*Koolhaas, Candice* <[cekoolhaas@hotmail.com](mailto:cekoolhaas@hotmail.com)>

The clinical validity of attention-deficit hyperactivity disorder (ADHD) has been challenged by critics of the pharmaceutical industry since the 1990s (Breggin, 1999), motivating theories that suggest ADHD may be a collection of ancestrally adaptive qualities that have been misattributed as disabilities (Swanepoel et al., 2017). This literature review will organize the current evolutionary theories explaining the cause of ADHD and compare the supporting empirical and theoretical evidence with the criticisms. Etiological theories based on natural selection, sexual selection, life history strategy, and mismatch theory will be discussed, as well as opposing arguments that stress the dysfunctional qualities of ADHD. In this way, direct comparisons can be made between the theories and highlight what aspects of each are unique and what aspects are shared across the theories. This will facilitate directions for future empirical research so that the evolutionary explanations for ADHD can either become more refined or be revoked.

**34. Exploring Correlation Between Post-Partum Depression and the 5-HTTLPR SNP (single nucleotide repeat) in new Fathers**

*Kotov, Daria; Corpuz, Randy* <[daria.kotov001@umb.edu](mailto:daria.kotov001@umb.edu)>

There is converging evidence for the “Bargaining Model” of maternal Postpartum Depression (PPD). Less is known about paternal postpartum depression. The ultimate function of paternal depression (if one exists) is not widely discussed. This may be due to an underdeveloped understanding of the proximate mechanisms that may—or may not—overlap with maternal depression. One mechanism is the role and sex difference specific to serotonin and the serotonin transporter gene (5-HTTLPR) in depression. Allelic variation in 5-HTTLPR (short/long) has shown mixed results in its relation to maternal PPD. As one proximate mechanism (and potential covariate in future models), we explore the relationship between 5-HTTLPR and paternal PPD. In a subset of a U.S. sample of first-time fathers (n=48 dyads), we genotyped saliva and used the Becks Depression Inventory to measure paternal PPD. In this exploratory research, we found no relationship for fathers between PPD and allelic variants of 5-HTTLPR. We discuss substantial limitations to this exploratory study such as sample size and demographic makeup of our sample. Future directions include the use of large samples from secondary data and other proximate mechanisms that may help inform well-developed hypotheses on the possible role of paternal PPD.

**35. Biased trait judgments in groups vs. isolation suggest a perceptual social intelligence bias**

*Lehmann, Sonja; Eisenbichler, Romy; Mueller, Kai-Markus*  
<[mail@kai-markus-mueller.com](mailto:mail@kai-markus-mueller.com)>

The cheerleader effect states that an individual face or human is rated more attractive in a group than when presented singly. Initial explanations revolved around visual processing. However, empirical results are not consistent with predictions based on visual theories. Thus, we propose an evolutionary explanation and establish, to the best of our knowledge, the first link between the cheerleader effect and the social brain hypothesis. Such evolutionary reasoning rejects the visual origin and instead posits emotional or decision biases. Hence, we tested eight evolutionarily relevant traits in groups vs. isolation. Five traits showed significantly higher positive evaluations (change scores) in the group condition: (1) attractiveness, replicating the cheerleader effect; (2) health; (3) salary, which we previously dubbed the “banker effect”; (4) intelligence, and (5) emotional stability. Three traits showed no significant effect in either direction: (6) pleasing disposition; (7) vanity; and (8) reliability. Importantly, the change scores correlated either weakly or not at all, indicating that the results are not explainable by a mere halo effect of visual attractiveness. It is an enticing speculation that the cheerleader effect might be a psychophysical bias analogous to the social brain hypothesis and therefore represents evolutionary pressure to select for (larger) social brains.

### 36. Effects of facial skin pigmentation on social judgments in a Mexican population

*Martinez-Ramirez, Jaaziel; Puts, David; Nieto, Javier; G-Santoyo, Isaac*  
<[jaaziel\\_mart@hotmail.com](mailto:jaaziel_mart@hotmail.com)>

Natural selection is responsible for producing variations in human skin pigmentation, nevertheless, this trait may currently be subject to additional selective pressures. The colonial era in Latin America developed a highly stratified society based on ethnic origins, and light skin pigmentation became associated with higher social status. Pigmentation is also sexually dimorphic, with males tending to exhibit darker skin than females. Hence inter or intra sexual selection could also be acting. We tested how this attribute may influence fundamental social perceptions in a Mexican population (N = 700). We sampled facial images of eight European American males with light skin pigmentation and eight males with darker skin pigmentation from a Mexican indigenous community named Me'phaa. We produced facial stimuli by interchanging skin pigmentation to be rated on attractiveness, trustworthiness, perceived health, dominance, aggressiveness, and masculinity. European American faces were perceived as more attractive, trustworthy, and healthy, but less dominant and masculine than Me'phaa, and the interchange of skin color changed this effect but mainly in attractiveness. These results partially support the hypothesis that dark color may aid in intrasexual competition, but they more strongly support the hypothesis that light skin pigmentation became associated with favorable social attributes in this population.

### 37. Counterfactual Regret: Exploring Adaptive Reasons to Share

*McCoy, Mark; Nebl, Patrick* <[mgmccoy@manchester.edu](mailto:mgmccoy@manchester.edu)>

The Personal Experience and Expression of Regret (PEER) model of counterfactual thinking proposes that public expression of regretful counterfactuals should be motivated by a goal of increasing social closeness, which is demonstrated in a series of studies (Summerville & Buchanan, 2014). There are still many questions left regarding the sharing of counterfactual regret, especially regarding the evolved function of sharing counterfactual regret. Little recent work has been done to investigate whether expressions of counterfactual regret can influence the behavior, thoughts, and feelings of others, which, according to Cosmides and Tooby (2000) is a necessary component of general functional emotion expression. Here, some early is presented work which attempts to explore the benefits of sharing counterfactual regret with others. In one study, participants played a variant of the dictator game. In another, participants read scenarios and imagined how different expressions of regret would best alter the opinions of others. Mixed but promising results indicate that this area of inquiry could be a vein for exploring a much overlooked area of emotional expression.

### 38. What a creep: Effects of gender and facemasks on perceptions of creepiness

*McKibbin, William; Andersen, Brielan* <[wmckibbi@umich.edu](mailto:wmckibbi@umich.edu)>

Research suggests humans may experience the feeling of being “creeped out” in response to ambiguously threatening stimuli. This may be particularly true for women, who face greater risks and costs associated with threats such as strange men. To date, no research has investigated gender differences in the experience of being creeped out. We predicted that women would rate targets as creepier than would men. We also predicted that male targets would be rated as creepier than female targets. Both hypotheses were supported. Based on a sample of 332 participants (254 women), results suggest that women rated targets as significantly creepier than did men. In addition, participants rated male targets as significantly creepier than female targets. Finally, we investigated effects of facial masking on perceptions of creepiness. We predicted that masked faces would be rated as creepier due to adaptive conservatism in the context of incomplete appearance information (e.g. asymmetrical features). This hypothesis was not supported. Indeed, participants rated unmasked faces as significantly creepier than masked faces. This may suggest certain facial features (e.g. the mouth) play an important role in evaluating creepiness. Discussion focuses on limitations of the current research and future directions.

#### **39. Functional Inferences of Preferred Disciplinary Strategies in Formidable Men**

*McPherson, Megan N.; Donahoe, Steele; Brown, Mitch* <[mnmcpher@uark.edu](mailto:mnmcpher@uark.edu)>

Individuals utilize facial width-to-height ratio (fWHR) as the basis for inferences of men’s aggressive intent in the service of identifying potential interpersonal threats and coalitional allies. These inferences shape evaluations of men’s capabilities either to facilitate or impede a perceiver’s social goals in group living across various domains. Within parenting domains, men’s fWHR could provide information on their likelihood to employ aggressive disciplinary strategies with their children. More specifically, perceptions of high-fWHR men as aggressive should facilitate inferences of such men as more likely to use harsh disciplinary strategies. Participants evaluated a series of images of White and Black men who naturally varied in fWHR by indicating the extent to which they perceived each man as prone to physically punishing their children and how severe these punishments would be. As predicted, high-fWHR men were perceived as having a greater proclivity toward physical punishment and to be more severe in this punishment compared to low-fWHR men. However, these inferences were particularly amplified among White targets than Black targets. These findings suggest that functional stereotypes of formidability in parenting domains differ across racial categories. We discuss potential bases for this distinction.

#### **40. Dark Personality Features and Anti-Natalist Beliefs: The Mediating Roles of Primal World Beliefs**

Meehan, Madeleine K.; Zeigler-Hill, Virgil; Shackelford, Todd K.  
<[madeleinemeehan@oakland.edu](mailto:madeleinemeehan@oakland.edu)>

Despite the widespread belief that Dark Triad personality features (i.e., narcissism, psychopathy, and Machiavellianism) are maladaptive, these personality features may serve important adaptive functions such as motivating individuals to secure resources, gain status, and avoid punishment. Similarly, human morality likely evolved to assist in solving adaptive problems. The goal of the present study was to replicate and extend research by Schönegger (2022) concerning the associations that the Dark Triad had with anti-natalist beliefs (i.e., that it is morally wrong to procreate) by using multidimensional conceptualizations of these dark personality features and examining whether primal world beliefs mediate the associations that these dark personality features have with anti-natalist beliefs. The results indicate that, as expected, specific dark personality features (i.e., antagonistic narcissism, psychopathic meanness, etc.) were positively associated with certain anti-natalist beliefs. Additionally, the associations these dark personality features had with anti-natalist beliefs were sometimes mediated by the safe primal world belief (i.e., perceiving the world to be non-threatening and cooperative) and the enticing primal world belief (i.e., perceiving the world to be irresistibly fascinating). Discussion focuses on the implications of these results for the role that primal world beliefs play in the connections between dark personality features and anti-natalist beliefs.

#### **41. Attachment and kinship selection among Uruguayan twins (monozygotic and dizygotic)**

*Melo-González, Valentina; Corte, Sylvia* <[valentina.melo@gmail.com](mailto:valentina.melo@gmail.com)>

Twin studies analyze the contribution of genetic and environmental factors to behavior. Assuming parenting in the same environment and period of time, sharing almost 100% of genes in monozygotic (MZ) and 50% in dizygotic (DZ). Attachment bond is fundamental throughout life for the construction of personality, and cognitive development. Previous studies argue twins perform each other as an attachment figure the more genes they share. Natural and kin selection affects reproductive success. Our aim was to determine if attachment, integrated with kinship, differs according to zygosity between MZ and DZ and perception of closeness with the sibling, age and sex. We evaluated whether the relationship between nephews/nieces and uncles/aunts MZ and DZ varies by zygosity. An online survey of 135 Uruguayan adult twins was analyzed. Included questionnaires on Zygoty (Christiansen et al, 2003); Relationship (Bartholomew and Horowitz, 1991); Life satisfaction (Neyer, 2002) and Closeness to nephews' and nieces' (Segal, 2007). No significant differences were found in perceived attachment linked to zygosity, nor influences of age or sex. Uncle/aunt-nephew/niece relationship was not determined by zygosity. These results suggest that perceived attachment does not depend on zygosity, rejecting the kin selection theory. This research is pioneering in Uruguay.

#### **42. The effects of perfection on person perception and partner choice**

*Mulhinch, Megan; McCullough, Michael* <[mmulhinch@ucsd.edu](mailto:mmulhinch@ucsd.edu)>

Selecting good partners, like friends or mates, is a core challenge of social life. Decades of research in social psychology has identified several traits – competence, warmth, and morality – that are fundamental to how we form impressions of others. One strategy for selecting good partners is to seek out partners who are high in these traits. But what happens to our judgments when we encounter people at the extremes of these traits—or even their theoretical upper bounds? In other words, what do people think about people who appear to be perfectly competent, warm, or moral? Recently, Isaac & Spangenberg (2021) adduced evidence that people assign special value or credit to people who are seemingly perfect—particularly in the domain of competence. People’s tendency to assign this so-called perfection premium seems to be driven by their tendency to spontaneously categorize seemingly perfect individuals into a unique category—literally, into a class by themselves. Here, we report the results of an experiment involving 400 people in which we (1) sought to replicate Isaac and Spangenberg’s (2021) findings and (2) examined whether people assign the perfection premium not only to people who appear to be perfectly competent, but also to people who appear to be perfectly prosocial.

#### **43. My mother, my type? Possible patterns of sexual imprinting in humans.**

Murtagh, *Jaime*; Wilson, *Jacob*; Sheets, *Virgil* <[jjwilson154@sycamores.indstate.edu](mailto:jjwilson154@sycamores.indstate.edu)>

We examined whether people show consistency in the “type” of romantic partner they prefer and where such preferences might emerge from. 307 undergraduates completed an online survey in which they rated various physical and psychological characteristics of their two most recent romantic partners. Correlations assessed degree of similarity between partners, or “typing.” There was evidence of “typing” on physical traits (such as height, weight, etc.) and even socially-influenced physical displays (e.g., hair color & length), but little on personality. Correlations were used to assess correspondence between preferred “types”—defined as the “average” of one’s partners—and one’s self as well as one’s opposite-sex parent (OSP). Men’s “types” were most strongly linked to their OSP, especially on the most highly-“typed” physical traits while women’s “types” appeared more equally tied to their OSP and self, and maybe even more connected to the self on personality traits. Additional correlations suggest that participants’ relationships with OSPs may moderate the “typing.” These results support the idea that people seek partners who match a mating “template,” but the origin of the “template” may vary by sex and/or by trait. Discussion suggests additional characteristics that might be examined in future studies.

#### **44. Coalitional Preferences for Masculinized Faces Among Conservatives**

Neiswender, *Patrick R.*; Snowden, *Samuel E.*; Brown, *Mitch* <[prneiswe@uark.edu](mailto:prneiswe@uark.edu)>

Physically formidable men espouse more conservative ideologies in the service of codifying competitive social hierarchies from which they would benefit. Individuals heuristically associate masculinized features with conservatism, which could facilitate

their identification of coalitional allies or threats. The identification of masculine men as allies or threats could likely emerge as a function of partisan affiliation, wherein conservatives would view masculinized conservative men as affording more benefits to their group. In the current study, we tasked participants to indicate their interest in working with male and female targets on an interdependent task who were either liberal or conservative. Targets were critically manipulated to appear either masculinized or feminized. Conservative participants reported greater interest in working with masculinized conservative targets. This masculinized conservative preference was particularly large for male faces. Conversely, conservative participants reported an aversion to working with masculinized liberal targets. Results indicate that ingroup favoritism appears contingent upon the perceived social affordances of prospective coalitional allies. Given the physical advantages of masculinized men that could foster greater access to resources for group members, conservatives' preferences could function to facilitate competitive hierarchies.

#### **45. Cooperative Intention Signaling Is Evolutionarily Stable against Mobile Defectors**

*Ohtsubo, Yohsuke; Suzuki, Kohei; Toyoda, Masaya; Kawamura, Yuta; Ohtsuki, Hisashi* <yohtsubo@l.u-tokyo.ac.jp>

A prominent model of evolution of cooperative signals is competitive altruism. However, according to a formal model (Gintis et al., 2001), competitively altruistic behaviors do not signal their cooperative intention, but their quality that allows them to cheaply produce altruistic signals. Recently, Roberts (2020) proposed a signaling model of cooperative intention. However, the Roberts model was disproportionately favorable to signaling cooperators because each defector, once paired with TFT, was forced to stay in the barren relationship for many trials. We extended the Roberts model by allowing mobile defectors to serially exploit cooperative agents (Enquist & Leimar, 1983) and analyzed whether a population of signaling cooperators is evolutionarily stable against the mobile defectors. We also analyzed whether it is evolutionarily stable against signaling defectors (i.e., dishonest signalers) and non-signaling cooperators. First, we found that the signaling cost needs to be nearly equal to the cost of cooperation in order to prevent the invasion of the dishonest signalers. Second and more interestingly, when the cost of signal is set equal to the cost of cooperation, the population of signaling cooperators are evolutionarily stable against both mobile defectors and non-signaling cooperators inasmuch as they are not too generously accepting those non-signaling agents.

#### **46. Social Affordance of Dirty Jokes in Self-Protection and Affiliative Domains**

*O'Neil, Bridget A.; Buckner, Zachary R.; Brown, Mitch* <[baoneil@uark.edu](mailto:baoneil@uark.edu)>

Despite its general connotation of sexual receptivity, women's interest in men's use of dirty humor remains limited to short-term mating contexts. This aversion to dirty humor as a mating display may be partially rooted in an understanding among women that dirty

humorists could employ more exploitative mating strategies, thus implicating them as a threat to physical safety. The current study investigated the social affordances of men's use of dirty and clean humor as mating displays by considering the potential threats to, and opportunities for, women's physical safety. Women evaluated male targets in a bar setting for their ability to satisfy and impede self-protection and affiliative goals. Importantly, these targets were described as having told a dirty or clean joke to ingratiate themselves with the participants. Results indicated that women perceived men using dirty humor as presenting a greater threat to their physical safety than men using clean humor. Nonetheless, this perceived threat did not impede perceptions of these men as capable of providing social opportunities in self-protection or affiliative domains. These findings suggest that women's valuation of humor is domain-specific based on how they weigh the potential costs and benefits.

#### **47. The Influence of Pathogen Threat on Mate Value Perceptions**

*Payne, Sarah; Ackerman, Joshua* <[paynesm@umich.edu](mailto:paynesm@umich.edu)>

To what extent is the perception of facial attractiveness influenced by external pathogen threats? Prior research has shown that the behavioral immune system, a motivational system contributing to pathogen avoidance, can influence how individuals perceive the attractiveness of others. The present study replicated and extended this work to investigate how the presence or absence of a pathogen-salient threat can alter an individual's perception of attractiveness, and, subsequently, their perception of mate value. Participants were exposed to a pathogen-salient or pathogen-free set of images and ranked how disgusting they found each image, which included both bodily and non-bodily related stimuli. Then, participants rated a set of faces of their romantically preferred gender on attractiveness. Results of this study revealed that exposure to initial pathogen threat did not influence later ratings of attractiveness. However, bodily-related images were significantly more likely to elicit a disgust response in the pathogen-salient condition as compared to non-bodily related images. This study adds to prior research indicating that factors associated with the behavioral immune system responses (e.g., disgust) can shape mate value perception.

#### **48. Disgust and Negative Attitudes about Menstruation: Comparison with Issues in Men's Reproductive Health**

*Peng, Sisi; Haselton, Martie* <[s.peng@ucla.edu](mailto:s.peng@ucla.edu)>

Why is menstruation stigmatized? One possibility is that it elicits disgust because the process involves blood. Alternatively, menstruation is a "woman's issue" that is viewed as less important due to women's generally lower societal status. Here, we explore this idea with U.S. college students (N = 475 participants) by examining whether disgust elicited by pathogens predicts negative attitudes toward menstruation. For comparison, we examined two other domains of disgust. To see whether patterns were unique to an issue involving women's reproductive health, we tested two stigmatized reproductive

issues confronting men: spontaneous erections and erectile dysfunction. We did not find that pathogen disgust predicted negative menstrual attitudes, suggesting that the source of stigma is not an association with disease risk. However, we did find that sexual disgust significantly predicted negative attitudes toward menstruation ( $b = .17$ ,  $t(187) = 3.80$ ,  $p < .001$ ). We found a similar pattern for one of the male reproductive issues, spontaneous erections ( $b = .18$ ,  $t(87) = 2.70$ ,  $p < .01$ ). Data collection is ongoing and we may present additional results. Follow-up studies should investigate different dimensions of sexual disgust and further assess sources of taboo around female bodies.

#### 49. The evolution of false theories

*Perote-Peña, Juan* <[jperote@unizar.es](mailto:jperote@unizar.es)>

I propose a mathematical model of cultural evolution to explain why false theories and meaning systems or maladaptive beliefs may spread and become fixed in a population while assuming that their diffusion rates are lower than their true counterparts. By combining ideas from judgment aggregation and the Condorcet Jury theorem with cultural evolution dynamics, I introduce a new epistemic stage in the cultural evolution process where culturally transmitted theories not only spread “horizontally” (across individuals in the same generation) and “vertically” (from one generation to the next), but also inside individual brains (“personal reflection process”). This occurs when a brain adopts a maladaptive theory (not received from outside) by means of internal inference from other false premise/idea that was indeed received culturally. In this context, false theories may favor the assumption of other false theories after the individuals have been exposed to true information about their logical connection, and increase their presence in the population within the normal and adaptive logical working of our brains. Using a simple stylized model and subsequent simulations I identify the parametric conditions in which false theories become universally accepted, so that the model could be tested empirically.

#### 50. Evolutionary psychology solves the problem of free will

*Pietraszewski, David* <[pietraszewski@mpib-berlin.mpg.de](mailto:pietraszewski@mpib-berlin.mpg.de)>

For centuries, the problem of free will has vexed philosophy of mind and psychology—namely, how to accommodate the scientific view of “mind as mechanism” with the experienced free agency of the self. Difficultly reconciling these two views has spawned debate over whether free will “really” exists, and what evidentiary standards are appropriate for deciding if it does. Here, I suggest that the problem of free will itself is an illusion: a byproduct of the way human philosophers and psychologists have applied their own evolved psychologies to thinking about the mind. The problem of free will occurs because of slippage between two different evolved conceptual frameworks (or levels of analysis): one for reasoning about conspecifics, another for reasoning about artifacts. The former views “agency” and “mechanism” as incompatible, the latter does not. The conspecific framework, moreover, flags whenever elements of agents satisfy

the input conditions of mechanisms (roughly, out of concern with interpersonal manipulation). The operation of these evolved frameworks, I argue, drives the diverging intuitions and apparent paradoxes of free will.

**51. How do people weigh competing demands while making safety decisions during a pandemic?**

*Prokosch, Marjorie; Smith, Colin Tucker, von Meding, Jason <[mprokosch@ufl.edu](mailto:mprokosch@ufl.edu)>*

The United States experienced record-breaking incidences of hurricanes, wildfires, and flooding in 2020 and 2021, all in the midst of the COVID-19 pandemic. One dilemma posed by these compounded threats is that COVID-19 prevention guidelines may conflict with people's disaster mitigation plans (e.g., evacuation to a public shelter, seeking social support). These recent hazard seasons have posed an especially ecologically valid window of opportunity to study multi-threat motivated decision-making, as they have created challenges with potentially competing solutions, like: infection concerns, safety needs, prolonged isolation, and stress from compounded risk exposure. An affordances-based framework predicts that when navigating multiple threats, salient threats claim priority in people's subsequent decision-making. In the current project we examined how competing disease avoidance, self-protection, and affiliation motives shapes decision-making in a series of prospective disasters. We predicted that different salient motives would each predict choices of self-protecting, prophylactic, or contact increasing strategies. Results revealed that relationships between safety motivations, disease avoidance motivation diverged across scenarios, while affiliation motives were more broadly related to contact increasing decisions across diverse hazards. This work highlights the utility of incorporating an evolutionary perspective into predictive frameworks of hazard decision-making.

**52. Awe- Shucks": Uncovering the Relationship Between Awe and Domain Specificities of Humility**

*Racioppa, David; Fiddick, Dr. Laurence; Visser, Dr. Beth <[racioppad@lakeheadu.ca](mailto:racioppad@lakeheadu.ca)>*

Awe is an emotional response to perceived vastness that requires cognitive accommodation. Awe is often classified as a prosocial emotion that evolved to foster humility towards high status individuals. Increased prosociality from induced awe is thought to be mediated by self-diminishment. Awe has also been construed as an epistemic emotion that reduces the saliency of the self to facilitate stimulus driven processing and schema revision. This study investigated the relationship between awe and domain specificities of humility to illuminate awe's evolutionary function. It was hypothesized that positive awe should be best predicted by intellectual humility whereas negative awe was hypothesized to be mostly associated with self-abasing humility which is arguably not a prosocial domain of humility. A preregistered study with 268 participants found that epistemic humility was the best predictor of elicited positive awe from video manipulations and a facet of intellectual humility was the second-best

predictor. Religious humility surprisingly was the best predictor of elicited negative awe from video manipulations however this result was not statistically significant. When humility measures derived from a factor analysis were used, a modified version of self-abasing humility was the best predictor of elicited negative awe. Implications of findings will be discussed along with an evolutionary rationale for viewing awe as an epistemic emotion.

### **53. Third-party perceptions of acquiescence: Why do people do what high-status people want?**

*Rodriguez, Nina N.; Krems, Jaimie Arona* <[ninrodr@okstate.edu](mailto:ninrodr@okstate.edu)>

Individuals with status—such as strong men or attractive women—are thought to be better equipped to impose costs and withhold benefits from others, making them better able to get others to acquiesce. But why do people acquiesce to those with high status? For example, is it to avoid the costs strong men might inflict and/or reap the benefits they might generate? Here, we examined social perceptions as to why men and women acquiesce to targets varying in sex, attribute (strength, attractiveness), and attribute degree—strong or weak men and women, more or less attractive men and women. Preliminary results from the US (N = 429) suggest that participants expect people to acquiesce to strong (vs. weak) men and, to a lesser extent women, out of fear and to get the strong person to like them. Participants also expect people to acquiesce to more (vs. less) attractive women and men to get the attractive person to like them—but not necessarily to avoid the costs the attractive person might inflict. Additionally, participants generally expect people to acquiesce to high status targets to reap the benefits they generate. Results begin to describe social perceivers' expectations of people's interactions with higher-status others.

### **54. Covid-19 Effects on Menstrual Cycle Regularity and Sexual Motivation**

*Schepke, Rachel; Shackelford, Todd; Zeigler-Hill, Virgil* <[rmschepke@oakland.edu](mailto:rmschepke@oakland.edu)>

There is no empirical work that compares menstrual cycle regularity of women infected with COVID-19 to women not infected with COVID-19 and no previous work investigating whether frequency of sex and sexual motivation differ between women who have irregular menstrual cycles from women who do not have irregular menstrual cycles. I aim to investigate whether women infected with COVID-19 will report irregular menstrual cycles more often than women not infected with COVID-19, and whether partnered women who report irregular menstrual cycles have sex less frequently and are less motivated to initiate sex. I aim to collect data from 125 women previously infected with COVID-19 and 125 women who have not been infected with COVID-19. To be eligible to participate, individuals must be female and of reproductive age (18-45 years), in a committed sexual relationship with the same male for at least six months, not be pregnant, and not currently be infected with COVID-19. Participants who were infected must have been infected within the last three months to compare menstrual cycle

regularity at least three months before the participant was infected and one to three months after they were infected. All participants will report complete cycle duration, duration of menses, and whether spotting occurred for their last six menstrual cycles. An independent means t-test, dependent means t-test, correlation tests, and mediation analysis will be used to analyze the data.

#### **55. Functional Reactions to Romantic Confessions from Short-Term Mates**

*Snowden, Samuel E.; Brown, Mitch* <[sesnowde@uark.edu](mailto:sesnowde@uark.edu)>

Romantic skepticism serves to prevent individuals from overcommitting to suboptimal relationships. This bias is particularly apparent among women, given the larger minimal investment in reproduction that would likely heighten their acuity toward mates who are incapable of satisfying their mating needs. Such skepticism often manifests as wariness toward romantic confessions in relationships, though it could similarly serve to individuals' interest in short-term mates to mitigate contact with clingy mates who would impede reproductive opportunities. This study considered how skepticism biases emerge across relationship contexts through reactions to romantic confessions. Men and women evaluated four hypothetical mates' desirability. Mates communicated romantic interest (or a control statement) following a sexual encounter in short-term and long-term contexts. Romantic confessions fostered considerable aversion in short-term mating, especially for women. Findings demonstrate a context-dependent functionality in romantic skepticism, facilitating aversion toward short-term mates who may impede reproductive goals.

#### **56. Ecological Threats and Cultural Systems; Frequency of Epidemics Predicts Collectivism Scores**

*Soheil Shapouri* <[ss25990@uga.edu](mailto:ss25990@uga.edu)>

Parasite stress theory of sociality and values posits collectivism as an anti-pathogenic response. Using a recent, non-WEIRD measure of collectivism that is based on representative national sampling (GCI) and harvesting data from the Emergency Events Database (EM-DAT) for the period 1900-2000 I investigated the relationship between pathogenic stress and natural disasters with collectivism while controlling for historic national wealth. The results showed that the number of epidemics positively ( $r(188) = .41, p < .0001$ ) and average Growth Domestic Product between 1960-2000 negatively ( $r(185) = -.29, p < .0001$ ) were associated with collectivism while the correlation between the number of deaths caused by epidemics, number of natural disasters, and number of people killed by natural disasters with collectivism were not statistically significant. Multiple linear regression with the number of epidemics and GDP as simultaneous predictors of collectivism scores further supported the link between the frequency of epidemics and collectivism. The implications and future directions will be discussed.

#### **57. A Gender Difference in Attention-Attitude Congruency Toward Sexual Stimuli**

Steiner, Eric; Young, Sharon <[tsteiner@nu.edu](mailto:tsteiner@nu.edu)>

Cross-culturally and historically, men expend more in mating efforts than do women, and women expend more in parenting efforts than do men. That said, laboratory assessments of gender differences that pertain to mating and parenting have been rarely assessed together, and rarely with both behavioral and self-report measures. In the present study, 612 students (475 women, 132 men, 5 nonbinary) viewed a set of 15 neutral, 15 infant, and 15 sexual images via Qualtrics in each of three sessions over several weeks from the privacy of their home. A different set of 45 images was used in each session. Viewing time as a measure of attention was covertly recorded, and questions regarding attitude toward the images followed each session. Women spent more time viewing—and reported a more positive attitude toward—infant images than did men. Men reported a more positive attitude toward sexual images, but there was no gender difference in viewing time of sexual images. The results have implications for research methods concerning sexual topics, and suggest a gender similarity in the valence of sexual stimuli.

**58. A smile is worth a thousand words (about who you are): the traits associated with smiling in a dating application profile picture**

Tan, Lynn K. L.; Choy, Bryan K. C.; Li, Norman P. <[lynn.tan.2019@phdps.smu.edu.sg](mailto:lynn.tan.2019@phdps.smu.edu.sg)>

Profile pictures are an integral component of profiles on online dating applications. Not only can information about a person's physical attractiveness be conveyed by profile photos, but information about personality traits (e.g., confidence, self-esteem) important in a mate can also be transmitted through specific visual cues. We examined the type of traits associated with the tendency to smile in one's profile picture on Tinder. Among individuals who submitted potential or actual profile pictures for common dating applications, smiling (versus not smiling) was associated with higher self-esteem and marginally higher self-perceived mate value and social confidence. This study provides behavioral evidence that smiling functions as a reliable cue to a potential mate's social competence on a modern mating platform. Limitations and future directions are discussed.

**59. The cultural attraction of mortuary ritual investments as cues of cooperation**

Umbreş, Radu <[radu.umbres@politice.ro](mailto:radu.umbres@politice.ro)>

Why do humans spend valuable resources for mortuary rituals? What explains the variability of expenditure according to the deceased's identity but also between different societies? This presentation proposes a cultural attraction model (Sperber 1996) for the similarities and differences between death ritual costs across cultures. Costly behaviors in mortuary rituals activate intuitions about cooperation with the dead represented by the enduring "person-file system" (Boyer 2002). Family, relatives, friends and other consociates perceive such investments as mutualistic cooperation (Baumard 2016) with

absent social partners calibrated according to various interpersonal welfare trade-off ratios (Delton & Robertson 2016). Ritual prestations have reputational effects for performers as cooperators as well as signaling individual and coalitional power (Hayden 2009). The model explains puzzling features of mortuary rituals such as fear of ancestor vengeance for ritual non-compliance or underinvestment, the preferential treatment of the dead's allies, the variable but finite timescale of mortuary prestations, overinvestment for high-status dead, and the importance of inheritance rights. Evidence from ethnographic fieldwork in rural Romania and anthropological literature illustrates these causal mechanisms, and suggests further hypotheses about the relationship between social institutions of cooperation between the living and rituals for the dead.

**60. Ignoring distractions in violent and unpredictable conditions: An evolutionary developmental approach.**

*Vermeent, Stefan; Young, Ethan S.; van Gelder, Jean-Louis; Frankenhuys, Willem E.*  
<[p.c.s.vermeent@uu.nl](mailto:p.c.s.vermeent@uu.nl)>

The ability to maintain attention on goal-relevant information in the face of distractions is a crucial cognitive skill in various everyday situations. People who grow up in adverse conditions typically show lower interference control. Evolutionary developmental perspectives suggest that this might be the result of cognitive adaptations that make people more attuned to salient information in their immediate environment, coming at the cost of being more vulnerable to distractions. In two preregistered online studies with US-based participants, we investigated the way in which people with varying levels of childhood adversity exposure are able to attend to goal-relevant information and ignore distractions. Adversity was operationalized as exposure to violence and environmental unpredictability. We used computational modeling to gain more insights into the underlying cognitive processes. Although the findings were somewhat inconsistent across studies, more childhood unpredictability was associated with slower information processing speed and worse interference control. Interestingly, using more chaotic task stimuli resulted in better interference control and similar processing speed in participants with more unpredictability exposure, whereas the performance of low-unpredictability participants suffered. No differences were found for differences in violence exposure. These findings suggest that exposure to adversity might lead to lower but more robust cognitive performance.

**61. Kinship cues, sibling sentiment, and dating avoidance**

*Voges, Marcus; Sheets, Virgil; Voges, Danielle* <[vsheets1@indstate.edu](mailto:vsheets1@indstate.edu)>

"You are like a brother to me!" Observers often view cross-sex friendships as having romantic undertones, but cross-sex friends are frequently rejected as romantic suitors because it is said that they evoke sibling-like feelings. Is this just an easy end to an awkward interaction that avoids hurting a friend's feelings, or do rejected friends really evoke feelings of close kinship that inhibit romantic attraction? Nearly 200 college

students identified “dateable” and “non-dateable” cross-sex friends. They then rated their length of interaction with, their degree of familiarity with, and degree of similarity to, each friend on a number of dimensions. Respondents also indicated which friend looked, acted, and felt, most like a sibling. Results showed that “non-dateable” friends were significantly more likely to be described as sibling-like in behavior, and in evoked sentiment, than “dateable” friends. However, the kinship cues that might account for this were not clear. Respondents did not report longer histories with greater intimate knowledge of, nor greater similarity with their non-dateable friends; in fact, some significant patterns were opposite of expectations. Discussion concerns other possible sources of kinship cues and sibling sentiment.

## 62. Relationship Initiation and Dissolution Behaviors Associated with the Fear of Being Single

*Welling, Lisa L. M.; Shephard, Kayla <[welling@oakland.edu](mailto:welling@oakland.edu)>*

People who report being more afraid of being single are less choosy when selecting a romantic partner. Fear of being single is also associated with being more dependent on unsatisfying relationships and greater longing for ex-partners. The current research investigates whether those with a higher fear of being single attempt to initiate romantic relationships with known others (e.g., friends) more frequently than do others, and whether fear of being single predicts mating-relevant behaviors. We found that participants who reported a higher fear of being single do exhibit more effort in their attempts to secure romantic partners. There was no evidence that fear of being single leads to individuals having a long- versus a short-term mating orientation, nor that fear of being single leads to maintaining relationships with ex-partners. However, those who reported a higher fear of being single did report being more motivated to remain friends with ex-partners because of continued romantic attraction. We also replicated previous work finding a relationship between fear of being single and anxious attachment, relationship-contingent self-esteem, and emotionality, and a negatively relationship with extraversion. These findings add to the literature on fear of being single and mate choice.

## 63. Gender differences in COVID-19 fears: Austrian evidence

*Windhager, Sonja; Sarfo, Jacob Owusu; Ansah, Edward Wilson; Consortium of Human Behavior Working Group Graduates; Schaefer, Katrin <[sonja.windhager@univie.ac.at](mailto:sonja.windhager@univie.ac.at)>*

The COVID-19 pandemic has challenged humans in many ways and offered a novel setting to test evolutionary predictions of human feelings and behavior. The current study focused on self-reports of COVID-19 fears. Following asymmetric obligatory parental investment theory, it was predicted that men were less concerned than women. Austrian questionnaire data from 374 adults (255 female, 119 male) were collected in late spring 2021 as part of a larger international effort. COVID-19 fear, as a summary score of ten 5-point-Likert-scale questions, was overall low, yet significantly higher in women ( $M_d=9$ ,

SIR=4) than in men (Md=6, SIR=4; U=10401,  $p<0,001$ ). Specifically, the gender difference only showed when participants did not consider themselves to belong to an at-risk group. As a main cause of their fears, women more often picked their own sickness (28%) and sickness of close persons (71%) than men (19% and 51%), whereas men (12%) more often picked personal economic decline than women (6%). Other fears received similarly many picks (new mutations, loss of social relationships, worldwide recession, loss of rights of freedom, loss of future opportunities) or few picks (vaccination, punishment) in both genders. These results have societal implications for targeted awareness campaigns and for the adoption of preventive measures.

**64. Social-environmental predictors of female sexual behavior: The role of interpersonal trauma and family relationships**

*Wood, Erin; Criss, Michael; Byrd-Craven, Jennifer* <[woode1@uthscsa.edu](mailto:woode1@uthscsa.edu)>

Early adversity and social relationships can influence female sexuality. The current project aims to understand the additive and interaction effects of parent-daughter relationship quality to explain the link between lifetime interpersonal trauma and female sexual behavior. Seven-hundred eighty-one females completed online survey measures assessing: interpersonal trauma (IPT), mother- and father-daughter relationship quality (MRQ and FRQ, respectively), sociosexual orientation (SOI), sexual behaviors and attitudes (SBA), and perceived benefits of engaging in risky sexual behaviors with long-term (LTB) and short-term partners (STB). Using hierarchical regression, IPT predicted variance in all outcomes. MRQ did not significantly explain any remaining variance in the model, but FRQ significantly explained remaining variance in STB and LTB. A marginally significant interaction between IPT, MRQ, and FRQ indicates that individuals experiencing more IPT, but who had greater MRQ and FRQ, perceived fewer benefits of engaging in STB. The data indicate that IPT significantly explains variance in female sexuality. When accounting for IPT, FRQ is associated with lower SOI, SBA, and fewer perceived benefits of STB. Because FRQ but not MRQ was found to be associated with variance in STB, the current study provides evidence to the unique and discrete role of fathers on female sexuality.