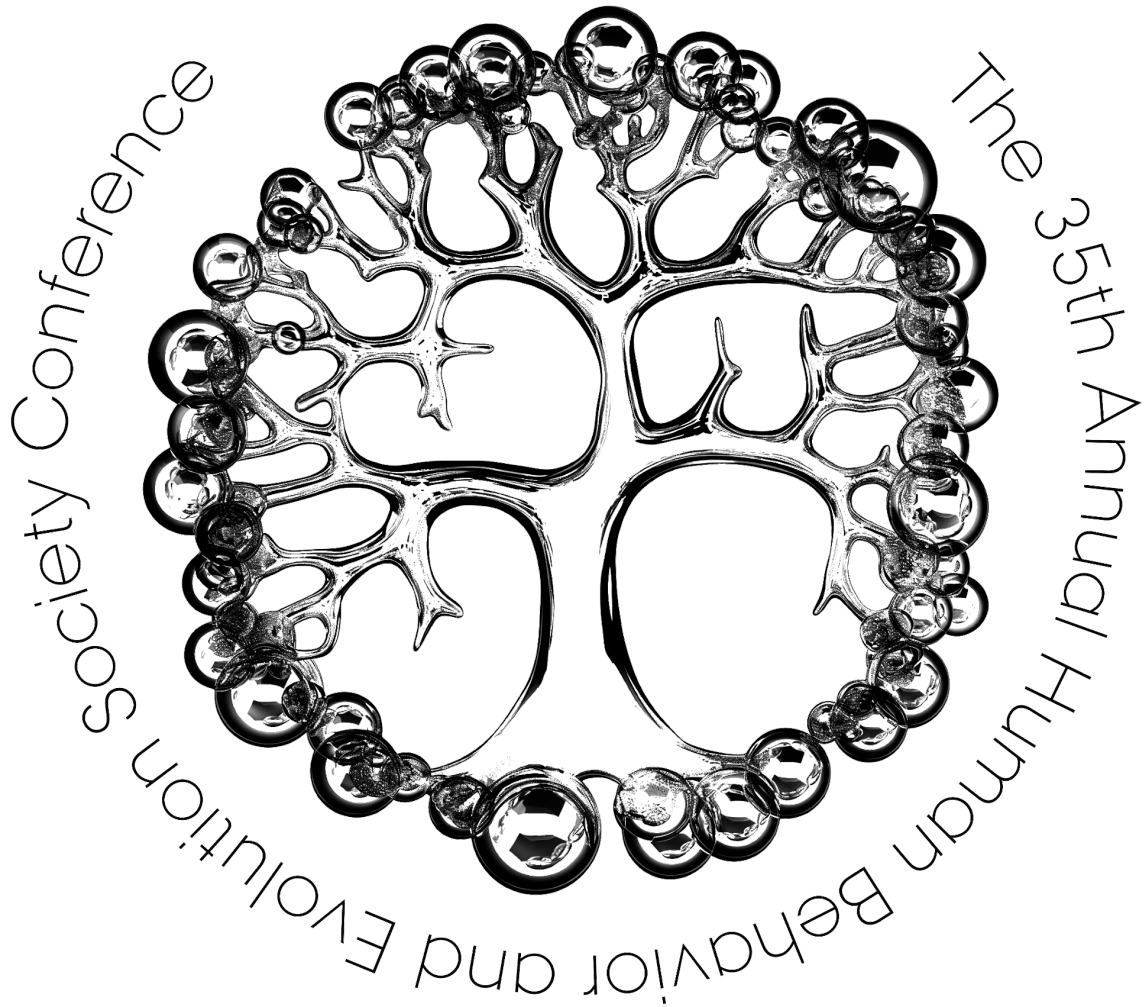


**HBES 2024**



Aarhus University  
May 22-25, 2024

<https://conferences.au.dk/hbes2024>

# Acknowledgments

**Host Committee:** Mathias Clasen, Marc Malmdorf Andersen, Elena Miu

**Program Committee:** Laith Al-Shawaf, Patrick Barclay, Jennifer Byrd-Craven, Lei Fan, Emelie Jonsson, Stacey Makhanova, Sarah Mathew, Wilson Merrell, Elena Miu (chair), Wataru Toyokawa

**New Investigator Award committee:** Patrick Barclay, Steven Gangestad, Rebecca Sear, Charlotte De Backer

**Postdoc Award committee:** Judith Burkart, Joseph Carroll, Martin Daly

**Poster Award committee:** Judith Saunders, Daniel Sznycer, Sonja Windhager

**Student Lunch Organiser:** Nina Rodriguez

**LGBTQ social and networking event organizers:** Michael Barlev, Michael Moncrieff

**WBES event organizers:** Abigail Page, Rebecca Sear

**HBES Central Committee:** H. Clark Barrett (president), Jessica Hehman (treasurer), Lisa Welling (secretary/archivist), Pat Barclay (communications secretary), Nina Rodriguez (student representative), Coren Apicella (council member at large), Chris von Rueden (council member at large), Jaimie Krems (council member at large), Joshua Tybur (council member at large), Daniel Conroy-Beam (council member at large), Marco Del Guidice (council member at large)

We would also like to thank the following individuals for their invaluable assistance:

Conference manager Gitte Grønning Munk, AU Arts

Student assistant Matilda Sif Rhys-Kristensen

Recreational Fear Lab intern Nina Juel Andreassen

Student volunteers Weronika Zarębska, Emma-Margaret Vaserik, Teodor Chipier, David Feher, Pernille Lærke Munk-Hansen, Rahel Meyer-Stromfeldt, and Sari Fernezelyi

Logo designer Nikolai Lander, AU Events and Communication Support

# Important Information

## Wifi

Eduroam is available on Aarhus University campuses. Read more about eduroam at <https://eduroam.org/>

Alternatively, guests can use the AUGuest network, login is free.

## HBES Meetings

Wednesday May 22

9:00-11:00 Publication Committee Meeting (closed meeting) - in meeting room M1

11:00-13:30 Executive Committee Meeting (closed meeting) - in meeting room M1

## Venue

HBES 2024 takes place at Aarhus University's conference center which is located in buildings 1420-1423. The street address is Fredrik Nielsens Vej 2-4, 8000 Aarhus C, Denmark. You can find it on Google Maps [here](#). The conference rooms "Stakladen", "Richard Mortensen Stuen", "Preben Hornung Stuen" and "Mogens Zieler Stuen" are all at the conference center.

The **registration** desk is also at the conference center, by the "Stakladen" room.

The **plenaries** and award talks are in the Aula, which is in building 1412, street address Nordre Ringgade 4, 8000 Aarhus C, Denmark - across the street from the conference center.

The **banquet**, award **ceremony**, and **keynote** are at Turbinehallen (Kalkværksvej 12, 8000 Aarhus C).

## Poster Set-Up

The Poster Session will be held in Vandrehallen (next to the Aula) 17:00-19:00 on Thursday May 23. Posters can be set up at the beginning of the conference and should be taken down at the end of the conference.

## Childcare

Childcare arranged by participants themselves may utilize room M1.2 in the conference center.

The relevant buildings are highlighted in red on the map below:



## 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. Additional information about harassment is provided in the full [full code of conduct sept 20 2018](#).
- 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. The names and contact information of the grievance committee are on the meeting and main HBES websites. 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 code of conduct.
- Respect the rules and policies of the meeting venue, hotels, and any HBES-contracted facility.

Seeking assistance and reporting an incident:

If an individual at an HBES event believes they have experienced or witnessed harassment, discrimination, or bullying, they should contact a member of the grievance committee, either in person at the conference or by email. If they prefer, they may ask someone else to contact the grievance committee on their behalf, but their identity must be shared with the committee so that the complaint can be investigated. Both the complainant and the accused may bring someone with them for support at any point during the proceedings. The complainant and accused will not be required to meet to discuss the incident. Confidentiality and discretion throughout the process is expected from all parties involved.

HBES members may seek assistance from the grievance committee without making a formal complaint, and if the complainant wishes, grievance committee members may attempt to resolve the dispute through informal mediation. Such a step would not involve either a record of the encounter, or sanctions by HBES. If the person wishes to make a formal complaint, it must be done in writing and will be investigated according to the procedure below. The accused will be given the option to respond to any formal complaint.

The current members of the grievance committee are: Bobbi Low, Catherine Salmon, Jaimie Krems, Karthik Panchanathan, Summer Mengelkoch, Michael Barlev, Martin Daly.

# Programme Overview

## WEDNESDAY, May 22

- 9:00 Publication Committee Meeting (*M7*)
- 11:00 Executive Committee Meeting (*M7*)
- 13:00 Conference Registration (*Vandrehallen*)
- 13:40 Opening remarks (*Aula*)
- 14:00 Plenary: Joseph Carroll (*Aula*)
- 15:00 Coffee break
- 15:20 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 16:20 Coffee break
- 16:50 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 18:00 Welcome Reception (*Stakladen*)

## THURSDAY, May 23

- 9:00 Plenary: Lisa Feldman Barrett (*Aula*)
- 10:00 Coffee break
- 10:20 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 11:40 Lunch (*Stakladen*) – Student Mentor Lunch (*Studenterbaren*)
- 13:00 Plenary: Dorsa Amir (*Aula*)
- 14:00 Coffee break
- 14:20 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 15:40 Coffee break
- 16:00 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 17:00 Poster Session (*Vandrehallen*)
- 19:00 WBES meeting (*Studenterbaren*)

## FRIDAY, May 24

- 9:00 Plenary: Judith M. Burkart (*Aula*)
- 10:00 Coffee break
- 10:20 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 12:00 Lunch (*Stakladen and Studenterbaren*)
- 13:00 New Investigator Award Finalists (*Aula*)
- 14:00 Coffee break
- 14:30 Postdoctoral Award Finalists (*Aula*)
- 15:30 Coffee break
- 16:00 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 17:00 LGBTQ+ Networking and Social Event (*Studenterbaren*)
- 19:00 Barbeque (*Nobel Park*)

## SATURDAY, May 25

- 9:00 Plenary: Jamie Krems (*Aula*)
- 10:00 Coffee break
- 10:20 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 11:40 Lunch (*Stakladen and Studenterbaren*)
- 13:00 Plenary: Nicolas Baumard (*Aula*)
- 14:00 Coffee break
- 14:20 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 15:40 Coffee break
- 16:00 Session talks (*Stakladen, Richard Mogensen, Preben Hornung, Mogens Zieler*)
- 19:00 Banquet, Award Ceremony, and Keynote (*Turbinehallen*)

## PLENARY AND KEYNOTE ABSTRACTS

(LISTED BY AUTHOR'S LAST NAME)

### KEYNOTE SPEAKER:

#### **Reimagining scholarly publishing to promote credible and trustworthy research**

*Brian Nosek*

The purpose of scholarly publishing is to facilitate the communication and interrogation of evidence and claims to advance knowledge production. The business of scholarly publishing interferes with this purpose. Research is inhibited by a scholarly publishing system that [1] is slow, incomplete, opaque, and static, [2] treats the paper as the only meaningful scholarly output, [3] offers dysfunctional, simplistic rewards based on publication and journal status, and [4] is calcified in legacy, commercial business models and infrastructure. Lifecycle Journals is an alternative approach to scholarly publishing intended to address these weaknesses and align the practice of scholarly publishing with its purpose.

### PLENARY SPEAKERS:

#### **Childhood Matters: The Importance of Development for the Evolutionary Human Sciences**

*Dorsa Amir*

Nearly a third of all humans on the planet are children. For most of humanity's time on this planet, that percentage was likely even larger, nearing half. What can we learn by more seriously considering the role that this substantial subpopulation has played in human evolutionary history? Given that humans exhibit a uniquely long and flexible period of dependence, unlike any other animals on this planet, I argue that an understanding of our species is incomplete without the study of childhood. I will briefly summarize the ways in which childhood has been historically incorporated into our understanding of human evolution, highlighting the strengths and weaknesses of prevalent approaches, including the common view of children as "pre-adults". I will then share an assortment of recent theoretical and empirical advances made possible through the rigorous study of children, including novel insights into the cognitive mechanisms underlying social decision-making, and a new framework through which to consider children's active contributions to cultural evolution.

## Human cultures as forests: The ecological approach to culture

*Nicolas Baumard*

Cultural phenomena all share certain features. They seem to come from outside individuals: individuals don't choose to be born into a monogamous society. They fall outside the range of voluntary individual action: even a very powerful person has trouble changing the vocabulary of a language or the supernatural beliefs that prevail in their group. Not only do they constrain the scope of individual action; they also provide opportunities for action that would not exist without them: no human being will build a steam engine without the work of thousands of others before him. Also, cultural phenomena pre-exist individual humans and can live on beyond them: words, works of art, institutions, games outlive their creators. Some of them can even live outside the humans that produce them, in the form of books, artifacts, and buildings.

In evolutionarily-minded sciences, predominant approaches in this regard have drawn on evolutionary biology. More or less explicitly by analogy with genes, cultural phenomena have been construed as the outcome of a process of "cultural evolution," whereby individuals inherit a culture alongside, and with equal causal status to, their genotype. Here we propose another way of approaching cultural phenomena, also inspired by biology, but which uses concepts from *ecology* instead of *evolution*. Ecology is the science that examines the interactions between organisms and between organisms and their environment. An ecosystem, such as a forest, mangrove, or a pond, is the result of these interactions. Ecology is thus ideally suited to analyze all sorts of interactions, from coercion to cooperation and from transmission to manipulation.

Specifically, I argue that key concepts from evolutionary ecology—such as extended phenotype, joint phenotype, ecological legacy, ecological succession—allow to better capture the key features of cultural phenomena, and thus provide a better framework for explaining culture than the idea that culture is analogous to the product of lineages of genes subject to replication and selection. Importantly, the ecological framework suggests that cultural phenomena are a kind of ecological phenomena, that is the product of individuals interacting with others' phenotypes and others' ecological legacies. As such cultural ecology is behavioral ecology continued and cultural phenomena should be studied like other ecological phenomena, that is through the adaptive lens.



## **The Truth about Fiction: Biological Reality and Imaginary Lives**

*Joseph Carroll*

In all known human cultures, people create and consume stories about imaginary human lives. To explain the mechanisms, ontogeny, phylogeny, and adaptive functions of this uniquely human behavior, we need to integrate two main areas of research: human life history theory, and neuroscientific research on the brain's Default Mode Network (DMN). Stories about imaginary lives are grounded in the motives, emotions, and cognitive characteristics of actual human lives. Human life history theory provides the most comprehensive and systemically integrated account of how actual human lives are organized. The DMN is a set of apex association cortices that integrate information from more modular parts of the brain and incorporate them within a continuously developing life narrative imbued with subjective, emotional meaning. The DMN has a crucial role in creating the self as a values-directed, goal-oriented agent, understanding other people both for cooperative endeavor and for competitive manipulation, integrating individual identity and social group identity, creating new linkages among ideas, and understanding multiple alternative possible courses of action. Those particular functions add up to one overarching adaptive function: creating an imaginative virtual world, an inner world, that guides our behavior in the actual, physical world. Fictional stories influence readers' imaginative world views, help shape their self-images and personal narratives, and inform the values that determine their goals. Imaginative constructs are animated by the basic motives of human nature. But every element of human nature is altered—constrained and modulated—by being incorporated within an imaginative virtual world. The human capacity for creating an imaginative virtual world has been the culminating adaptation of the long human trajectory of gene-culture coevolution.

## **Friendship as a multiplayer challenge**

*Jaimie Krems*

Friendships can have positive impacts on health, happiness, and likely fitness. But, in part because much of our research tradition has prioritized romantic relationships, we know less about how these communal bonds work. My research aims to redress this gap by revealing the computational design of human friendship psychology. I begin from the premise that having friends—and enjoying the related benefits—requires people to meet multiple and likely recurrent challenges (e.g., finding, making, keeping friends). I also introduce the 'embedded dyad framework', which improves our ability to describe these challenges: Just as better describing the shape of a lock allows us to generate better predictions about the design of its key, better describing the shapes of friendship challenges allows us to generate better-informed predictions about how people solve them (or, really, about the design features of the

psychological tools that people use to solve them). In particular, this framework increases our descriptive power by providing a more ecologically-valid view of the social relationship landscape—one emphasizing that dyads, the focus of much relationships work, exist embedded in wider and often densely-interconnected networks. Therein, one’s dyadic partners—here, friends—frequently interact with other people, which can influence one’s friends, friendships, and outcomes. Thus, friendship challenges are likely to possess not only well-recognized dyadic components (e.g., getting friends to like us), but also comparatively overlooked supra-dyadic ones (e.g., getting friends to like us *more than they like their other friends*). I discuss how this framework generates novel predictions about the shape and solutions for three friendship challenges: finding, making, and maintaining friends.

### **Subjective selection and the evolution of ubiquitous cultural patterns**

*Manvir Singh*

In 1896, Franz Boas declared that “the most difficult problem of anthropology” was to explain cultural traditions “that develop with iron necessity wherever man lives”. In this talk, I will present a research program that aims to return to Boas’s problem using tools and insights from modern sociocultural, cognitive, and evolutionary approaches. Addressing shamanism, music, and punitive justice, I will draw on cross-cultural and long-term ethnographic research suggesting that complex, ubiquitous cultural traditions reliably emerge as humans create and preferentially retain traditions that appear to satisfy regular proximate goals, reconciling diverse approaches within cultural evolution. Our profound cultural similarities reflect our capacity to craft culture that compellingly satisfies widespread motivations.

*Lisa Feldman Barrett*

TBA

*Judith Maria Burkart*

TBA

## AWARD COMPETITION ABSTRACTS

(LISTED BY AWARD COMPETITION)

### **NEW INVESTIGATOR AWARD:**

#### **Genetic markers of cousin marriage and honour cultures**

*Olympia L. K. Campbell Cecilia Padilla-Iglesias, Grégory Fiorio, Ruth Mace*

Honour cultures, where individuals feel required to respond to threats to their honour with violence, remain common. One manifestation of honour cultures, honour killings, result in the death of thousands of women every year, often at the hands of close family members, representing an evolutionary puzzle. However, it is relatively unknown as to why this emerged, although some have noted that honour cultures typically occur among groups practising high rates of cousin marriage. Here we test a hypothesis that cousin marriage is associated with the strength of an honour culture cross-culturally. Using the average genomic inbreeding coefficient of an ethnic group, as a measure of the historical practice of cousin marriage, we show that this is associated with the likelihood of justifying honour killings against women, but not men, across 52 ethnic groups. These associations also hold between regions within countries using proxies of honour cultures, such as the number of women employed outside the home. We discuss our findings in the context of parent-offspring conflict over consanguineous marriage choices and we add to the growing literature on the relationship between intensive kinship and cultural traits.

#### **Prosocial religions as folk-technologies of mutual policing**

*Léo Fitouchi* Manvir Singh, Jean-Baptiste André, Nicolas Baumard

Why do humans believe in gods that punish uncooperative behaviors? Leading accounts argue that prosocial religions evolved because they help societies grow and promote group cooperation. Yet recent evidence suggests that prosocial religious beliefs are not limited to large societies and might not have strong effects on cooperation. Here, we propose that prosocial religions, including beliefs in moralizing gods, develop because individuals shape supernatural beliefs to achieve their goals in within-group, strategic interactions. People have a fitness interest in controlling others' cooperation—either to extort benefits from others or to gain reputational benefits for protecting the public good. Moreover, they hold the folk-psychological belief that other people could be deterred from cheating if they feared supernatural punishment. Thus, people endorse supernatural punishment beliefs to manipulate others into cooperating. Prosocial religions emerge from a dynamic of mutual monitoring, in which each individual, lacking confidence in the cooperativeness of conspecifics, attempts to incentivize their cooperation by

endorsing beliefs in supernatural punishment. We show how variants of this incentive structure explain the variety of cultural attractors towards which religious evolution converges. We review cross-disciplinary evidence for nine predictions of this account and use it to explain the decline of prosocial religions in modern societies.

**The social leverage effect: Institutions transform weak reputation effects into strong incentives for cooperation**

*Julien Lie-Panis Léo Fitouchi, Nicolas Baumard, Jean-Baptiste André*

Institutions explain humans' exceptional levels of cooperation. Yet institutions are at the mercy of the very problem they are designed to solve. They are themselves cooperative enterprises, so to say that institutions stabilize cooperation just begs the question: what stabilizes institutions? Here, we use a mathematical model to show that reputation can sustain institutions without such a second-order problem. Our premise is that cooperative dilemmas vary in difficulty. Some are easy: they can be solved by reputation alone because cooperation is cheap, behaviors are observable, or interactions occur within small groups of kith and kin. Others are hard: they cannot be solved by reputation alone. Humans need not tackle hard cooperation problems head on. Instead, they can design an institution, which (a) is based on an easy cooperation dilemma, and (b) generates enough new incentives to solve the initial hard cooperation problem. Our model leads us to view institutions as technologies that humans have invented and gradually refined to build the most mutually beneficial social organizations that can be sustained by reputation alone. Just as a pulley system helps lift heavy loads with minimal effort, institutions maximize the potential of limited reputational incentives, helping humans achieve extended levels of cooperation.

**POST DOCTORAL AWARD:**

**Infant altercentric cognition as a solution for early limited mobility.**

*Velisar Manea Victoria Southgate*

As a solution to information selection early in life, when infants are relatively immobile, infant cognition was proposed to be altercentric (Southgate, 2020), and visual exploration primarily guided by the easily exploitable cues of others' attention. These cues filter the input for the young mind even in the absence of communicative contexts, while having the advantage of highlighting information specific to the environment the infant is born in. In support of this hypothesis, we showed that 8-month-olds commit a memory error when witnessing events with others,

misremembering an object where another agent last saw it. In non-social controls the memory error is not present. By 12 months, the altercentric bias recedes (Manea et al., 2023). Here we test whether the oxytocin system plays a role in the existence of this bias early at 8 months. High concentrations of oxytocin during infancy (Nishizato et al., 2017) increase attention to social stimuli, and may reduce self-related encoding. We will present partial results on the relationship between oxytocin concentration and the trajectory of the altercentric bias from a sample of  $n=120$  infants, at 8 and 12-months of age by relating salivary oxytocin concentration with our event co-witnessing paradigm described above.

### **The Role of Opposition to Abortion in Shaping Policy Preferences: Unveiling Hidden Reproductive Goals.**

*Jordan Moon Jaimie Arona Krems*

Pro-life individuals frequently assert that sanctity-of-life concerns drive their attitudes. Per this “Face-Value Account,” the more strongly people oppose abortion for such reasons (e.g., “abortion is murder”), the more they should support policies preventing abortions. A “Strategic Account” suggests that underlying reproductive goals drive policy positions and predicts a different pattern of preferences—that abortion opponents prioritize policies discouraging casual sex. In two between-subjects experiments (one pre-registered;  $N=1427$ ), US participants evaluated fictive bills described as preventing the same exact number of abortions via means that varied in their implication for casual sex (e.g., abortion bans vs. comprehensive sex education). In both experiments, opposition to abortion was positively associated with support for restrictive bills discouraging casual sex (punishing abortion-seeking women, abstinence-only sex education)—but negatively associated with support for a bill not likely to discourage casual sex (comprehensive sex education with birth control provision). Further, the strongest abortion opponents had significantly higher support for the restrictive bills than for Comprehensive Sex Education; this preference was robust controlling for social and economic conservatism and religiosity. Results largely supported the Strategic Account, suggesting abortion attitudes are influenced by nonconscious, unvoiced goals, such as restricting others’ casual sexual behaviour.

### **Investigating the evolutionary roots of gossip: The effects of gossip on cortisol, beta-endorphins and cytokine levels.**

*Konrad Rudnicki, Charlotte De Backer, Karolien Poels, Bianca Beersma, Elena Martinescu, Irina Spacova, Caroline Dricot, Sarah Lebeer*

The evolutionary theory of gossip suggests that gossip functions similarly to social grooming in primates, aiding in the exchange of social information and reducing stress, particularly among prosocial individuals. This theory was explored through two studies. The first, a laboratory experiment, investigated whether gossip among friends could alleviate stress by influencing cortisol levels, beta-endorphin release, and autonomic activity (measured via skin conductance and heart rate variability). The second study, conducted in a workplace setting, examined the relationship between gossip and the levels of pro-inflammatory cytokines, indicators of chronic stress. Results from the lab experiment indicated that gossip does not alter the acute release of cortisol or beta-endorphins but does significantly impact both sympathetic and parasympathetic activity. The field study revealed paradoxical effects of workplace gossip on stress: it correlated with increased self-reported stress yet also with higher job satisfaction, suggesting its role as a coping mechanism in stressful environments. Additionally, gossip was linked to lower cytokine levels, but only among pro-self individuals, contrary to our initial hypothesis. Overall, these findings imply that gossip can reduce stress, but its effectiveness is highly context-dependent and not universal.

## SESSIONS AND SYMPOSIA ABSTRACTS

(LISTED IN ALPHABETICAL ORDER BY PRESENTING AUTHOR'S LAST NAME)

### **Do The Facts Matter? How Do Politicians and Citizens use Different Evidence to Update Their Policy Preferences.**

*Lene Aarøe, Miceal Canavan, Julian Christensen*

*SESSION #3: POLITICS*

Abstract: Statistics and personal narratives are fundamental types of evidence in political debate. Statistical information provide a macro, data-driven perspective on a issue whilst personal narratives describe the personal experience of an individual affected by the issue. A key feature of modern political debates is that the information environment is highly competitive where people are exposed to different sides of the issue simultaneously. Yet, little research has examined the persuasiveness of statistical information and personal narratives in competitive environments where they each illuminate different dimensions of a societal problem. Integrating theories from evolutionary psychology into research on political communication we outline a model for understanding the impact of statistical information and personal narratives in competitive information environments. Our ancestors lived in small groups for most of human evolutionary history which suggests that human psychological mechanisms evolved to process the kind of vivid, small-scale social information that was key to navigate such environments. This suggests that people are better able to encode this type of information and draw inferences from it compared with abstract statistical information. By implication we predict that exposure to just a single personal narrative will crowd out the effect of statistical information on political opinions. We explore the role of emotions as an underlying psychological mechanism. We test the argument in large-scale online survey experiments fielded to an elite sample of politicians and a sample of "ordinary citizens" in Denmark.

### **Socio-Economic Status: A Social Construct with Genetic Consequences.**

*Abdel Abdellaoui*

*SESSION #6: EVOLUTIONARY PSYCHOLOGY AND BEHAVIOURAL GENETICS:  
FRUITFUL UNION OR SHIPS PASSING IN THE NIGHT?*

In human civilizations, individuals are born or sorted into different levels of socio-economic status (SES) through social stratification. SES is known to cluster both in families and geographically, and has been associated with detectable genetic effects. Here, we discuss recent findings in genomics research in light of the

hypothesis that SES is a dynamic social construct that can exert selection pressures on genes associated with traits that help in achieving or retaining a certain socio-economic position. Social stratification results in people with varying talents being placed into strata with different environmental exposures, which could result in evolutionary selection pressures through differential mortality and reproduction rates and non-random mating. This correlation between genes and environmental exposures confounds genetic effect estimates. Recent cultural developments may have influenced these selection pressures in ways that increase social inequality. Novel tools in genomics research are revealing previously concealed genetic consequences of the way society is organized, which should be handled with caution in search for a fair and functional society.

**Resource risk and the origins of inequality: Evidence from a pastoralist economy.**

*Konstantinos Angelopoulos, Spyridon Lazarakis, Rebecca Mancy, Dorice Agol, Elissaios Papyrakis*

*SESSION #10: RESOURCES AND ENVIRONMENT*

Resource risk generates variation in resources that propagates over time to generate longer-run wealth inequality because savings decisions are a function of these resources. Understanding the importance of the resource risk mechanism for wealth inequality in small-scale economies can shed light on the origins of inequality. Our study focuses on a pastoralist economy in which wealth is held in livestock, there is virtually no financial market penetration, informal community-level arrangements do not insure away negative shocks, and production and storage technologies resemble those of early economies. We collected and analysed survey data from traditional Turkana pastoralist communities in Kenya to measure wealth inequality and household-level shocks to both herd growth and human time input into resource generation, capturing additional income sources and co-insurance effects. The data reveal high wealth inequality and substantial resource risk that depends on droughts. Using modelling analysis that links wealth accumulation to resource risk and century-long data on droughts we show that the empirical wealth distribution is completely explained by savings decisions under shocks to resources. These results highlight the importance of resource risk and human behavioural responses for the emergence of inequality in human societies.

**The Origins of Qeirat Values.**

*Mohammad Atari, Ivan Kroupin, Helen Davis, Jonathan Schulz, Joseph Henrich*

*SESSION #9: MORALITY AND NORMS*



Evolutionary and social psychological theories suggest that social perception plays a key role in making decisions on mate choices, relationships, friendships, etc. Previous studies have explored social perception using static cues like facial symmetry, skin colour, and body shape from static stimuli such as photographs. However, real-life judgements are made on moving bodies and less is known about the dynamic cues that may have an influence on our perceptions. This study chose two contrasting forms of movements—walking and dancing—to study the perception of three basic factors: attractiveness, competence and warmth. While walking is a simple and common form of movement, dancing is a complex form of movement which also plays a role in wooing and courtship. To separate dynamic from static cues, motion-capture technology was used. Normal videos and motion-captured videos of walking and dancing were collected from 100 individuals along with their photographs which were rated for attractiveness, competence and warmth by 102 raters. Sexual dimorphism ratings were collected based on the motion-captures walking and dancing videos. Multiple regression analysis showed both static and dynamic cues were significant predictors of said social factors. The study also found sex and sexual dimorphism had a significant effect on the perception of attractiveness, competence and warmth. This study also explored the differences in social perception between the two forms of movements chosen. These findings suggest that movements play a significant role in social perception and sex and sexual dimorphism in movements has a strong influence on the way we perceive each other.

### **Love at First Fright**

*Paola Baca, Talia Chachkes, Melis Demiralp, Coltan Scrivner*

*SESSION #2: BLITZ TALKS*

Previous research suggests that play can be a safe proxy for dangerous situations, enabling individuals to navigate and learn from simulated threats. The horror genre embodies this concept, known as "scary play," allowing people to safely engage with fear and anxiety. Interestingly, "scary play" may offer insights into romantic partners' reactions under stress. Specifically, it may give men a chance to demonstrate bravery, while women observe their male counterparts' responses to danger. Prior studies, using horror films, indicated that men enjoyed the films more when their female date was scared, and women preferred it when their date exhibited courage. This study revisits these observations in a heightened scenario: a haunted house. We surveyed heterosexual couples ( $n = 222$ ) before and after they experienced a haunted attraction. Our results indicate that men enjoyed the haunted house more when their partner was visibly frightened ( $r = .19$ ,  $p = .034$ ). Women's enjoyment wasn't significantly tied to male bravery ( $p = .984$ ); however, they found

their partners more attractive when they behaved courageously ( $r = .21$ ,  $p = .004$ ). This study provides insight into how people may use recreational horror to observe and display certain common mate preferences.

### **Darwin, Media, and Misconceptions: a Study of Laypeople's Literacy in the Evolutionary Sciences.**

*Louis Bachaud, Romain Gauchon*

*SESSION #9 COGNITION AND MEDIA*

'Public understanding of evolutionary science has been studied extensively, with a main focus on identifying misunderstandings of natural selection among teachers and pupils, in order to help design the best evolutionary science curricula possible. However, there has been little investigation yet on public understanding of the human evolutionary behavioral sciences. Yet, these disciplines face their own specific misconceptions from the public, such as the naturalistic fallacy, confusion between ultimate and proximate causes of behavior, or the "blank slate" view of human nature. This study is the first to empirically assess public scientific literacy in the evolutionary sciences, through a 20-item science quiz that includes scientific reasoning, endocrinology, genetics, evolutionary biology, and evolutionary psychology. Two groups of respondents were recruited: one from the general US population ( $n=151$ ) and one from online men's groups whose ideology relies in part on evolutionary psychology ( $n=148$ ). Results shed light on laypeople's understanding of our disciplines and its sociodemographic correlates (such as level of education). Furthermore, this survey investigates respondents' sources of scientific knowledge (YouTube, books, Wikipedia, etc.). Analysis of the results allows to establish different profiles of "science learners," and explore the interaction between sources of scientific knowledge and misconceptions about evolutionary human sciences.

### **The perils of being replaceable: partner choice undermines people's stake in their partners' welfare.**

*Pat Barclay, Aleta Pleasant*

*SESSION #1: MATING PSYCHOLOGY 01*

According to current theory and experiments, cooperation is more likely evolve when organisms can choose to replace bad partners with good ones. However, there is a downside to this partner choice: when partners can be easily replaced, organisms have less stake in their partners' welfare, and will therefore be less likely to help keep those partners alive and well enough to reciprocate. We support this argument in two ways. First, we present a mathematical model showing that when a third-party is

present, organisms will provide more observable help to their partners (reciprocity/signaling-based helping), but less anonymous help that would keep that partner in good condition (stake-based helping). Second, we present data from an online experiment (N=1429) where participants played a multi-round Prisoner's Dilemma, partway through which they could anonymously pay to help their partner survive and continue the game. Participants helped good partners less if that partner could be easily replaced by another cooperator. Altogether, our findings show that partner choice undermines people's stake in their partners. We also highlight the importance of differentiating between helping that relies on observation (e.g., reciprocity, signaling), helping that requires no observation (e.g., kinship, stake), and how the two types interact.

### **Coalitional formidability assessment mechanisms in humans.**

*Henrikas Bartusevicius, Samira Aminihajibashi, Stefan Goetz, Thomas Hagen, Eric Skoog*

*SESSION #5: DISEASE, PSYCHOLOGY AND COALITION*

In hostile human interactions, assessing the formidability of opponents—before potential combat—is vital. Fighting formidable opponents risks injury and death, while deferring to weak ones may result in reputational and resource costs. Accordingly, studies have revealed the existence of rapid and accurate fighting capacity assessments, extracting formidability information about individual opponents from minimal cues. Here, we probe the existence of analogous mechanisms specialized to the domain of coalitional aggression. Fifteen hypotheses were derived predicting efficient detection and assessments of human coalitions. Across 25 exploratory studies (N > 4,500), based on extant psychophysiological paradigms adapted for online administration, we found preliminary evidence corroborating the hypotheses. Participants automatically attended to, and then rapidly and accurately determined the numerical size of, schematic coordinated male-like coalitions. These assessments were influenced by individual (e.g., self-assessed formidability) and contextual (e.g., perceived availability of coalitional support) characteristics. To confirm these findings and assess cross-cultural variation, we currently design 8 preregistered experiments, spanning 20,000 participants across 30 countries. The data will be collected in February and March 2024. Coalitional formidability assessment mechanisms, if confirmed across cultures, may constitute signature evidence that coalitional aggression or small-scale war has characterized human evolution—a subject of long-standing multidisciplinary debate.

### **Variations in human personality with resource availability: a meta-analytic review.**

*Thomas Beuchot, Mélusine Boon-Falleur, Coralie Chevallier, Nicolas Baumard*  
 SESSION #1: BLITZ TALKS

Evolutionary psychology and behavioural ecology posit that organisms adaptively modify their behaviour in response to environmental cues. In particular, individuals living in so-called resource-rich ecologies should favour long-term and high-risk/high-reward strategies. This idea suggests that people living in resource-rich ecologies should score higher on the Big Five personality traits: extraversion, openness to experience, agreeableness, conscientiousness and emotional stability. To test this prediction, we present a meta-analysis examining the relationship between Big Five personality traits and resource availability. We rely on three types of measures: macro-level measures (GDP per capita); micro-level measures (parental income); and micro-level exogenous resource shocks (cash transfers). In line with the predictions of the theoretical literature, the overall pattern confirms that increased resource availability is associated with more extraversion, more openness to experience, more emotional stability, and more conscientiousness. We do not find a significant association with agreeableness. These results should however be nuanced as they depend on the measure used for resource availability.

### **Estimating the global number of languages over the Holocene**

*Damian Blasi*

SESSION #11: LANGUAGE

Linguistic diversity is both a proxy and a cause of human cultural diversity and as such a reflection of our species' cultural nature. Most extant linguistic diversity resulted from a handful of important demographic, social, and technological events during the Holocene. However, contemporary methods are unable to extrapolate past stages of global linguistic diversity over this period because (1) language change is highly sensitive to a host of extra-linguistic factors that have changed substantially over the Holocene, and (2) they are honed for groups of ostensibly related languages (i.e. language families), which leaves extinct and small language groups out of the global picture. In this talk, we introduce a novel set of statistical models to estimate the number of languages that have existed at some point over the last 12,000 years, sourcing contemporary linguistic diversity data as well as insights from paleodemography, human biology, and ethnographic records. We find that the worldwide number of languages immediately before the Holocene was more likely smaller than today, and that its trajectory until today's 7,000 languages was most likely complex and non-monotonic, with a particularly eventful period of rapid expansion and contraction around 3,000-2,000 years ago.

**Global differences in experiences of hostility on social media reflect political and economic inequalities.**

*Alexander Bor, Antoine Marie, Lea Pradella, Michael Bang Petersen*

*SESSION #3: POLITICS*

Concern about the hostility of political discussions on social media is widespread. Dominant public and scholarly narratives frequently attribute this hostility to common features of large social media platforms (such as anonymity, recommendation algorithms and echo chambers), suggesting that hostility develops as people log onto such platforms. Yet, knowledge is extremely scarce about how the wider sociopolitical context influence this process, in part because of a limited research focus on a few Western countries. Here, we assessed users' experiences of online hostility in 30 countries across six continents (N = 15,202) to examine the role of the offline context. Building on insights from evolutionary psychology, we develop the argument that online hostility may be driven by a minority of status-seeking individuals, who are equally predisposed to be hostile in face-to-face and online political discussions. These individuals are particularly likely to emerge in environments characterized by political or economic inequality. Consistent with this argument, the findings demonstrate that people in less politically and economically equal countries suffer from more hostility on social media than people in more equal countries. Furthermore, we find that in all surveyed countries, people with strong status-seeking motivations are significantly more hostile both online and offline than people with low status-seeking motivations and that such individuals are more numerous in unequal countries.

**How is women' sexuality affected by hormonal contraceptive use? Evidence for positive average treatment effects and high heterogeneity based on longitudinal data.**

*Laura Botzet, Julia M. Rohrer, Lars Penke, Ruben C. Arslan*

*SESSION #10: HORMONES AND CONTRACEPTION*

Women's reproductive behavior is regulated by hormones, but hormonal contraceptives interfere with these endocrine mechanisms, potentially affecting women's sexuality. Two challenges in researching the effects of hormonal contraceptives on women's sexuality are the estimation of causal effects in a naturalistic setting and the large interindividual heterogeneity in the effects reported by women. Using the longitudinal PAIRFAM data (6,836 women, 14 waves), we estimated the average treatment effects on sexuality (sexual frequency, desired sexual frequency, sexual satisfaction) and separated them from other sources of association (effects of observed and unobserved confounding variables, reverse

causality and attrition bias). We found evidence for positive average treatment effects of hormonal contraceptives on sexual frequency and sexual satisfaction. In addition, we found high heterogeneity in interindividual treatment effects. Our results contribute to understanding the effects of hormonal contraceptives on sexuality in a naturalistic setting, where women adapt their choice of contraceptive method to their own experiences. By exploring the effects of hormonal contraceptives on sexuality, our project aims to improve the understanding of women's reproductive behavior and its regulation by endocrine mechanisms.

### **Borrowing in Rural Morocco: the Role of Social Emotions and Social Norms.**

*Maria Brackin, Sarah Alami*

*SESSION #9: MORALITY AND NORMS*

Access to credit is a key aspect of financial inclusion. In rural areas of Morocco, borrowing rates are persistently low and largely unresponsive to interventions. Existing explanations for low credit use include structural barriers, lack of trust in institutions, and religiosity. Despite documentation of negative attitudes towards credit use, and evidence for “debt aversion” in experiments, little attention has been paid to potential psychological and social barriers to real-world borrowing. Drawing from an evolutionary psychology perspective, one complementary explanation for low credit use is the importance of reputation in human communities. Social emotions, emerging from concern for the welfare and perception of others, may encourage or deter borrowing. Likewise, social norms about borrowing may reinforce avoidance of debt due to concern about reputational damage. To test this reputational hypothesis, we collected data about formal and informal borrowing practices in the rural village of Tizzoughaghine in Morocco. Our findings suggest that social norms and perceptions contribute to borrowing choices, with a strong relationship between attitudes and formal borrowing by men, and a strong relationship between perceived borrowing rates and informal borrowing by women. We also find some evidence for the importance of social emotions such as guilt and gratitude.

### **Can Religion Drive Economic Complexification in Early Human Societies? A Cross-Cultural Analysis of North American Archaeological Data**

*Zach Buck*

*SESSION #11: BELIEF SYSTEMS & CROSS-CULTURAL STUDIES*

Varied niche construction approaches to religion in early human societies suggest religious specialization and economic complexification share a co-evolutionary

relationship. However, limited analyses exist in the archaeological domain to test this assumption at a cross-cultural scale. Should religion and religious morphology be seen as a driver of early economic complexification, or only its product? To investigate the relationship of social complexity and religious specialization in early human societies, the following paper presents findings from a cross-cultural analysis of 21 North American indigenous archaeological traditions with data hosted on eHRAF: Archaeology. Results provide mixed support for an approach to religion as a driver of economic complexification, with religious control of food storage and feasting important mediators. These results are interpreted in light of recent work which emphasizes food storage as a basic economic element required for the development of religious specialization, as well as Hayden's paleo-political ecology (PPE) model, a classic theory in North American archaeology on the relationship between food storage, religion, feasting, and social complexity. Discussion additionally focuses on interactions between niche construction approaches which emphasize religion's adaptive benefits and the PPE model, which focuses religion's capacity to stabilize social inequality.

### **Playing with Dolls: Sex-Biased Play and Supernatural Beliefs Across Cultures**

*William Buckner, Nachita Rosun*

*SESSION #11: BELIEF SYSTEMS & CROSS-CULTURAL STUDIES*

Material objects that repeatedly emerge across independent societies represent an important source of evidence for understanding the evolution of human cognition. Using the electronic Human Relations Area Files (eHRAF) World Cultures database, we investigated the presence of dolls across a global sample of 111 primarily non-industrial societies. Dolls functioning as toys are noted for the majority of these societies, and are often reported to be played with mostly or exclusively by young girls. These dolls are commonly used in imitative caregiving play, and this practice may provide an important role in training young girls for allomaternal care of siblings and future motherhood. However, distinct from their use as toys, dolls are also commonly reported to function as magical objects for adults, utilized for protection, increasing fertility, containing spirits, or violently punishing an enemy. Toy dolls are reported absent in some societies, and in rare cases children are even discouraged from playing with dolls due to their perceived supernatural power. We consider these findings in relation to the evolution of sex differences, norm psychology and the transmission of culture, and the cultural attraction of supernatural belief.

### **Self-Perceived Strength Mostly Calibrated Trust in Strangers in a Chinese Panel Dataset**

*Yuqiu Chen, Xiaoyu Ji, Zhi-jin Zhong, Jinguang Zhang*  
 SESSION #5: BLITZ TALKS

A growing body of research suggests that relative bargaining power (RBP)—a joint function of one’s ability to benefit and harm others—calibrates a wide range of personality traits. However, prior studies mostly used cross-sectional samples when the key predictors, including relative strength and attractiveness, were mostly self-reported, rendering causal directions unclear. Thus, we leveraged a Chinese panel dataset to test the calibration hypothesis of interpersonal trust (cf. Lukaszewski, 2013) given our long-term interest in this variable. Cross-sectionally (N = 2030, men = 913), we found that men’s physical height positively and significantly predicted their self-reported strength, which in turn positively and significantly predicted trust in kin, friends, acquaintances, and strangers (age and income were controlled for). However, cross-lagged models with 232 men and the same controls found that self-reported strength (Wave 1) only positively and significantly trust in strangers (Wave 2). A fixed-effects model confirmed this result, ruling out potential time-invariant confounds (e.g., more trusting people were more likely to complete follow-up questionnaires from strangers). Our findings support the calibration hypothesis of interpersonal trust but suggest that—at least for the Chinese men in our sample—self-perceived strength mostly calibrates their trust in strangers.

**Who is the 'ingroup'? The influence of mortality and resources on group boundaries.**

*Minyoung Choi, Oliver Sng, Joshua Ackerman*  
 SESSION #10: RESOURCES AND ENVIRONMENT

Who counts as your “ingroup,” and why? Drawing on behavioral ecological work, we hypothesized that people have evolved to regulate their ingroup boundaries adaptively, shifting the breadth of their group boundaries depending on ecological conditions. Specifically, we hypothesized that people might broaden their ingroup boundaries when the local ecology poses greater mortality threats, while they constrain their ingroup boundaries when the local ecology is characterized by greater resource scarcity. Indeed, we find evidence that suggests this is so. Studies 1 and 2 found that greater mortality threat in one’s ecology predicted a broader ingroup boundary (i.e., higher outgroup trust, more identification with communities), while resource scarcity predicted a narrower ingroup boundary (i.e., lower outgroup trust, less identification with communities). Perceptions of ingroup size were also measured to see if people regulate them depending on ecological conditions. The nature and function of ingroup boundaries will be discussed.



### **Sex differences in spatial navigation: Is the jury in?**

*Edward Clint, Connor M. Hulst, Richard C. Francis, Edward K. Clint, Winter Smith, Elliott R. Sober. Theodore Garland, Justin S. Rhodes*

*SESSION #9: SEX EFFECTS*

Sex differences in wayfinding, locations, and related cognitive performance have been well documented in humans and other species. These differences have been attributed biological adaptations that evolved due to differential selection pressures resulting from dimorphic ecological roles, such as the greater need for one sex to routinely, effectively traverse larger distances than the other. This hypothesis was largely accepted as being empirically substantiated prior to cross-cultural studies or robust exploration of alternative hypotheses. The total body of evidence including cross-cultural studies, recent animal studies, and our new cross-species comparative analysis provide substantial evidence that the theoretical and empirical basis of the adaptation hypothesis requires reexamination. Limitations basic to a cross-species literature review prevent the analysis from compelling the firmest conclusion of rejection but nonetheless shines a bright light on the opportunities to improve our methods and hypotheses.

### **In challenging family environments maternal grandmothers continue to go the extra mile.**

*David Coall, Shantha Karshigesu, Francesca Robertson, Elizabeth Wenden, Julie Dare, Ruth Marquis*

*SESSION #3: FAMILY STRUCTURE 2*

Evidence supports the adaptive role grandparents play in enhancing fertility and survival in their descendants. As grandparents' roles simultaneously diversify (e.g., family structural change) and intensify (e.g., grandparents as primary carers) we need to explore the boundary conditions of this role. Using data from Western Australia, including the Indigenous community, this study investigates whether the strongest association in this field, the role of maternal grandmothers (MGMs), remains in 530 families where grandparents are raising their own grandchildren. MGMs were most likely to participate in this study (n=319, 60%) followed by paternal grandmothers (n=138, 26%), maternal grandfathers (n=50, 9%) and paternal grandfathers (n=23, 4%). Compared to all other grandparent types, MGMs reported more years caring for grandchildren, younger age of grandchild when they come into care, and more grandchildren who continued to come and go from their care. These often complicated caring commitments, may increase the life-time cost to MGMs, reflected in lower general health. MGMs reported fewer descendants (grandchildren and great-grandchildren), however this is likely due to younger MGM age. This study shows that even in difficult family situations where grandparents are

raising grandchildren, a potentially common family structure throughout human history, maternal grandmothers continue to go the extra mile.

### **De-Confounding Sex and Sex of Partner in Mate Preference Research.**

*Ashley Coventry, Selina Mixner, Benjamin Gelbart, Kathryn Walter, Daniel Conroy-Beam, Tamsin German*

*SESSION #1: MATING PSYCHOLOGY 01*

Much of the previous research examining sex differences in human mate preferences has used exclusively heterosexual participants. Consequently, this prior work overlooks a critical issue: in heterosexual populations, participant sex and partner sex are perfectly confounded. It is impossible to distinguish from previous work whether sex differences in preferences result from males and females having different preferences, or from people having different preferences for male compared to female partners. We teased apart this fundamental problem by examining ideal long- and short-term preferences for both male and female partners in a large ( $n = 433$ ), bisexual sample. We found that sex differences in mate preferences are largely driven by participant's own sex and not by the sex of one's partner. A notable exception was that preferences for resources were driven by the partner's sex, not participant sex. Additionally, both males and females set higher standards for the traits of male partners compared to female partners overall. These findings suggest that a person's mate preference psychology is shaped by both one's own sex as well as the sex of the person they are considering and elaborates on our understanding of the proximate psychology of mate preferences.

### **Collective ritual, cohesion, & cooperation: The case of fiestas in Oaxaca, Mexico.**

*Cameron M. Curtin*

*SESSION #4: COOPERATION*

The ubiquity of costly collective rituals across human societies poses an evolutionary puzzle. Evolutionary anthropologists have proposed that collective rituals enhance group solidarity and cooperation, providing an edge in intergroup competition and facilitating the spread of these practices. Studies have found support for this hypothesis, showing that collective rituals can foster cohesion and cooperation in both lab and real-world settings. Here we test this hypothesis in a novel, naturalistic setting: patron saint fiestas in Oaxaca, Mexico. These elaborate, multi-day festivals involve a range of collective ritual activities, such as dancing, music-making, and processions. Using ethnography, surveys, and a behavior economics game, we study the biggest annual fiesta in one Zapotec village. Employing a within-subjects design

with 36 participants, we compare cohesion, prosocial attitudes, and cooperation several months before and immediately after the fiesta. In contrast to prior research on this topic, our data reveal declines in ingroup altruism and cooperation after the fiesta, and no change in cohesion. Nonetheless, we find that the fiesta itself is a huge cooperative endeavor for the community.

**"The worst in the world!" Misinformation and mischief in discourse about violence.**

*Martin Daly & Gretchen Perry*

*SESSION #9 COGNITION AND MEDIA*

Beliefs about violence are often at odds with reality. One example is a popular myth among journalists, lay people, and even academics in New Zealand that their country has exceptionally high rates of family violence (even "the highest in the world"), although the data clearly indicate otherwise. Another is alarmism about a "rising tide" or "epidemic" of partner violence against women, even where the evidence says that rates of such violence have been declining for decades. These misapprehensions often reflect self-interest: sensationalism sells newspapers, and those raising funds for abused women have little reason to acknowledge that the problems they seek to address are already in decline. But mistaken beliefs also take hold because the data required to assess them cannot be observed by any individual, because people are not good at estimating probabilities at the best of times, and because of "error management", whereby risk perception is biased to avoid underestimating dangers. Unfortunately, these misperceptions encourage further error by suggesting that useful innovations such as mandatory arrest and improved shelter availability are ineffectual, and thus impede sound policy-making. Reality, insofar as it can be assessed, is a better basis for action.

**The influence of timing and cause of grandmaternal death on grandchildren's educational success.**

*Mirkka Danielsbacka, Antti O. Tanskanen, Hanna Remes, Riikka Sallinen, Riina Peltonen, Pekka Martikainen, Niina Metsä-Simola*

*SESSION #3: CULTURAL FAMILY STRUCTURE 2*

Previous studies have proposed that grandmaternal investment can improve the educational success of their grandchildren. Grandparental death causes the loss of investment, and when preceded by disabling illness and need of support, it could involve a period in which grandparents and grandchildren compete for the resources of the middle generation. To study whether the timing and cause of grandmaternal death influence their grandchildren's educational success, we

compared maternal siblings (n=154,940) using sibling fixed effects models and Finnish Census Panel data. We found a modest, but robust, gradient by the timing of grandmaternal death: The earlier the grandmaternal death was, in relation to a grandchild's completion of comprehensive school, the lower the grandchild's grade point average (GPA). This gradient seemed the most pronounced among grandchildren whose grandmothers had succumbed to dementia – a disease associated with particularly large care needs. A similar gradient was observed by a grandchild's age at grandmaternal death: The younger a grandchild was at grandmaternal death, the lower was the child's GPA. The results suggest that both, the loss of grandparental investment and competition over the middle generation's resources, may contribute to poorer educational outcomes of grandchildren.

**What does your laugh mean? Socio-contextual information in volitional laughter.**

*Virgile Daunay Gregory Bryant, Andrey Anikin, David Reby, Katarzyna Pisanski*  
 SESSION #6: THE EVOLUTION AND FUNCTION OF HUMAN NONVERBAL VOCAL COMMUNICATION

Human nonverbal vocalizations, such as laughter, serve as a reliable means to express intended emotions and motivations. While the acoustics and perceptual differences between volitional and spontaneous laughs have been extensively studied, little is known about the specific communicative functions of volitional laughter. Moreover, the relationship between laughter and its social contexts remains unclear. A representational approach argues for the presence and perception of contextual information within laughter acoustics, and affect induction approaches posit that laughter without context remains ambiguous, primarily functioning to directly influence the listeners' emotional state. Our study involved participants producing volitional laughs in eight different contexts, from positive situations like watching a comedy to more negative scenarios (the “dark side” of laughter) such as mocking someone. Classification algorithms and human listeners demonstrated above-chance but generally low accuracy (below 30%) in recognizing these social contexts, highlighting the complexity of distinguishing laughter contexts. Acoustic features, including pitch, spectral features, and voice quality, varied across contexts, and these predicted affective perceptions like authenticity, emotional valence, dominance, and arousal. The findings suggest an intermediate approach: while additional laughter features may be present in the external environment and may be crucial for specific socio-contextual disambiguation, acoustics convey initial affective cues.

### **Social relationships, poverty, and energetic regulation.**

*Arran Davis, Emma Cohen, Daniel Nettle*

*SESSION #2: FACES*

In humans, the presence of interdependent, cooperative relationships signal safety and access to energetic resources. Social cues are therefore an important input for homeostatic systems, such as fatigue and pain, that protect the body from harm and govern the use of bioenergetic resources. Experimental research suggests that social support reduces perceptions of pain and fatigue, potentially via less cautious protective and energetic strategies in the presence supportive social relationships. The current study is the first to investigate these effects in a large, observational dataset. We used responses to the 21-country European Social Survey 7 to investigate the effects of poverty, loneliness, and their interaction on a pain, fatigue, and low energy symptom cluster (henceforth, symptom cluster). Results revealed significant main effects of loneliness and income, such that lonely individuals score higher on the symptom cluster, and that as income decile decreases, scores on the symptom cluster increase. We also found a significant loneliness by income interaction; the effect of loneliness on the symptom cluster was stronger amongst those on lower incomes. We discuss potential mechanisms linking perceived isolation and low social capital to the homeostatic processes that influence protective and energetic strategies and, ultimately, health outcomes.

### **Cultural Selection and Social Media Engagement: Understanding the Influence of Cognitive Attractive Factors on the Spread of Misinformation on Facebook.**

*Petra de Place Bak, Ethan Weed*

*SESSION #9 COGNITION AND MEDIA*

How do factors of cultural attraction influence engagement behavior on digital social media? Drawing on research on cognitive attraction in social transmission, we tested how previously identified content biases influence engagement behaviors on social media. Specifically, we focused on the presence of social, threat-, and intergroup-related information, and sentiment expressions. Misinformation was chosen as an appealing empirical case as it, in contrast to truthful information, can be 'optimized' for cognitive appeal. We examined 1,022,526 instances of engagement (reactions, comments, shares) generated by 356 misleading Facebook posts. The data was collected from the Danish IFCN-certified fact-checking organization TjekDet's website and annotated by two independent coders. We evaluated the relationship between the presence of cognitive attractive factors and the number of engagements a post received by fitting a Bayesian negative binomial regression model. The study showed that cognitive attractive factors are frequently present in misleading posts. However, only intergroup-related information, and positive, and

negative sentiment expressions increased overall engagement. The effect was primarily driven by an increase in the number of shares. Furthermore, the finding that social and threat-related information did not increase engagement suggests that some biases fade in social media where memorization is not a prerequisite for retransmission.

### **Diachronic analysis of moral virtues in the early modern period before the Industrial Revolution.**

*Mauricio Dias Martins, Nicolas Baumard, Attila Keleman, Francesca Bonalumi, Claus Lamm*

*SESSION #9: MORALITY AND NORMS*

Recent work suggests that the Industrial Revolution was more likely to occur in England because its society developed preferences for traits related to long-term oriented cognition, such as cooperation, industriousness, and intellectual exploration (Baumard, 2018). Moreover, rising living standards may have facilitated these preferences. We tested these hypotheses by quantifying the importance of moral virtues expressed in English vs. French theatre plays from 1651-1789 (N = 929 and 925). Using natural language processing tools, we computed the frequency of words pertaining to 6 broad virtue categories (Peterson & Seligman, 2004), explored their temporal variation across the two countries, and assessed the predictive role of GDPpc. We also replicated the analysis using data-driven clusters. We found that Knowledge (creativity, curiosity, judgment, knowledgablness, perspective) and Humanity (love, kindness, sociability) were more salient in England before the Industrial Revolution ( $\beta = -1.420, p < .001$ ;  $\beta = -0.369, p < .001$ ), while Transcendence (awe, gratitude, hope, humour, spirituality) was more salient in France ( $\beta = 1.709, p < .001$ ). Country differences in Knowledge were partially explained by GDPpc (temporal precedence and 14% mediated effect,  $p < .001$ ), while its role was less clear for the other virtues.

### **Assessing and explaining the rise of imaginary worlds: An evolutionary approach**

*Edgar Dubourg, Rayan Safan, Valentin Thouzeau, Nicolas Baumard*

*SESSION #1: IMAGINATIVE CULTURE*

We hypothesize that imaginary worlds in fictional stories tap into exploratory preferences. Evidence suggests that these exploratory preferences evolved to guide organisms to unknown territories, notably by making cues of new environments interesting to cognition. Because curiosity-driven exploration has been shown to be adaptively enhanced in enriched environments, we hypothesize that the increasing

success of imaginary worlds in contemporary cultures is caused by economic developments in human societies (Dubourg & Baumard, 2022, Behavioral & Brain Sciences). Using psychological experiments (N=200) and online data (Facebook likes, N=3.5 millions), we show that people who enjoy imaginary worlds are higher in Openness to experience, a personality trait that captures people's level of curiosity (Dubourg et al., 2023, Scientific Reports). Additionally, we use both an automatic annotation method with Large Language Models (Dubourg et al., 2023; N=32,311 novels) and manual annotation of 500 novels (from the Odyssey, 450 BCE, to Narnia, 1950) to quantify the novelty level of these imaginary worlds. Measures of affluence emerged as more robust predictors than time in explaining the increase in worldbuilding, suggesting that as societies become more affluent, there is a corresponding increase in the cognitive appeal of such novel fictional environments.

### **Developmental convergence of scientific reasoning across a diverse set of populations.**

*Alejandro Erut, Jesse Peregrino, Alexander Etz, Linda Abarbanell, Florencia Anggoro, Adote Anum, Vivian Dzokoto, Frankie Fong, Susan A. Gelman, Benjamin Jee, Bruce Mannheim, Mark Nielsen, Noratthiah Nordin, Guillermo Salas Carreño, Ciara Wirth, Zachary Taylor, Cristine H. Legare*

*SESSION #9 COGNITION AND MEDIA*

According to cultural evolutionary theory, cultural representations are shared via social transmission chains that are influenced by cognitive biases, learning mechanisms, cultural attractors, and institutional regulations. However, little is known about whether the convergence of cultural representation over development is population-specific. One possibility is that within a generation, the cultural stock of (adult) representations constitutes the convergence point of the developmental trajectory of children's representations over time and across domains. Alternatively, due to variable cultural and ecological inputs, there may be no consistent pattern of developmental convergence (DC). This preregistered study examined DC in scientific reasoning among children (ages 6-14) and their parents. We presented five problems in a vignette format, each representing a distinct scientific reasoning concept (e.g., control variable, sampling)—N~2,586, Sites=12. We analyzed a) if children's developmental trajectories converge with adult averages, b) if the target of convergence is culturally specific or general, and c) if the trajectory is dependent on the first time point measured. Our findings indicate that a) developmental convergence of scientific reasoning is the norm in most samples rather than the exception, b) the trajectories and the convergence points are culturally specific, and c) the trajectory is not predicted by the starting point.

### **Outrage in Moral Punishments: The Dual Dynamics of Anger and Disgust in Personal Experience and Social Signaling.**

*Lei Fan, Joshua Tybur, Catherine Molho, Tom Kupfer, Disa Sauter*

*SESSION #6: EMOTION & HUMOR*

Exploring the emotional landscape in moral punishments, two projects examine the roles of anger and disgust in responses to moral transgressions, through perspectives of personal experience and social signaling. The first project, with two studies (N's = 908, 360), investigates how the interpersonal value of victims by observers affects their emotional and aggressive responses. The results indicate a stronger association of interpersonal value with anger and direct aggression, compared to disgust, which is more linked to indirect aggression. Additionally, anger correlates with both direct and indirect aggression, while disgust is tied only to indirect aggression. The second project, comprising three studies (N's = 800, 1630, 1100), explores the communicative functions of anger and disgust expressions in outrage. Findings show that perceptions of anger lead to expectations of direct aggression, whereas perceptions of disgust lean towards indirect aggression. This highlights the distinct roles of these expressions in shaping expectations of aggression. Together, these projects reveal the complex mechanisms of emotional experience and signaling in transgression contexts, affirming stable associations between anger and direct aggression, and disgust and indirect aggression, from both experiencer and observer perspectives. They advance understanding of the dynamics in human social interactions and moral judgment.

### **Free descriptions from first impressions of voices**

*David Feinberg, Jessica Ostrega*

*SESSION #11: LANGUAGE*

How do we perceive voices? Most research on voice perception focuses on rating voices for different attributes such as dominance, attractiveness, trust, etc. These attributes have evolutionary significance, but do we know that they are significant to listeners? To test this we asked hundreds of people to describe more than 1000 voices instead of rating them. We used both topic analysis, and hand coded the semantic fields of each descriptive word. Both methods yielded similar results. The top 10 topics people described voices as (in order) were: Age, Gender, Personality (e.g. HEXACO/Big 5), accent, intelligence, energy level, race, voice pitch, normality, and charisma. Next on the list were socioeconomic status, attractiveness, and dominance. This study supports the idea that conscious descriptions of voices map well onto the attributes that researchers have focused on. Perhaps, the order of importance is different, but there was nothing people described voices as that isn't in



the realm of extant voice rating studies. Whether or not these ratings are based on kernel of truth is equivocal.

### **The Battle of the Brides: Co-Wife Aggression as a Springboard for Studying Women's Intrasexual Mating Competition.**

*Maryanne Fisher*

*SESSION #10: MATING PSCYHOLOGY*

Here I examine the dynamic of co-wife aggression utilizing evidence from the eHRAF World Cultures database. My goal is to elucidate the underlying causes and strategies of competition among co-wives, who represent multiple women engaged in intense mating competition for the limited resources from one man. Co-wife aggression is an adaptive response stemming from resource competition over male investment in one's offspring, and directly impinges on wives' reproductive success and inclusive fitness. Searches were limited to records containing the terms polygamy and wives, with cohabiting, aggression, violent, or fight. Preliminary findings indicate an interplay of strategies used by co-wives that range from direct physical aggression to subtle forms of manipulation (e.g., gossip, social exclusion, altering husband's perception), and alliance formation (i.e., to increase status and reputation), reflecting a nuanced understanding of social dynamics within polygynous households. In rare instances children are used to win competition. Further, they may also compete via differential reproduction, attempting to bear more children, thereby securing a larger portion of the husband's resources for their offspring. Mediation tends to involve the husband, the acknowledgement of hierarchy, and inclusion of sororal rather than unrelated co-wives. Directions for future research into women's intrasexual mating competition will be presented.

### **Testosterone and sexual behaviour: Findings from a large, representative British population sample.**

*Georgina Ford, E. Morrison*

*SESSION #10: HORMONES AND CONTRACEPTION*

The impact of testosterone on human behaviour has long been a well-researched area. Despite mixed findings within the literature, the apparent universally acknowledged impact of testosterone on sexual behaviour, particularly in men, persists (Duke et al., 2014). This study aimed to address methodological issues in hormonal research, by using a large-scale, stratified population based British sample and assess the relationship between salivary testosterone and sociosexuality, young adult sexual behaviours, and sexual maturation as predicted by Life History Theory

and the Challenge Hypothesis. Key findings are that testosterone is related to aspects of sociosexuality, but more so with women than men. Moreover, although Adverse Childhood Experiences were not found to be related to adult testosterone, they did significantly predict sexual debut in men and women and maturational tempo in women. The significance of this work is that for the first time, one of the world's largest sexual behaviour surveys has been used to investigate evolutionary informed hypothesis. Further, it addresses prevailing issues with hormonal research, such that overwhelmingly there is a reliance on small, unrepresentative sample sizes with relatively unstandardised, mixed data collection, with often limited control of covariates.

### **Genetic similarity between relatives provides evidence on the presence and history of assortative mating**

*Hans Fredrik Sunde, Nikolai Haahjem Eftedal, Rosa Cheesman, Elizabeth C. Corfield, Thomas H. Kleppesto, Anne Caroline Seierstad, Eivind Ystrøm, Espen Moen Eilertsen, Fartein Ask Torvik*

*SESSION #11: PARTNERS, PARENTHOOD, FAMILIES*

Assortative mating – the non-random mating of individuals with similar traits – is known to increase trait-specific genetic variance and genetic similarity between relatives. However, empirical evidence is limited for many traits, and the implications hinge on whether assortative mating has started recently or many generations ago. Here we show theoretically and empirically that genetic similarity between relatives can provide evidence on the presence and history of assortative mating. First, we employed path analysis to understand how assortative mating affects genetic similarity between family members across generations, finding that similarity between distant relatives is more affected than close relatives. Next, we correlated polygenic indices of 47,135 co-parents from the Norwegian Mother, Father, and Child Cohort Study (MoBa) and found genetic evidence of assortative mating in nine out of sixteen examined traits. The same traits showed elevated similarity between relatives, especially distant relatives. Six of the nine traits, including educational attainment, showed greater genetic variance among offspring, which is inconsistent with stable assortative mating over many generations. These results suggest an ongoing increase in familial similarity for these traits. The implications of this research extend to genetic methodology and the understanding of social and economic disparities.

**Moderation of hormonal associations with women's extra-pair sexual interests by partner sexual attractiveness: A preregistered study.**

*Steven Gangestad, Tran Dinh*

*SESSION #9: SEX EFFECTS*

Nearly two decades ago, scholars found support for the hypothesis that naturally cycling women partnered with unsexy men show increased extra-pair sexual attraction when conceptive during their cycles (peri-ovulatory phase), compared to when non-conceptive (e.g, luteal phase)—and more so than women partnered with sexy men (e.g., Pillsworth & Haselton, 2006; Larson et al., 2012). Since then, there have been questions regarding the robustness of this effect. We conducted a preregistered (osf) study of 258 women, recruited from the online platform Prolific. Women completed daily surveys of sexual interests for 30 consecutive days. Estradiol and progesterone levels were estimated from backward counts from onset of next menses (Arslan et al., 2023). Partner sexual attractiveness moderated associations of both estradiol ( $p=.021$ ) and progesterone ( $p=.005$ ) levels with extra-pair interests. Separate analyses found moderation of the association of conception probability (estimated from backward counts) with extra-pair interests ( $p=.001$ ). For women partnered with unsexy men, extra-pair interests increased with estradiol levels (and conception probability) and decreased with progesterone levels. Women partnered with sexy men did not show significant hormone-associated changes in extra-pair interests. Contrary to prior claims, moderation effects may be sizeable and importantly inform theory concerning hormonal influences on women's sexual interests.

**Decision-making expertise and intelligence are associated with conflict resolution skills among recently settled Ethiopian hunter-gatherers.**

*Zachary Garfield, Edward H. Hagen*

*SESSION #1: BLITZ TALKS*

Group living increases inter-individual conflicts, making efficient conflict resolution essential. Institutions can facilitate conflict resolution, however, in egalitarian societies which emphasize personal autonomy, leadership is key in maintaining group cohesion. This study uses data on 12 psycho-social traits from a sample of 60 individuals from a Chabu community, an Ethiopian forager-horticulturalist egalitarian society. We employ network-based methods and Bayesian multi-level modeling to identify trait clustering, trait-based linkages, and the key predictors of conflict resolution skills. We found conflict resolution skills cluster with decision-making abilities, intelligence, social alliances, and expertise, while being respected and liked form another distinct cluster. Aggressiveness, being feared, and farming productivity form a third separate cluster. After accounting for inter-rater variation, sound

decision-making and intelligence (i.e., neural capital) were positive predictors of conflict resolution skills, while aggressiveness was a negative predictor. When it comes to effective conflict resolution, it is neither better to be feared nor loved. Instead, under egalitarianism, individuals equipped with high neural capital emerge as effective conflict mediators. Our results shed light on leadership phenotypes associated with conflict resolution. Additionally, they carry implications for the evolution of group living, highlighting the role of neural capital in promoting effective conflict mediation within egalitarian societies.

### **Where does the Green-Eyed Monster Lurk? Jealousy Across 37 Cultures.**

*Benjamin Gelbart, Daniel Conroy-Beam*

*SESSION #6: EMOTION & HUMOR*

Emotion researchers disagree over whether jealousy is a dedicated emotion adaptation, a blended byproduct of other emotions (e.g., a blend of anger and sadness), or a psychological construction. Adaptationist approaches suggest that jealousy is an adaptation well-designed for protecting valued relationships in response to rival threats. Under this account, men and women should reliably differ in their jealousy responses to sexual and emotional infidelity, and these responses should be facultatively calibrated by relevant ecological cues. Here, we test these possibilities using jealousy and infidelity data across 37 countries (N = 14,761). In keeping with adaptationist accounts, sex differences in jealousy responses as a function of infidelity type replicated around the world. Furthermore, for the first time, we find that emotional infidelity yielded significantly more investment diversion than sexual infidelity. Moreover, consistent with facultative calibration accounts, the results suggest that jealousy is most intense among those who are more sociosexually restricted, lower in mate value relative to their partner, and unable to attract high-quality alternatives. Taken together, these results speak against blended and constructionist accounts and suggest that jealousy is a dedicated adaptation. More broadly, these results highlight the benefits of special design evidence in distinguishing between competing accounts of emotion.

### **Heritability of humor production ability - a twin study.**

*Gil Greengross Nancy Segal, Jaakko A. Kaprio, Paul Silvia*

*SESSION #6: EVOLUTIONARY PSYCHOLOGY AND BEHAVIOURAL GENETICS:  
FRUITFUL UNION OR SHIPS PASSING IN THE NIGHT?*

Sense of humor is a universal human attribute, enjoyed daily by people all over the world. Researchers agree that humor has an evolutionary basis, but the nature of the

adaptive function of humor is disputed. Relatively little is known about the sources of individual differences in humour and what might contribute to developing a great sense of humour. The current study is the first attempt to examine the heritability of humor production ability by evaluating the relative contributions of genetic and environmental factors to the development of humour ability, based on a twin study design. Four hundred and eighty-one pairs of MZ twins and 219 pairs of DZ twins ( $\bar{x}$  age = 60 years, mostly female) from the Twins UK registry completed a humor production task requiring them to compose a funny caption for a captionless cartoon. Results revealed no evidence of additive genetic effects, with substantial shared environmental effects. While previous studies have found a substantial genetic component for humour appreciation and humour styles, humor production ability is more complex and harder to assess. Other limitations are discussed, as well as suggestions for improved tools to assess humor ability.

### **Biological and cultural evolution of feminine honor: An ideological mate guarding account.**

*Pelin Gül, Tom R. Kupfer, Sajad Sojoudi, Stephen Foster*  
 SESSION #9: MORALITY AND NORMS

Feminine honor norms require women to cultivate a reputation for sexual purity through behaviors such as wearing modest clothes or maintaining virginity before marriage. Although the consequences of these norms for women are well-understood, little is known about their evolutionary and psychological origins. We propose that feminine honor serves an ideological mate guarding function that is shaped by sexual jealousy and mating strategy. We sought evidence for our novel hypothesis, drawing from samples in the US, Turkey and Iran, and considering the diverse ways that feminine honor can be enacted and transmitted. In the US, dispositional jealousy and experimentally induced state jealousy increased support for feminine honor norms, particularly in men. Associations with dispositional jealousy and mating strategy generalised to Turkish and Iranian participants, and expanded to disapproval of female promiscuity in social media, support for restricting women's social freedom, and intentions to punish norm violators. Results held beyond masculine honor, religiosity, and political conservatism. Our research highlights mating motives as a crucial psychological mechanism for understanding the origins and maintenance of feminine honor in and beyond honor cultures. It also reveals the nuanced ways in which both genders can contribute to its transmission.

### **Cycle phase and hormonal correlates of within-women shifts in voice attractiveness**

*Goirik Gupta Mei Mei, James Roney*

### *SESSION #5: BLITZ TALKS*

Do women's voices sound more attractive on days of the menstrual cycle when conception is possible? Some prior research has supported this pattern. To provide further evidence on this question, we collected voice samples from 39 women with confirmed ovulation on four weekly testing occasions per woman. Participants recorded a neutral phrase (the rainbow passage) and a phrase with a social context (invitation to a cup of coffee). Timing of ovulation was confirmed using urinary luteinizing hormone (LH) tests and used to estimate which voice samples were produced during the fertile window (defined as days -5 to 0 relative to the day of ovulation). Approximately 100 raters rated each voice sample for attractiveness. Contrary to some prior findings, voice attractiveness was not rated significantly higher for fertile window voice samples than for samples collected in other cycle regions. Additionally, contrary to prior findings, which suggest a negative within-subject correlation between voice attractiveness ratings and progesterone, we did not find such an association between the two variables. Our findings raise doubts regarding whether voice attractiveness is a reliable perceptual cue of women's ovulatory timing.

### **The Psychological Ability to Cope Reduced Infections During the Pandemic: A Two-Year Population-Based Study of The Determinants of 123 Million COVID-19 Test Results in Denmark.**

*Lasse Hansen, Frederik Jørgensen, Michael Bang Petersen*

*SESSION #5: DISEASE, PSYCHOLOGY AND COALITION*

The evolved psychology of disease avoidance stipulates that fear of infection reflect the activation of behavioral strategies to avoid pathogens. In contrast, the broader field of health psychology has highlighted appraisals related to the ability to cope (e.g., the feeling of being able to cost-effectively adhere to government advice) and argued that coping appraisals are superior predictors of protective behavior against health threats. In this study, we directly compare fear of infection and coping appraisals as predictors of protection against actual infection the COVID-19 pandemic. To this end, we utilize a unique data infrastructure from Denmark that couple surveys of 8 % of the adult Danish population (N= 385,334) with the results of all 128 million COVID-19 tests performed in Denmark during 24 months of the COVID-19 pandemic. Overall, controlling for a comprehensive range of sociodemographic measures and employing panel data to bolster internal validity, we observe that coping appraisals consistently lead to a decrease in individuals' probability of COVID-19 infection risk. We find no consistent evidence for a similar effect of fear of infection. Fear mainly seems to index -- to some extent, accurately -- individual feelings of infection exposure.

## **Multivariate Constraints on Mate Preference Evolution**

*Kaitlyn Harper, Brendan Zietsch*

*SESSION #2: BLITZ TALKS*

A myriad of human mate preferences are thought to have evolved due to their indirect fitness benefits – that is, their association with having fitter offspring and thus greater inclusive fitness. While these evolutionary mechanics are straightforward in the case of a single trait and preference, it is more difficult to extend this verbal model to multiple traits and preferences. To address this issue, we used agent-based models to simulate the evolution of one to ten sets of traits and corresponding preferences. Agents' traits and preferences were each influenced by 40 loci. Agents used the Euclidean distance of partner traits from their preferences to evaluate potential partners and formed exclusive reproductive pairs based on the Resource Allocation Model. In our model with only one trait and preference, both easily evolved to the optimal values. However, preference evolution was distinctly constrained in models with multiple traits and preferences. At ten traits and preferences, the preferences did not evolve at all, while trait evolution was unaffected. This result reflects the trade-offs individuals face when evaluating potential partners based on several traits simultaneously. Our findings suggest that new hypotheses may be needed to explain the myriad of mate preferences reported in humans.

## **What Do Hunter-Gatherers Find Funny? Ethnographic Descriptions of Humor in Traditional Societies.**

*Marc Hye-Knudsen*

*SESSION #6: EMOTION & HUMOR*

Across cultures, people seem to find many of the same things funny. Competing theories of humor have been forwarded to account for this apparent convergence. Adopting a view of humor as an evolved response to benign violations, I argue that four comic themes characterize most humor across cultures: Pain and misfortune, sex and obscenity, the foreign, and the sacred. I propose that each of these themes are ultimately grounded in our evolved psychology as universal pressure points that humor can tap into. In support of my account, I review more than one thousand descriptions of humor in the ethnographic record of the ten hunter-gatherer societies in the Probability Sample Files: the Mbuti, the Andamans, the Aranda, the Ona, the Bororo, the Copper Inuit, the Tlingit, the Klamath, the Blackfoot, and the Ojibwa. I document the presence of the four comic themes across these ten cultures,

delineating the most common gags and subthemes within each major theme. I finally discuss the relevance of these findings for our understanding of the evolution of humor and its adaptive function.

### **Supernatural languages as natural conlangs**

*Aritz Irurtzun*

*SESSION #11: LANGUAGE*

Laboratory research on ‘language evolution’ has uncovered a set of biases that humans act upon when acquiring their languages (e.g. Tamariz & Kirby, 2016). Here I propose a characterization of supernatural ritual languages as ‘natural conlangs’, and thus as comparable to the ‘laboratory conlangs’ of those works. I compiled a Ritual Language DataBase which provides a typology of over 280 linguistic systems related to supernatural rituals across the world, systematically documenting several features of each practice (the intended function, user type, modality, grammatical strategies employed...). A comparative analysis uncovers patterns and the significant role of users, functions, and modalities when shaping the structure of supernatural ritual linguistic practices. This is remarkable, given the fragmentary and uneven evidence reported in the ethnographical and linguistic records where these languages are attested, which I argue suggests the effect of universal cognitive biases underlying. From this, a hierarchy of supernatural languages can be established as a tension between the search for Strangeness (the more the language employed departs from the normal human ‘norm’, the most plausible the magical powers of the user look to the community) and Learnability (the more systematic and predictable a language is, the easiest its replication by a next generation).

### **Modelling cultural systems and their evolutionary consequences.**

*Fredrik Jansson, Andrew Buskell, Magnus Enquist*

*SESSION #9: CULTURAL EVOLUTION AND SOCIAL LEARNING*

Models of cultural evolution tend to study traits in isolation, often for good reasons, since the purpose is typically a tractable simplification of core aspects of evolutionary processes. However, many behaviours cannot be explained unless we consider the interdependence between traits. For example, some traits are more compatible than others, and this fact should influence their transmission. The belief in Shiva is harder to spread if the potential recipients already believe in a monotheistic god. We here propose a mathematical modelling framework that takes into account that cultural traits are embedded in webs of relations and sequentially acquired and selected in light of previously acquired traits. Through analysis and simulations, we illustrate how



structural properties and individual filters can give rise to different patterns of change at the population level, and can generate both individual skills and group phenomena such as polarisation. We argue that a systems approach offers the potential for a more thorough understanding of the source and character of emergent phenomena, and an increased scope of cultural evolution, whereby faithful transmission, the spread of maladaptive traits, self-organisation and cultural selection can be accounted for by systems dynamics, thus providing a potential alternative account to some innate biases.

**Consensus in social judgments of faces across world regions is driven by effects of distinctiveness on perceptions of prosociality, rather than effects of masculinity.**

*Benedict Jones, Junzhi Dong, Kathlyne Leger, Anthony J Lee, Alex L Jones, Yasaman Rafiee, Zuzana Elliott, Lisa M DeBruine, Victor Shiramizu*

*SESSION #2: FACES*

Social judgments of faces influence important social outcomes. Although many researchers have argued that facial masculinity plays a key role in perceptions of prosociality and dominance, whether these effects are consistent among people from different world regions is highly contentious. Consequently, we investigated possible relationships between masculinity and face ratings made by 11,484 participants from eleven world regions (Africa, Asia, Australia and New Zealand, Central America and Mexico, Eastern Europe, Middle East, Scandinavia, South America, United Kingdom, United States and Canada, Western Europe). Surprisingly, masculinity did not significantly predict perceived prosociality or dominance in any regions. By contrast, facial distinctiveness (i.e., atypicality) was significantly and negatively correlated with prosocial perceptions in all regions. Collectively, our results suggest that consensus in social judgments of faces among people from different world regions is driven by the effects of distinctiveness on prosocial perceptions (i.e., an “anomalous-is-bad” stereotype), rather than the effects of masculinity.

**Why We Love Huckleberry Finn (and Hate the Ending).**

*Emelie Jonsson*

*SESSION #4: EVOLUTIONARY ANALYSIS AND IMAGINATIVE CULTURE*

Huckleberry Finn is one of the most beloved novels in English—and one of the most controversial. Throughout its history of scandals and bans, scholars have puzzled over its ending: the reappearance of Tom followed by a sudden abandonment of moral consequentiality in favor of a prolonged, cruel prank on Huck’s companion Jim. Both this ending and the general interactions of Huck and Tom can be illuminated by an

evolutionary understanding of agonistic structure. Tom, and to a lesser degree Huck, diverge from the pattern of nineteenth-century male protagonists: a disinclination to dominance behavior and a focus on subsistence and cultural acquisition above romantic pursuits, coupled with very low Extraversion; low Neuroticism; and moderate Agreeableness, Conscientiousness, and Openness to Experience. This protagonistic profile mirrors the human egalitarian syndrome and creates reader sympathy, but it also correlates with low reader interest. Tom and Huck are more interesting—but also divisive—because they add antagonistic traits that have been linked to modern antiheroes. Tom resembles the Dark Empath personality: combining Machiavellianism and Narcissism with a capacity for empathy. Huck is empathetic, Machiavellian and eschews cultural acquisition. The ending subordinates Huck to Tom, simultaneously channeling Huck's antagonistic profile and using Huck's protagonistic vulnerabilities.

### **Threat vocalisations are acoustically similar between humans (*Homo sapiens*) and chimpanzees (*Pan troglodytes*).**

*Roza Kamiloglu, Cantay Çalışkan, Katie Slocombe, Disa Sauter*

*SESSION #6: THE EVOLUTION AND FUNCTION OF HUMAN NONVERBAL VOCAL COMMUNICATION*

In behavioural contexts like fighting, eating, and playing, acoustically distinctive vocalisations are produced across many mammalian species. Such expressions may be conserved in evolution. For instance, we have previously demonstrated that human listeners ( $n = 3120$ ) can accurately infer behavioural contexts not only from conspecific vocalisations, and but also heterospecific vocalisations. These findings point to the possibility of acoustic regularities in the vocalisations of phylogenetically related species. Here, we test this hypothesis by directly comparing the degree of acoustic similarity between human and chimpanzee vocalisations ( $n = 344$ ) produced in 10 similar behavioural contexts (e.g., being tickled, being separated, discovering food, threat). We use two complementary analysis methods for testing acoustic differentiability of vocalisations for specific contexts between species: Pairwise acoustic distance measures (Euclidean, Cosine, Correlation) and acoustic separability metrics based on unsupervised learning algorithms (KMeans++, Spectral Clustering). Cross-context analysis revealed that acoustic features of vocalisations produced when threatening another individual were distinct from other types of vocalisations and highly similar across species. Using a multi-method approach, these findings demonstrate that human vocalisations produced when threatening another person are acoustically similar to chimpanzee vocalisations in the same situation as compared to other types of vocalisations, likely reflecting a phylogenetically ancient vocal signalling system.

### **Socioeconomic status and dispersal in early adulthood in Finland.**

*Jenni Kauppi, Alyona Artamonova, Milla Salonen, Mirikka Lahdenperä, Virpi Lummaa*  
 SESSION #1: FAMILY STRUCTURE 01

Internal migration is influenced by factors such as inheritance customs, household structures, marriage patterns, work opportunities, and kin ties. Socioeconomic status (SES) has a crucial role on shaping individual life-history and dispersal behaviour through various mechanisms. Parental income serves as an important resource during the transition from childhood into independent adult. Here we investigated how parental SES (low-, middle-, and upper-class) has affected the first moves of young men and women, between the ages 15-35 years, away from their birth parish through time (from 1760s to 1960s). Our data has been collected from Church records in historical and contemporary Finland, which here represents different temporal and social environments. We found that women disperse more than men, however, based on additional analyses, men disperse on average further away than women. Lower-class individuals consistently disperse more than middle- and upper-class individuals across all centuries. Notably, individuals with high SES had strongest increase in their dispersal probability through time. Our results suggest, that the impact of socioeconomic status on dispersal behaviour has changed in time; lower-class individuals have always had a substantial pressure to disperse, but both higher-class individuals potentially had a shift in their pressures or opportunities to disperse as the environment changed.

### **Beyond the Binary: Exploring Competitive Mating Strategies among Queer and Straight Women.**

*Karla Kenny, Maryanne Fisher*  
 SESSION #10: MATING PSYCHOLOGY

Considerable research has been dedicated to the examination of mating competition among heterosexual (“straight”) women, revealing the strategic use of various tactics. These include self-promotion, manipulating mate accessibility and perception of rivals, competitor manipulation, and competitor derogation, all directed towards securing high-quality male partners. Conversely, the exploration of mating competition strategies among queer women, defined in this study as women who date women, remains largely unexplored. Despite the long evolutionary history of same-sex relationships, a research gap persists, necessitating further research to understand the dynamics of mating competition within this demographic. Our comparative study reveals a noteworthy contrast, indicating that queer women report significantly less use of competitor manipulation and derogation compared to

their heterosexual counterparts. These findings raise the possibility that the nature of the sexual and/or romantic relationship itself may exert influence on competitive behaviors. One plausible explanation could be that in queer relationships, potential rivals may evolve into potential mates in the future – a dynamic absent in androphilic women, who typically compete for male partners. Preliminary data survey supports this hypothesis, indicating a unique pattern of mating competition among queer women.

### **Voice qualities express the moral character of fictional characters.**

*Jens Kjeldgaard-Christiansen, Zac Boyd, Míša Hejná, Mark Ølholm Eaton*

*SESSION #1: IMAGINATIVE CULTURE*

The voices of fictional characters can be made to express their moral goodness or badness: In *The Exorcist*, for example, the sick and broken voice of possessed Regan MacNeil was designed to express her moral corruption. However, little is known about how and how widely audiences base their moral intuitions about fictional characters on voice quality. This presentation starts by examining evolved psychological mechanisms whereby characters' voices may come to express their moralities. Presented next are the results of an online perception study in which 250 participants rated the moral qualities of 22 different fictional characters following brief exposure to their voices. The voice clips, all of which were performed by the same professional voice actor, were extracted from live-streamed sessions of *Dungeons & Dragons*. Participants came mainly from Europe and the Americas and had different degrees of familiarity with the fictional source materials. Results indicated general agreement among all participant groups in their assignment of moral qualities to the different characters. These judgments, moreover, largely agreed with the characters' actual role distribution, such that prosocial, helpful characters were judged to be morally good and antisocial, aggressive characters were judged to be morally bad.

### **Ownership as contingent cooperation: Infants expect cooperators but not competitors to respect each other's possessions**

*Erik Kjos Fonn*

*SESSION #2: BLITZ TALKS*

Human ownership behavior hinges on cooperation, and the failure to respect others' possessions may have detrimental social consequences. On the other hand, motives for cooperation and ownership respect should be balanced by motives for competitive resource acquisition. Therefore, whether or not a resource belongs to a

potential cooperator, who might seize future cooperation in the face of defection, should shape humans' propensity to respect ownership. In two experiments (N = 98) we tested whether this logic is inscribed in the infant mind. When 11–13-month-old infants saw two agents engage in a friendly, cooperative interaction (playing together with a resource), infants were surprised and looked longer when the main character later chose to take a resource belonging to its previous play partner, rather than taking a free, unpossessed resource. In contrast, infants looked equally long to the two same test events when the two agents had previously engaged in a resource fight, indicating no surprise when ownership was violated. This was also the case in a final baseline condition where infants received no information about the social relationship between the two agents. Together, this suggests that early-emerging expectations about ownership are fundamentally shaped by the relational and cooperative context.

### **How Personality Trait Distributions Shape Economic Disparities: Insights from Multi-Agent Simulations.**

*Guanghao Liu, Yu Chen, Hidenori Komatsu, Nobuyuki Tanaka, Yasuhiro Hashimoto, Ren Hayashi, Aoshi Suzuki*

*SESSION #2: PERSONALITY*

The Big-5 personality traits framework, consisting of Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (OCEAN), has been extensively utilized in analyzing individual personalities. Previous studies have established that each of the Big-5 traits can exert either a positive or negative influence on an individual's income and wealth. Nevertheless, on the macroscopic level, there remains a lack of understanding regarding how the distribution of personalities within social groups impacts the wealth distribution. In this paper, we introduce the Big-5 personality traits into an agent-based wealth distribution model, in which the likelihood of an agent gaining a new portion of wealth depends not solely on their wealth accumulation but also on various functional forms of Big-5 distributions. We executed simulations across five cases to examine how wealth distribution alters under the effects of diverse personality trait distributions. Our findings indicate that the specific form of wealth distribution, especially the conventional Pareto distribution, is profoundly influenced by personality trait distributions. Notably, individuals with extremely high or low Conscientiousness scores can lead to imbalances in wealth distribution across the entire system. Conversely, systems characterized by individuals with average Conscientiousness scores tend to exhibit reduced wealth inequality.

## **Understanding how Developmental Environments Shape Retirement Savings with a Life History Framework**

*Daniel Kruger, Morten Holm*

*SESSION #5: BLITZ TALKS*

Countries around the world face the crisis of inadequate retirement savings in large portions of their populations. Inter-temporal financial allocations are typically framed as rational decisions to maximize lifetime utility. However, those developing in more stable macroeconomic conditions show greater risk-aversion and longer investment horizons. We hypothesize that individuals who grew up in adverse rearing environments develop higher temporal discounting preferences and therefore save less for retirement than individuals who were raised in more nurturing environments. Prior studies in this area are based on experiments or use current financial situations as proxies. We test this hypothesis with a wide array of data from Statistics Denmark on the complete cohort of Danish individuals born in 1980. Confirming predictions derived from Life History Theory, individuals who grew up in adverse neighborhoods, without their fathers, and in low-income families have significantly lower retirement savings payments than individuals from more favorable rearing environments. Importantly, we include a powerful vector of control variables concerning laborers' income, wealth, job experience and family relations in adulthood including education, employer, and job rank fixed effects in our models. The marginal effect of income-increases on annual retirement savings payments is lower for individuals from adverse childhood environments.

## **Close and more distant relatives influence child mortality risk in historical Finland.**

*Mirkka Lahdenperä, Milla Salonen, Martin W. Seltmann, Takayuki Hiraoka, Jari Saramäki, Virpi Lummaa*

*SESSION #3: FAMILY STRUCTURE 2*

Humans are characterised as cooperative breeders as other members of the social group besides parents also take part in raising offspring. The individuals who invest most and increase child survival are usually the more closely related individuals. However, most studies investigating the effects on child survival have concentrated on only close kin and the effects of more distant kin remain unknown. Here, we investigated the associations of child mortality (0-5 years, n=32,000 children) with the presence of 38 different type of relatives, divided by the lineage (maternal/paternal) and sex in a historical Finnish population. We found that several paternal relatives (aunts, uncles and cousins) increased child mortality and many of the effects were seen among the wealthier, whose resource competition was likely more intense than in poor. The maternal grandmother decreased child mortality the most among the average and poor, who likely needed the grandmother's contribution to childcare

more than the wealthy. Our results bring new insights on the importance of kin and suggest that relatives can provide support or other resources but also compete for limited resources and care.

### **A Literary Cry for Help from Female Insings (Involuntary Single).**

*Mads Larsen, Leif Kennair*

*SESSION #4: EVOLUTIONARY ANALYSIS AND IMAGINATIVE CULTURE*

Modern mating markets relegate a growing number of men to being incels (involuntary celibate). Increasing attention befalls another group struggling on the same markets: female insings (involuntary single). In the partly autobiographical novel *Half of Malmö Consists of Guys Who Dumped Me* (2021), Amanda Romare dramatizes how urban dating and technologies like Tinder exploit women's evolved mate preferences in a manner that drives addiction and dysfunction. Many women have practically unlimited access to serial dating and short-term sex with highly attractive men, but such experiences can leave women less able to calibrate their mating strategies, thus making it harder to acquire a long-term partner. Romare argues that incels get too much attention, as our culture blinds us to the plight of lonely women. To investigate the insing phenomenon, we apply sexual strategies theory, sexual conflict theory, and other frameworks from evolutionary psychology. Mismatch, conflicting desires, and exploitative technologies make many women prioritize mate qualities that misalign with their own pair-bonding ambitions. Our analysis illustrates how both incels and insings fall victim to our evolved mate preferences. Communities that develop a better understanding of these preferences could improve intersexual communication, which might help them find more productive ways to mate.

### **Interstate Conflict Increases the Appeal of Undemocratic Candidates.**

*Lasse Laustsen, Kristian Vrede Skaaning Frederiksen*

*SESSION #4: BETWEEN DEMOCRACY AND DESPOTISM: SOCIO-ECOLOGICAL PREDICTORS OF LEADERSHIP*

Recent years have seen a rise in undemocratic behaviors from democratically elected leaders, still with such leaders benefitting from widespread public support. This project presents and tests a two-step theory addressing why citizens sometimes prefer undemocratic politicians. First, candidate undemocratic behavior affects citizens' trait impressions of candidates such that undemocratic acts increase impressions of dominance. Second, according to evolutionary models of followership, dominance constitutes a positive leadership asset in conflict contexts. In

sum, we suggest that citizens come to prefer undemocratic candidates in times of interstate conflict and war, because undemocratic candidates are seen as more dominant. We test our theory across three well-powered and pre-registered studies. Two conjoint experiments (N=3,800) show that respondents form dominance impressions of political candidates from information about whether a candidate complies with democratic principles or behaves undemocratically. Second, a vignette-based survey experiment (N=2,500 representative Americans) supports that candidates engaging in undemocratic behaviors receive a boost in leadership evaluations relative to democratically compliant candidates in situations marked by interstate conflict (by priming either the Russian-Ukrainian war or the Chinese-Taiwanese conflict). Results are discussed in relation to existing theories about citizens' acceptance of undemocratic candidates and citizens' trait preferences in leaders.

**Institutions leverage the power of reputation to solve the problem of cooperation in large-scale societies.**

*Julien Lie-Panis Léo Fitouchi, Nicolas Baumard, Jean-Baptiste André*

*SESSION #1: BLITZ TALKS*

Institutions explain humans' exceptional levels of cooperation. Yet institutions are at the mercy of the very problem they are designed to solve. They are themselves cooperative enterprises, so to say that institutions stabilize cooperation just begs the question: what stabilizes institutions? Here, we use a mathematical model to show that reputation can sustain institutions without such a second-order problem. Our premise is that cooperative dilemmas vary in difficulty. Some are easy: they can be solved by reputation alone because cooperation is cheap, behaviors are observable, or interactions occur within small groups of kith and kin. Others are hard: they cannot be solved by reputation alone. Humans need not tackle hard cooperation problems head on. Instead, they can design an institution, which (a) is based on an easy cooperation dilemma, and (b) generates enough new incentives to solve the initial hard cooperation problem. Our model leads us to view institutions as technologies that humans have invented and gradually refined to build the most mutually beneficial social organizations that can be sustained by reputation alone. Just as a pulley system helps lift heavy loads with minimal effort, institutions maximize the potential of limited reputational incentives, helping humans achieve extended levels of cooperation.



### **Desire for social status affects marital and reproductive attitudes: A life history mismatch perspective**

*Amy Lim, Hernando Granados-Chong*

*SESSION #2: BLITZ TALKS*

Modern low fertility is an unresolved paradox. Despite the tremendous financial growth and stability in modern societies, birth rates are steadily dropping. Almost half of the world's population lives in countries with below-replacement fertility and is projected for a continued decline. Drawing on life history theory and an evolutionary mismatch perspective, we propose that desire for social status (which is increasingly experienced by individuals in industrialized, modern societies) is a key factor affecting critical reproductive preferences. Across two experimental studies (total N = 719), we show that activating a desire for status can lead people to prefer reproductive tradeoffs that favor having fewer children, thereby predicting preferences for delaying both marriage and having a first child. These data support an evolutionary life history mismatch perspective and suggest a complementary explanation for declining fertility rates in contemporary societies, especially developed and economically advanced ones.

### **Perceived personal mortality risk as an internal regulatory variable**

*Joseph Manson, Mitchell Landers*

*SESSION #5: BLITZ TALKS*

Life history theory posits that extrinsic mortality risk is the principal driver of life history strategy, including behavioral traits. This suggests that perceived personal mortality risk (PPMR) is an internal regulatory variable (IRV). PPMR is hypothesized to take, as input variables, (1) the harshness and unpredictability of childhood environments (setting a baseline PPMR, i.e., an individual's expected age at death) and (2) present-day perceptions of safety and access to material and social resources (affecting acute or short-term PPMR, i.e., self-estimated probability of death in the near future). Hypothesized outputs of PPMR include future orientation, mating orientation, and aggression. We measured baseline and acute PPMR and 15 hypothesized input variables at six different points over a 12-month period among 118 USA and 138 UK adults. Baseline and acute PPMR were only modestly ( $r = -0.39$ ) correlated, supporting the hypothesis that these are distinct subcomponents of the PPMR IRV. Moreover, several hypothesized present-day inputs (worries about becoming unemployed, perceived shortages of goods, satisfaction with relationships with kin and with romantic partners) were associated in the predicted directions with acute PPMR but not with baseline PPMR. Surprisingly, greater satisfaction with friendships was associated with an elevated acute PPMR.

### **Trust in leaders: A developmental perspective.**

*Francesco Margoni*

*SESSION #3: DEVELOPMENT*

Previous research has shown that from early toddlerhood, children tell respect-based power exerted by a leader from fear-based power exerted by a bully. With two studies, we tested if children trust leaders more than bullies, and investigated possible developmental effects in how children allocate their epistemic and interpersonal trust. In the first study, children aged 1.5 to 10 years (N=337) were presented with agents characterized as either a leader or a bully (based on cues used in prior studies) who both used the same novel word (“zaffo”) to label each a different novel object. Next, children were asked to select the zaffo. Most of the toddlers trusted the bully, whereas at 3 years the opposite tendency (a proclivity to trust the leader more than the bully) emerged and fully developed between age 5 and 8. In the second study, we tested preschool- (N=46, 4-5 years) and school-age children’s (N=32, 7-8 years) interpersonal trust employing the Trust Game. In both groups, children invested their resources more in the leader than in the bully. Overall, these data suggest that the type of social power displayed by who is in charge can shape children’s learning and interpersonal processes from very early in life.

### **Pre-modern checks and balances: analysis of hunter-gatherer cultures.**

*Honorata Mazepus, Natália Kubalová*

*SESSION #1: BLITZ TALKS*

Institutional checks and balances are essential to prevent the abuse of power in contemporary political systems. Yet, political scientists report their erosion. Simultaneously, research shows that the pronounced support for democratic values remains high across the world. Why do citizens allow dismantling of democratic institutions? Does it mean that contemporary institutions for constraining authorities do not resonate with our human minds? In this paper we take the first steps to identify the pre-modern "original" mechanisms to constrain and empower authorities by investigating hunter-gatherer communities. Through the analysis of ethnographic records in the eHARF World Cultures database, we examine (1) under what conditions they empowered and constrained the leaders and (2) what mechanisms did hunter-gatherers use to prevent the abuse of power. In this pilot study, we analyse 860 paragraphs describing four cultures from different regions of the world and with different socio-political organization. Preliminary findings confirm aversion towards domination, show punishment of underdelivering leaders, and reveal preference for competence-based leadership. These findings can help us understand whether the democratic erosion is due to the incompatibility of checks

and balances with the human intuitions about politics, the design of contemporary institutions, or to the specific circumstance that trigger the erosion.

### **Trait Preferences for Leaders During War: Experimental and Panel-Based Evidence from Ukraine 2022.**

*Honorata Mazepus, Florian Van Leeuwen, Henrikas Bartusevičius, Mark Van Vugt*  
 SESSION #4: BETWEEN DEMOCRACY AND DESPOTISM  
 SOCIO-ECOLOGICAL PREDICTORS OF LEADERSHIP

When do citizens want a dominant political leader? A prominent hypothesis suggests that such preferences arise as a result of intergroup conflict. However, this conflict-sensitivity hypothesis has not yet been tested in the context of a real war. Here, we report results from an original experiment embedded in a two-wave panel survey with 1,081 (811 re-interviewed) Ukrainians conducted at the start of the 2022 Russian invasion of Ukraine. The results show that respondents generally value competence and warmth over dominance in leaders. Yet, war increases preferences for dominance and reduces preferences for warmth and competence. Additional analyses reveal that emotional reactions to the war also relate to leader trait preferences: Ukrainians who react with aggressive emotions display enhanced preferences for all leader traits, whereas fearful reactions leave leader trait preferences mostly unaffected. Taken together, these results substantially advance existing knowledge about how violent conflict shapes citizens' leader preferences.

### **Does Measurement Bias Explain Sex Differences in Self-Reported Empathy?**

*Thomas McCauley, William McAuliffe, Eric Pedersen, Michael McCullough*  
 SESSION #9: SEX EFFECTS

A comprehensive literature suggests that sex differences in empathy may have evolutionary roots, as females express more empathy across non-human primates, infants, adolescents, and adults. Although self-reports of trait empathy indicate that females are much more empathic than males, self-reports of state empathy reveal small, inconsistent sex differences. Researchers have inferred from this pattern that sex differences in empathy reflect measurement biases that are elicited by personality questionnaires, but not reports of currently felt emotions. However, sex differences in trait empathy need not correspond to sex differences in empathy in any one situation because trait questionnaires measure empathy at a higher level of aggregation. Moreover, the hypothesis that trait questionnaires of empathy are more biased than state measures has never been empirically tested. We conducted measurement invariance tests on eight studies from our laboratory (N = 5,480). Non-invariance effect sizes were generally small, and we found some evidence that trait

measures are more biased than state measures. Contrary to past research, a meta-analytic summary of bias-free estimates revealed that females on average experience greater state and trait empathy than males, although here there was substantial heterogeneity in effect sizes. Our results tentatively suggest that women really are more empathic than men.

### **Culture Shapes Sex Differences in Mate Preferences.**

*Melissa McDonald, Adam Tratner, Nechumi Malovicki-Yaffe*

*SESSION #1: MATING PSYCHOLOGY 01*

Research has documented a robust tendency for women, relative to men, to prefer mates with good financial prospects as a signal of men's social status, namely their ability to gain access to contested resources and provide for one's family. Yet, the means by which status is achieved varies across cultures. Within the Israeli Jewish ultra-Orthodox community, heightened status is conferred not to wealthy men, but those who demonstrate devotion to religious scholarship (Study 2, N = 949), and women adhere to a sociocultural arrangement in which they work as breadwinner to enable men's religious study. Consequently, relative to men, women report a stronger preference for a mate who is a religious scholar, and men report a stronger preference than women for an attractive mate who has good financial prospects (Study 1, N = 1,414). Sex differences in preferences for financial prospects (but not physical attractiveness) are moderated by religious conservatism; among the religiously conservative, who most strongly endorse this sociocultural arrangement, men value the economic prospects of mates more strongly than women, but at the lowest levels of religious conservatism, the effect is reversed. The findings illustrate both the stability and flexibility of evolved mate preferences.

### **Psychologizing the Evolution of Altruism: Gratitude across Helping Behaviors**

*Anne McGuire*

*SESSION #3: VALUES AND PROSOCIALITY*

Gratitude varies across diverse helping behaviors and covaries with characteristics and consequences of the behaviors, but not always as predicted by evolutionary theories of altruism. Contrary to models of reciprocity and norms supporting indirect reciprocity, results here show gratitude operating more strongly in helping between strangers. Young adult participants rated 72 empirically derived, actually-occurring helping behaviors on scales including gratitude, cost to helper, benefit to recipient, likelihood that the recipient would later help the original helper (reciprocity); and increased likelihood that an observer would provide help later (support for a norm for

helping). Results allow testing evolutionary hypotheses such as Trivers's (1971) claim that gratitude reflects a behavior's cost-benefit ratio. Across 72 behaviors, recipient's gratitude is much better predicted by recipient's benefit ( $r=.91$ ) than by cost to the helper ( $r=.43$ ) or benefit-cost difference ( $r=.11$ ). Results also extend evolutionary thinking about the role of psychological processes. Gratitude is not significantly correlated with either reciprocity or a likelihood of future help in behaviors that occur mostly in intimate contexts. However, gratitude appears to be a reinforcer for reciprocity ( $r=.57$ ) and for a norm for helping ( $r=.77$ ) in precisely the relationship context (between strangers) that is an evolutionary novelty.

**Predictably unpredictable: Worse mental health outcomes for birthing parents in knowledge economies versus smaller-scale societies when facing food/housing insecurity? An evolutionary take.**

*Luseadra McKerracher*

*SESSION #1: BLITZ TALKS*

Background: Recent, evolutionarily-rapid transformations in socio-economic organization in many high-income countries from small-scale to predominantly knowledge-based economies may have led to psychological mismatches between socio-environmental conditions and perceptions, motivations, and behaviours. Two novel features of knowledge-based economies to which population members may not have adapted are: an increased need for multi-decadal planning around resource allocation and investment in embodied capital and an exponential increase in opportunities for social comparison. A corollary of this is that uncertainty about the predictability/security of material resources to be allocated may be particularly psychologically-salient for people in such contexts, elevating mental distress among parents/prospective parents experiencing insecurities. Methods: To explore this, I compared central tendencies from literature-based data on parental psychobiological health outcomes following exposure to peri-natal food/housing insecurity in large-scale, high-income populations (10 studies) to available published data on comparable exposures and outcomes in smaller-scale populations (2 studies). Results/Conclusion: The limited data available suggest that peri-natal food/housing security may be associated with particularly high scores on mental distress scales for parents living in large-scale populations, but current data are insufficient to substantiate this claim. Further data on predictable and unpredictable residential mobility, food security, and peri-natal psychobiological indicators, particularly from small-scale populations, are needed.

## **People reliably infer the extent of others' knowledge from minimal cues**

*Hugo Mercier, Edgar Dubourg, Thomas Dheilly, Olivier Morin*

*SESSION #4: COOPERATION*

Humans acquire much information from individuals more knowledgeable than them. But, when we are ignorant, how can we tell who is knowledgeable? Past research has focused on indirect and unreliable cues to knowledgeability, from intonation to prestige. Alternatively, people might use the nestedness of knowledge to reliably infer who is knowledgeable. If knowledge is nested, and if someone possesses a rare piece of knowledge (but not a common piece of knowledge), then that individual is likely broadly knowledgeable. This means that, if people can estimate the rarity of different pieces of knowledge, and if knowledge is nested, then they can reliably infer people's knowledgeability from a minimal cue: the possession of a single piece of knowledge. First, using a database of nearly 3 million answers to trivia questions, we demonstrate that human knowledge is nested. Second, a series of pre-registered, and replicated experiments (total N>1000, US participants) show that (i) participants can accurately assess the rarity of pieces of knowledge, and (ii) if a participant knows someone possesses one piece of knowledge, they can infer their knowledgeability in the relevant domain. Moreover, this is true even for participants who are themselves ignorant in this domain.

## **When and Why People Conceal Infectious Disease.**

*Wilson Merrell, Soyeon Choi, Josh Ackerman*

*SESSION #5: DISEASE, PSYCHOLOGY AND COALITION*

From the common cold to COVID-19, pathogenic infections are a common fact of life. People sick with these illnesses tend to face negative social outcomes, like exclusion, and therefore may take steps to hide their illnesses from others. Pulling from evolutionary models of pathogen avoidance (e.g., behavioral immune system) and theories of more general information withholding (e.g., secret-keeping), we examined the prevalence and predictors of infection concealment across 10 studies of past, current, and projected illness. In our samples of U.S. university students, health-care employees, and online crowdsourced workers (total N = 4,110), about 75% reported concealing illness in interpersonal interactions, possibly placing others in harm's way. Concealment motives were largely social (e.g., wanting to attend events like parties) and achievement oriented (e.g., completing work objectives). Disease characteristics, including potential harm and illness immediacy, also influenced concealment decisions. People imagining harmful (vs. mild) infections concealed illness less frequently, whereas participants who were actually sick concealed frequently regardless of illness harm, suggesting state-specific biases underlying concealment decisions. Disease concealment appears to be a widely

prevalent behavior by which concealers trade off risks to others in favor of their own goals, creating potentially important public-health consequences.

### **Modelling the role of childhood play as a driver of innovation in cultural evolution.**

*Elena Miu, Felix Riede*

*SESSION #4: PLAY, CULTURAL TRANSMISSION AND CHILDREN'S LEARNING*

The field of cultural evolution has been tremendously productive in understanding the evolution of human adaptation, but the role of children learning has been underexplored. Evidence from psychology suggests that, broadly, children are more exploratory and innovative than adults. This dynamic can have profound implications for population-level cultural adaptation, particularly in circumstances where the environment changes quickly and cultural repertoires need to adapt. Here we investigate *in silico* how a life history of innovation and social learning contributes to cultural adaptation, and its implications for the evolution of childhood. We present an agent-based model to answer (1) under what conditions childhood is adaptive and (2) whether childhood can provide a buffer against environmental change, in the context of cumulative cultural evolution and collective problem solving. Using a multi-armed bandit task that allows for incremental improvement in behaviours, we implemented a two-stage strategy for exploring this space – children explore broadly, more likely to learn new behaviours, while adults exploit behaviours already known, incrementally improving. We found that populations with two-stage strategy achieve higher payoffs, both individually and collectively. Our models point at a childhood ‘Goldilocks Zone’ – neither too long, nor too short – allowing individuals time to explore before specialising and improving. We implement a variety of environmental change regimes and demographic shifts and find that childhood had differential benefits depending on regime characteristics.

### **Social Complexity: Why Modern Humans are Far More like Certain Ants than We are like Other Primates.**

*Mark Moffett*

*SESSION #3: POLITICS*

The most intricate and environmentally dominating organizations in the natural world beside those of humans are found not in any other primate but rather among the colonies of social insects. I will argue that points of comparison between things that are typically seen as sharply different, such as ants and people, are of exceptional value to science, and indeed that modern humans are in many ways more like certain ants than we are to our sister species, the chimpanzee and the

bonobo. Following up on an invited review about ants for the *Journal of Organization Design*, an academic business publication, I will cover the role of individual and group identity in productivity; the advantages of flat organizations with no leaders or hierarchies; principles of self-organization; the value of direct versus indirect communication; labor specialization and coordination; the role of errors in innovation; and the potential to achieve huge societies and global domination. The likely value and limitations of comparing ant and human organizations are briefly examined.

**Willingness to provide childcare among people with only one versus multiple intimate relationships.**

*Justin Mogilski, Elisabeth Sheff, Geoffrey Miller, Katarzyna Grunt-Mejer, Laith Al-Shawaf, Michelle Larva, Dan Kruger, Ezra Hampikian, Zuzana Štěrbová*  
 SESSION #2: CHILDCARE

Finding and securing new partners (i.e., mating effort) is commonly presumed to detract from childcare (i.e., parenting effort). This trade-off has not been tested in contemporary multi-partnered relationships (e.g., polyamorous, swinging, and open relationships) nor compared to single-partner relationships (e.g., monogamy). Parents and non-parents from 62 countries in one or multiple intimate relationships (N = 4,571) reported sociosexuality and willingness to provide childcare for their partner(s)' children. Single-partnered and more sociosexually restricted people reported greater willingness to care for a partner's children than those who were multi-partnered or more unrestricted. However, these patterns depended on 1) the type of multi-partnering, 2) whether participants were currently parents, and 3) whether they were caring for primary versus secondary partners' children. Multi-partnered and unrestricted non-parents were less willing to provide childcare than single-partnered and restricted non-parents, but all current parents were similarly willing regardless of sociosexuality and current number of partners. Further, swingers were more willing to care for a primary partner's children than polyamorous, open, and even monogamous participants. Yet, swingers and open people were less willing to care for secondary partners' children compared to polyamorous and monogamous people. Mating and parenting effort may not be at odds in these relationships.

**Guilt- and shame-driven prosociality across societies.**

*Catherine Molho, Ivan Soraperra, Jonathan F. Schulz, Shaul Shalvi*  
 SESSION #4: COOPERATION



Previous research has documented substantial cross-societal variation in impersonal prosociality. Such variation might arise from cultural evolutionary processes resulting in different moral systems—that is, packages of psychological mechanisms, norms, and institutions regulating social behavior. Here, we test the idea that different societies rely on distinct mechanisms—guilt and internalized norms versus shame and external pressures—to support prosociality. In a registered report, we proposed a cross-societal experiment in 20 culturally diverse countries, with 7,800 participants around the world. Previous cross-societal research on prosociality relied on economic decision-making tasks, where (1) individuals could allocate money between themselves and others, (2) received full information about how their decisions impact others, and (3) made their decisions privately. To examine how guilt and shame affect prosociality across societies, we administer dictator games and experimentally induce guilt, by varying information about the consequences of participants' decisions (full versus hidden), and shame, by varying observability (public versus private). Additionally, we measure guilt- and shame-proneness at the individual and societal levels. We expect to find that activating guilt (by varying information) more strongly increases prosociality among guilt-prone individuals and societies, whereas activating shame (by varying observability) more strongly increases prosociality among shame-prone individuals and societies.

### **Social learning in a structured system.**

*Lucas Molleman, Piet van den Berg, Björn Lindström*

*SESSION #9: CULTURAL EVOLUTION AND SOCIAL LEARNING*

Models of cultural evolution predict that payoff-based social learning is an adaptive strategy to rapidly acquire useful knowledge and skills. Experiments, however, indicate that this strategy is underused. I will present an individual-based model in which skills can be learned socially, but their successful expression requires foundational skills that lay the groundwork for mastering more advanced skills. Simulations show that in structured systems of skills, payoff-based social learning can be maladaptive, and is often outperformed by – arguably simpler – strategies that focus on learning from others who have similar skill sets, or similar age. The results help resolve discrepancies between theoretically predicted and empirically observed patterns in human social learning.

### **How parenthood and parental motives increase social conservatism and religiosity.**

*Damian Murray, Carlota Batres, Khandis R. Blake, Youngjae Cha, Gregory V. Chauvin, J. W. Clifton, Ana W. Fernandez, Andrzej Galbarczyk, Maliki E. Ghossainy, Dayk Jang,*

*Graznya Jasienska, Minoru Karasawa, Lasse Laustsen, Riley Loria, Francesca Luberti, James Moran, Zoran Pavlović, Michael B. Petersen, Adam R. Smith, Iris Žeželj*  
 SESSION #11: PARTNERS, PARENTHOOD, FAMILIES

Linguistic diversity is both a proxy and a cause of human cultural diversity and as such a reflection of our species' cultural nature. Most extant linguistic diversity resulted from a handful of important demographic, social, and technological events during the Holocene. However, contemporary methods are unable to extrapolate past stages of global linguistic diversity over this period because (1) language change is highly sensitive to a host of extra-linguistic factors that have changed substantially over the Holocene, and (2) they are honed for groups of ostensibly related languages (i.e. language families), which leaves extinct and small language groups out of the global picture. In this talk, we introduce a novel set of statistical models to estimate the number of languages that have existed at some point over the last 12,000 years, sourcing contemporary linguistic diversity data as well as insights from paleodemography, human biology, and ethnographic records. We find that the worldwide number of languages immediately before the Holocene was more likely smaller than today, and that its trajectory until today's 7,000 languages was most likely complex and non-monotonic, with a particularly eventful period of rapid expansion and contraction around 3,000-2,000 years ago.

**A folk Theory of Human Nature: Laypeople's valuation of body parts are similar within and across cultures and track compensation laws across cultures.**

*Yunsuh Nike Wee, Daniel Sznycer, Jamie Arona Krems*  
 SESSION #11: BELIEF SYSTEMS & CROSS-CULTURAL STUDIES

People appear to have a folk Theory of Human Nature (ToHN). ToHN includes the ability to account for other people's behavior through inferences about their beliefs and desires (Theory of Mind; ToM). But ToHN's scope is broader. For example, ToHN also includes knowledge about the value of body parts. This is because (i) different body parts likely vary in their contribution to fitness, and (ii) it would have been advantageous for the mind to be able to compute the corresponding value representations with some accuracy, allowing the mind to, for instance, seek appropriate compensation for bodily damage done by offenders—eye for eye, tooth for tooth. Here, we test three predictions derived from the body parts hypothesis. First, the values laypeople impute to different body parts differ across body parts, and these imputations are similar within and between cultures. Second, the values laypeople impute to different body parts track (perhaps because they inform) the benefits provided by compensation laws from different cultures. We test these with three modern codes (US; South Korea; United Arab Emirates) and one Germanic code from the Early Middle Ages (Law of Æthelberht; Kent, ca. 600 AD). Third, the

values laypeople impute to different body parts inform multiple inferences and emotions (e.g., the anger another person will feel if you cause them to lose a body part). Evidence from preregistered studies conducted with American and Indian participants (N = 509) supports all three predictions.

### **Children, learning through play and ceramic production in the Gravettian.**

*April Nowell, Rebecca Farbstein*

*SESSION #4: PLAY, CULTURAL TRANSMISSION AND CHILDREN'S LEARNING*

While archaeologists are learning more about the lives of Upper Paleolithic children, their role in craft production, remains understudied. Using high resolution photographs of 489 diagnostic artifacts from Dolní Věstonice I, Pavlov I, and Předmostí, three archaeological sites in the Czech Republic dating to ca. 30,000 years BP, we address two questions: 1. Can the ceramic products of novices be distinguished from those made by experts? 2. If so, can we tell if these novices were children? Our sample included both fired and unfired clay anthropomorphic and zoomorphic figurines, figurine fragments and non-diagnostic pellets. We recorded size, degree of symmetry, degree of experimentation, technique, productivity, decoration and finish, and repetition of elements and motifs in ceramic, ivory and antler artifacts from the same sites. We conclude that unlike the ivory and antler objects, a significant proportion of the ceramic assemblages were made by novices who were likely children. This study illuminates knowledge transmission, particularly the importance of learning through play, and skill acquisition in the deep past. It also reveals the ways that Paleolithic children actively contributed to the welfare of the communities of which they were a part.

### **Experimental investigations into the Tower of Babel: On the origin and evolutionary function of linguistic diversity.**

*Nathan Oesch, Lindsay Grandison*

*SESSION #1: BLITZ TALKS*

The most extensive catalog of the world's languages is that of the Ethnologue inventory which includes approximately 6,900 distinct languages. Intriguingly, the vast majority of the world's languages can be attributed to relatively small speaker populations. This brings up an interesting, but seldom raised, puzzle: why is there more than one language? The social bonding hypothesis argues that linguistic diversity, including accents and dialects, serve an important social function in identifying and regulating social interactions among group members, and facilitating social bonding. The current study, therefore, recruits n=1500+ anonymous male and

female native-language speaking participants (1/2 male, n=50; 1/2 female, n=50: n=100 x top-15 most commonly-spoken world languages) from a broad range of diverse populations with Internet access. Participants will be presented with four English-spoken speech samples (two male audio clips; two female audio clips), from native-speakers of the Ethnologue-ranked top-15 most commonly-spoken world languages. Participants will then complete a standard battery of questions related to social closeness, comprehensibility, awkwardness, pretentiousness, and other factors which may confound speech sample ratings. The central prediction is that social closeness scores will be greater than all control condition scores for participants rating English-spoken vocal clips sampled from native-speakers of their own language.

**Using transmission chains to study symbolic mark-making: The case of the Blombos and Diepkloof engravings.**

*Murillo Pagnotta, Izzy Wisher, Malte Lau Petersen, Felix Riede, Riccardo Fusaroli, Kristian Tylén*

*SESSION #9: CULTURAL EVOLUTION AND SOCIAL LEARNING*

Archaeological findings of abstract geometrical engravings provide valuable insights into the evolution of human symbolic behaviour. However, they are often controversial and hard to interpret. The ochre pieces from the Blombos Cave and the ostrich eggshells from Diepkloof Rock Shelter are important examples. Scholars debate whether they served as proto-aesthetic decorations, indexical markers of group identity, or denotational symbols in communication. Notably, their temporal trajectory shows earlier engravings with simpler, unstructured patterns and later ones with more complex, symmetric cross-hatchings. Based on the assumption that the pragmatic use of artifacts will motivate incremental adaptive refinements over time, we studied which changes result from different contexts of use. Participants were arranged in transmission chains seeded with the early Blombos and Diepkloof patterns and were instructed to reproduce them as part of three different activities: decoration, marking of group identity, and communication. The patterns produced by each generation became the stimuli for the next, allowing us to identify systematic structural modifications accumulated across the different production contexts. By considering what types of adaptive changes happen as a function of different symbolic practices, our study allows us to inform inferences about the plausible function of the original Blombos and Diepkloof engravings.

### **Women are not more likely than men to react to task-irrelevant infant crying in a dyadic non-cooperative experiment.**

*Christine Parsons, Arnault-Quentin Vermillet, Josh Skewes*

*SESSION #2: CHILDCARE*

It is widely assumed that women are more sensitive and reactive to infant signalling than men, even before parenthood. Anecdotally, men and women often describe differences in their ability to ignore infant signals, such as crying, but there has been limited empirical study of gender differences. In a dyadic lab-based experiment, we randomly paired mixed-gender dyads of non-parent participants (N=98) and asked them to complete an individual task. At pseudo-random intervals during the experiment, cry sounds were played at a volume of 75 DB(SPL). Both participants had equal opportunity to stop the sound with a single button press. We examined which participant within each dyad was more likely to stop the sound. Using Bayesian modelling, our results suggested moderate evidence for no difference in the likelihood of stopping infant cries between men and women, with a mean gender bias of 0.50 (SD=0.06, 95%CI=[0.38, 0.62]; Bf = 6.35). We found several interaction strategies emerging within dyads, with the most common being for one participant to stop the sound most of the time. Our findings do not support the notion that women are more reactive to task-irrelevant crying than men, contrary to biological essentialist theories.

### **Conceptualizing the evolution of personality traits and intelligence in the genomic era.**

*Lars Penke*

*SESSION #2: PERSONALITY*

The study of individual differences has a history of modelling constructs as broad latent variables, which have often been interpreted as causal entities with unitary biological substrate that should be tractable on genetic level. I will review the current state of genomic research on personality traits and intelligence, which provides strong evidence for a highly polygenic, pleiotropic, and heterogeneous genetic architecture. Rare genetic variants seem to have stronger effects on intelligence than on personality traits, implying evolutionary maintenance by mutation-selection balance. Recent studies on personality in clonal animals raised in identical environments suggest a substantial role of stochasticity in the development of stable behavioral differences. Taken together, these findings contradict tractable, unitary biological substrates for both personality traits and intelligence and are more in line with classical infinitesimal and recent omnigenic models. Similar conclusions can likely be drawn for other behavioural, physical and life history traits. I will discuss what

these models imply for process and network models of individual differences, as well as the evolutionary selection of individual traits.

**Step-gap in grandparental investment: The role of mating effort and co-residence history between step-grandparents and middle-generationís parents.**

*Jenni Pettay, David Coall, Mirkka Danielsbacka, Antti Tanskanen*

*SESSION #1: FAMILY STRUCTURE 01*

The prevalence of divorce in both parental and grandparental generations has led to a rise in the number of children who now have families that include both biological and step-grandparents. Despite the thorough examination of biological grandparents' contributions in recent literature, there remains a scarcity of studies focusing on the investment of step-grandparents. Using population-based data from a sample of 2,476 parents in Germany, we assessed grandparental investment through financial support and assistance with childcare of grandparents (N = 4,279) and step-grandparents (N = 487). The study revealed that step-grandparents provided less investment in their grandchildren compared to biological grandparents. Furthermore, the study identified that a longer duration of co-residence between step-grandparents and parents earlier in life did not correspond to an increase or decrease in step-grandparental investment. In line with the scarce literature on step-grandparental investment, these findings indicate that mating effort may be the most important motivation for step-grandparental investment.

**Kids are voice experts: Early development of Vocal modulation abilities.**

*Romane Philippe, Cerise Petit, Katarzyna Pisanski, David Reby, Valentina Canessa-Pollard*

*SESSION #6: THE EVOLUTION AND FUNCTION OF HUMAN NONVERBAL VOCAL COMMUNICATION*

Humans have remarkable voice modulation abilities, enabling them to encode dynamic information such as emotions and motivations or to imitate others' voices. However how these abilities develop in early childhood remains largely unexplored. While previous studies indicate that children can manipulate sexually dimorphic acoustic cues to adjust gender-related attributes, their ability to modulate age- and size-related cues, or the extent to which they can generalize these modulations to non-human voices remains unknown. In this study, we recorded English-speaking children between the ages of 5 and 11 as they mimicked animals of different ages, genders, and sizes. Acoustic analyses revealed that both girls and boys adjusted their voices by decreasing vocal production speed, voice pitch, amplitude, and increasing

voice roughness to sound old. They also increased pitch, pitch variability, and decreased roughness to sound female. Finally, both sexes decreased pitch, increased production speed and vocal tract lengths, and only girls decreased roughness, to sound bigger. Most of these modulations were congruent with the age, sex, and size-related differences or stereotypes observed in adults. This provides evidence that children can modulate their voices according to age, sex, and height variation and can even generalize these modulations to the voices of non-human characters.

### **Evolutionary Implications of SSRI-Associated Changes in Sexual and Romantic Behaviors Among Large Sample of US Adults**

*Malia Piazza, Amanda N. Gesselman, Justin R. Garcia, Helen E. Fisher*

*SESSION #5: BLITZ TALKS*

The treatment of depression using selective serotonin reuptake inhibitors (SSRIs) has garnered increased attention recently, including from evolutionary behavioral scientists, due to a lack of scientific consensus regarding SSRI mechanisms of action and relationships between depression and serotonin. Existing scholarship indicates that SSRIs interact with key neurotransmitters (i.e. dopamine) which play an adaptive role in sexual desire and romantic love. Previous research has found unique sexual challenges arising from SSRI-use. From an evolutionary perspective, these iatrogenic effects of SSRIs interfere with psychobiological mechanisms that are meant to drive reproductive success. The current study investigates impacts of SSRI-use on sexual/romantic outcomes. Our study analyzes data on romantic and sexual behavior and SSRI-use from two waves of the annual Singles in America study, each with over 5,000 single adult participants. Across the sample, 43% reported sexual/romantic side effects from SSRI-use, including 38% of women and 51% of men. We found SSRI-use to be associated with changes in sexual/romantic behaviors and attitudes, (i.e. differences in number of partners and yearning for affection). These results suggest that SSRI-use may disrupt evolved mating psychology mechanisms associated with long-term pair-bonding and sexual/romantic fulfillment. Our findings highlight the need for further attention to sexual/romantic impacts of SSRI-use.

### **All Mixed Up: An Adaptationist Theory of Humor and Laughter.**

*David Pinosof, Daniel Sznycer, Jamie Krems*

*SESSION #6: EMOTION & HUMOR*

Human social life is rife with coordination problems: passing each other in a narrow

hallway, differentiating the meanings of "hook up with" and "meet up with," etc. But what happens when we suffer a mix-up—for instance, we both move in the same direction and collide, or I casually suggest we "hook up at 8pm tonight"? Here, we argue that such costly mix-ups posed a significant adaptive problem for our ancestors, obstructing cooperation and damaging otherwise fruitful relationships. The evolved solutions to this problem were: 1) the ability to sense humor (i.e., detect mix-ups), and 2) laugh at humor (i.e., signal that a mix-up has occurred). We present a mathematical model of the costs of mix-ups, the probability of them occurring, and the benefits of mutually signaling when they've been detected. Our model shows that agents with a sense of humor, and the ability to laugh at (i.e., mutually signal) the humor they've sensed, are favored by natural selection. Our model provides an elegant explanation for puns, practical jokes, wordplay, impersonations, slapstick, and situational comedy. A healthy sense of humor may be a prerequisite for the evolution of complex cooperation.

### **The Evolution and Importance of Status Badges: Evidence from Vocal Fundamental Frequency.**

*David Puts, Toe Aung*

*SESSION #6: THE EVOLUTION AND FUNCTION OF HUMAN NONVERBAL VOCAL COMMUNICATION*

Badges of status are conspicuous characteristics such as color patches that convey formidability. Prior research suggests that status badges are likelier to evolve in species that live in larger groups where individuals often interact with strangers and have less direct information about the status of competitors. Within species, status badges may be most important in competitor assessment among unfamiliar individuals. Using vocal fundamental frequency ( $f_0$ ) as a model characteristic, we tested these ideas in two studies. First, in a sample of 1,914 recordings across 37 anthropoid primate species, we found that males evolve lower  $f_0$  compared to females in species with more intense male competition for mates and larger group sizes. Second, in a study of 2,647 adult human listeners sampled from 44 locations across 22 nations, we found that males attend more strongly to  $f_0$  when assessing the status of other males in societies with higher homicide rates and where individuals more frequently interact with strangers. These results support the idea that status badges evolve and are most relevant when detailed knowledge about individual competitors is low and have several important implications about the nature of ancestral human mating competition.



**Is pathogen disgust increased on days of the menstrual cycle when progesterone is high? Evidence from a between-subjects study using estimated progesterone levels.**

*Yasaman Rafiee, Benedict C. Jones, Victor Shiramizu*

*SESSION #9: SEX EFFECTS*

The Compensatory Prophylaxis Hypothesis suggests that women experience increased pathogen disgust during phases of the menstrual cycle characterised by high progesterone levels. This increased disgust may counteract the immunosuppressive effects of progesterone. However, there are mixed results from studies with within-subject designs that have tested the association between progesterone levels and the compensatory prophylaxis hypothesis. It has been proposed that within-subject designs introduce carry-over effects due to repeated testing, potentially obscuring the true effects of progesterone and pathogen disgust. Therefore, using a between-subjects design we tested N = 1346 women to investigate the positive association between scores on the pathogen disgust subscale of the Three Domain Disgust Scale (TDDS) and estimated progesterone levels obtained from a recent study by Arslan et al. (2022). The result revealed no significant association between progesterone levels and pathogen disgust, suggesting that null results for the hypothesized association between progesterone and pathogen disgust are not limited to studies using designs that may be subject to carry-over effects caused by repeated testing. Our findings add to a growing body of research that does not support the Compensatory Prophylaxis Hypothesis.

**Friendship and Social Hierarchy in Elementary School Networks.**

*Carlos Rodriguez-Sickert, Melanie Oyarzún, Cristián Candia-Castro-Vallejos*

*SESSION #3: DEVELOPMENT*

The interplay between social hierarchies and friendship is vital to our understanding of human social structures, mirroring patterns discernible in the organization of hunter-gatherer bands. This study examines the nuances of this relationship among 856 children aged 9 to 12 from 14 schools in Santiago, Chile. We mapped cooperative networks within classroom settings through a modified Prisoner's Dilemma, structured to reflect the reciprocity found in foraging societies. Social status was measured using PageRank, based on the distribution of tokens—akin to the sharing economies of early human groups—with peer-nominated popularity providing concurrent validation. Our observations reveal a social stratification in cooperative behavior linked to status, where lower-status children exhibit deference to their higher-status peers. However, this structure dissolves within the bounds of friendship. Among friends, cooperation flows uninhibited by social hierarchy, reminiscent of the egalitarian interactions that underpin cooperative hunting and gathering activities. This parallel suggests that the essence of friendship in

elementary school children echoes the fundamental social equalizers present in hunter-gatherer societies, challenging the established social status dynamics.

### **The Faces of Male and Female Leaders are Shaped and Perceived Similarly: an Experimental Study in European Population**

*Victoria Rostovtseva*

*SESSION #5: BLITZ TALKS*

The phenomenon of leadership is of great importance in studying the evolution of social systems. It is known that the leader-follower structure can automatically arise in groups that initially lack any hierarchy. Here we report on the experiment investigating visual features, which may signal a leader quality. We explore, whether there are specific facial shapes characteristic of male and female individuals with leadership potential, and if so, are those shapes perceived similarly across cultures. In the first part of our experiment, 172 Russian participants were classified according to their leadership qualities based on behaviour in the same-sex group game (Public Goods Game), played face-to-face. Their facial photographs were then analyzed using geometric morphometrics. The results revealed that the facial shape of “leaders” and “non-leaders” differs significantly both in men and women. These differences are similar in both sexes, and not related to masculinization vector. In the second part, morphed and averaged portraits of the male and female emergent leaders were judged by raters of European and Asian descent (N=744) on a number of traits. The results revealed that both male and female leader/non-leader portraits were perceived similarly across cultures, and by subjects of both sexes. The study supported by RSF (23-18-00277).

### **Religious Socialisation in Mauritian Families**

*Nachita Rosun, Matthew M. Gervais, Aiyana K. Willard*

*SESSION #11: PARTNERS, PARENTHOOD, FAMILIES*

Studying processes of religious belief transmission can shed light on the cultural evolution of institutions and the future of religious societies. We use data from two studies on religious socialisation in Hindu, Muslim, and Christian Mauritians to predict intergenerational changes in religious beliefs and practices. We examine how changes in parental credibility enhancing displays (CREDS) and movement away from multi-generational households predicts religious decline in younger generations. The ongoing demographic shifts (e.g., fertility decline and changes in SES) in this population can help understand how kinship structures interact with socialisation practices to influence individuals' beliefs and behaviour. Using survey

data (n= 1151), we examine associations between 1) presence of family members, 2) parental CREds, and 3) individual belief and practice. Extended households and CREds predict higher belief and practice. Fifteen semi-structured interviews identify themes around role distribution and gendered religious socialisation. These findings contribute to our knowledge of religious socialisation within families and the effects of demographic changes on cultural transmission processes. Variations in religious practice and belief associated with the presence of different family members can indicate how some aspects of religion may be upheld by normative expectations underlying close interpersonal relationships.

### **Disgust Toward Illness Symptoms Predicts Moral Judgments of Infectious Disease Concealers**

*Kaelyn Sabree, Savannah Adams, Madhulika Shastry, Joshua Ackerman*

*SESSION #5: BLITZ TALKS*

Disease concealment, intentionally hiding illness symptoms or neglecting to disclose one's sickness to others, is a prevalent behavior. Interestingly, unlike other forms of concealment, disease concealment introduces distinct moral and ethical considerations given its potential to spread infectious diseases. Building on previous work suggesting that pathogen disgust shapes moral judgments, we explored the role of disgust in moral judgments of individuals concealing infectious illnesses. In the current study (N = 288), participants evaluated the moral character (e.g., how principled, ethical, morally upstanding, etc.) of targets described as concealing mild or severe illness symptoms for various reasons (e.g., to go to work, to get a haircut, etc.). Participants then reported their disgust toward the illness symptoms in addition to their impressions of harm associated with the concealment. As participants' disgust toward illness symptoms increased, evaluations of moral character significantly decreased (even when controlling for perceived harm to others). These findings suggest that moral judgments are influenced not only by deliberate evaluation of the harm a concealer poses to others, but also by the perceiver's own disgust, a self-focused and relatively automatic emotional response.

### **Who belongs to your family? Change in kin networks from 18th century agrarian society to 21st century industrial society in Finland.**

*Milla Salonen, Mirrka Lahdenperä, Takayuki Hiraoka, Jari Saramäki, Virpi Lummaa*

*SESSION #3: FAMILY STRUCTURE 2*

Traditionally, humans live in large kin societies characterized by helping, for example, providing help in childcare, resource acquisition, and social support.

However, kin can also compete for limited resources. This traditional style of living has seen a rapid decline in Western countries since the start of the industrialization and demographic transition at the end of the 19th century and was replaced by sharing the household with nuclear family members only. At the same time, decrease in fertility and childhood mortality and increase in lifespan has shifted the population structure of Western countries, which likely changes the presence of different kin as well. For the first time, we characterize the change in kin networks on individual level using a pedigree register data from Finland from early 18th century until the 21st century (n=120 000 individuals). We highlight how the decrease in fertility and increase in lifespan is reflected in the presence of different kin at multiple stages of a focal individual's life. We also compare the most typical kin network before and after the onset of the demographic transition. The results increase the understanding of the current demographic changes in Western societies and how these may be associated with kin networks.

### **Emily Dickinson's Theory of Mind.**

*Judith Saunders*

*SESSION #4: EVOLUTIONARY ANALYSIS AND IMAGINATIVE CULTURE*

Preoccupied with the internal workings, mental and emotional, of the human psyche, Emily Dickinson (1830-1886) discloses in her poetry a fully developed Theory of Mind. She emphasizes the vastness of the interior world ("wider than the sky") and its complexity (a "mob" of often competing impulses). She devotes much of her poetic energy to exploring her own inner processes (e.g., desire, resentment, remorse, grief, ecstasy) rather than those of others. Indeed, Dickinson's poems repeatedly emphasize the ability of the individual mind to resist being "read." Although current research in ToM often focuses on mindreading techniques employed worldwide to detect unacknowledged emotions and hidden agendas, Dickinson points out that the individual psyche remains, in important respects, impenetrable. She forces readers to recognize that in the evolutionary arms-race of ToM--concealment versus detection--strategies of mindreading have not achieved anything like complete success. Presenting sometimes terrifying examples, Dickinson suggests that our inability to infiltrate the "polar privacy" of others is a positive thing, given the layered complexity (and "volcanic" potential) of self she delineates in her poems. Perfectly successful mindreading would yield ghastly revelations, undermining cooperative endeavors and imperiling human prosociality.

**Male facial cues to high stature among Europeans and Maasai augment perceptions of aggressiveness**

*Katrin Schaefer, Marina L Butovskaya, Audax ZP Mabulla, Bernhard Fink, Sonja Windhager*  
 SESSION #?:

Research suggests that a man's stature and muscular strength indicate the ability to protect, secure resources, and achieve social status. We examined facial cues of stature together with social perception. Geometric morphometric facial morphs, varying solely in the shape consequences of body height, were created. The calibration samples comprised 85 European and 54 Maasai young men. An Austrian sample of young adult raters (43 men, 50 women) assessed the facial morphs for aggressiveness, attractiveness, physical strength, and body height. Facial morphs representing taller men were judged as stronger, taller, and more aggressive than those corresponding to shorter men. The highest attractiveness was attributed to morphs representing medium body height. Response patterns were highly similar across rater sex and stimulus populations. We interpret the results with regard to i) height-dependent perceptions of physical threat, and ii) a preference for facial averageness, at least in industrial societies. Shape regressions upon body height and muscular strength both reveal large-scale changes in facial morphological covariation but in opposite directions. The present study contributes to elucidating recent cross-cultural findings of aggressiveness attributions to the faces of very weak men. Overgeneralization might add to the biological components that affect the perception of male formidability.

**Allomaternal support networks in cross-cultural perspective: plugging gaps in our understanding of human 'cooperative breeding'.**

*Rebecca Sear Anushé Hassan, Laure Spake, Abigail Page, Susan Schaffnit, Radim Chvaja, Mary Shenk, Richard Sosis, John Shaver, the Evolutionary Demography of Religion Project Team*  
 SESSION #1: FAMILY STRUCTURE 01

There is now overwhelming evidence that women receive considerable support to raise children, but there remain a number of gaps in our knowledge of this system of cooperative reproduction. We know relatively little about the make-up of the networks of support women draw on for raising children. Focus has predominantly been on specific supporters, particularly fathers, grandparents and siblings. We also know perhaps less than we think about the impact of support on the wellbeing of either women or children. Few attempts have been made, for example, to explore associations between allomaternal support and maternal wellbeing. Here we draw on data collected from 4000 women, from 5 countries (The Gambia, Malawi, Bangladesh, India and the US), for the Evolutionary Dynamics of Religion, Family Size and Child Success project. These data allow us to describe the width and breadth of

women's support networks, detailing who supports women and the types of support they provide. We find that women receive considerable support from multiple individuals in each country, but support networks vary between contexts, in the number of helpers, who provides help and what kind of help they provide. We further explore how this support is associated with mothers' health.

### **Interdisciplinary Ties: Why Evolutionary Psychologists and Behavioral Geneticists Should Know What Each is Up To.**

*Nancy Segal*

*SESSION #6: EVOLUTIONARY PSYCHOLOGY AND BEHAVIOURAL GENETICS: FRUITFUL UNION OR SHIPS PASSING IN THE NIGHT?*

Evolutionary psychology (EP) and behavioral genetics (BG) are controversial, cutting-edge disciplines that have yielded exciting insights into the origins/expressions of human behavior. They have often functioned as distant cousins—related, but with generally little meaningful interaction between them. EP focuses on finding psychological mechanisms that evolved to meet environmental challenges faced by our ancestors. BG aims to understand the genetic factors, genetic variants, internal and external environments, and other influences underlying individual differences in behavioral traits. This symposium highlights ways that evolutionary psychologists can gain from genetically/environmentally informative twin, family, and adoption designs, and the more recent GWAS studies for assessing hypotheses/questions concerning cognition, psychopathology, sexuality, humor, and more. In addition, behavioral geneticists can, for example, profit from evolutionary studies of selection pressures on traits for appraising genetic correlations between traits and how they may vary between males and females. Interestingly, calls for bridges between the two disciplines have been more frequently voiced by evolutionary psychologists than behavioral geneticists. This symposium, in support of an evolutionary behavioral genetics, reviews BG methods and extant EP-BG studies (Segal, Chair). Speakers applying EP, BG twin/family methods, and/or molecular-genetic approaches follow (Abdellaoui, Greengross, Verweij). This symposium ends with commentary from a discussant (Zietsch).

### **Testing the Congruency Hypothesis using meta-analysis: Are changes in oral contraceptive use correlated with partnered women's sexual satisfaction?**

*Victor Shiramizu, T. V. Pollet, Y. Rafiee, B. C. Jones*

*SESSION #10: HORMONES AND CONTRACEPTION*

Based on claims that changes in women's hormone levels influence their mating

psychology, the Congruency Hypothesis proposes that women in relationships who changed their hormonal contraceptive use between meeting their partner and testing will report lower sexual satisfaction with their partner than women who did not change their oral contraceptive use between these times. However, findings from studies testing this hypothesis have reported mixed results. Consequently, we conducted a meta-analysis of published studies on this topic. For the thirteen effect sizes using between-subjects designs, the pooled correlation between congruency and sexual satisfaction was not statistically significant and a Robust Bayesian meta-analysis found that the null hypothesis was favoured over the Congruency Hypothesis by a factor of 8.13 (i.e.  $1/.123$ ). For the four effect sizes using within-subject designs, the pooled correlation between congruency and sexual satisfaction was significant, but weak ( $r = .19$ ). Here, a Robust Bayesian meta-analysis found weak evidence in favour of the Congruency Hypothesis ( $BF_{10} = 1.55$ ). Collectively, these results suggest that it is unlikely that changing oral contraceptive use has a substantial effect on women's sexual satisfaction with their romantic partner.

### **How do we learn our mate preferences?**

*Carlos Sosa Colindres, Daniel Conroy-Beam*

*SESSION #10: MATING PSYCHOLOGY*

Each of us has a unique set of mate preferences; but how we come to these mate preferences is mysterious. In prior work we have found that a model that iteratively adjusts mate preferences in response to feedback can reproduce individual preferences. However, this prior model is limited because it does not have the ability to learn in real-time. Reinforcement learning algorithms, in contrast, allow online learning from the mating market. Here we test how well a reinforcement learning algorithm, specifically the  $\epsilon$ -greedy strategy, approximates how people learn their mate preferences. In this model, agents attend to the mate value and interest expressed by other agents and from this, they estimate the expected value of adjustments to their preferences. Even with no prior knowledge of participants' ( $n = 1044$ ) preferences, this  $\epsilon$ -greedy model reproduces individual participants' mate preferences with respectable accuracy. This research suggests reinforcement learning provides promising models for solving the critical but underexplored adaptive problems in the ontogeny of mate preferences.

### **Adaptive functionality in the emotion of pride: Evidence from 10 small-scale societies.**

*Daniel Sznycer, D. Xygalatas, S. Alami, X.-F. An, K. I. Ananyeva, S. Fukushima, H. Hitokoto, A. N. Kharitonov, J. M. Koster, C. N. Onyishi, I. E. Onyishi, P. P. Romero, K. Takemura, J.-Y. Zhuang, Leda Cosmides, John Tooby*

*SESSION #6: EMOTION & HUMOR*

Becoming valuable to fellow group members so that one would attract assistance in times of need is a major adaptive problem. To solve it, the individual needs a predictive map of the degree to which others value different acts so that, in choosing how to act, the payoff arising from others' valuation of a potential action (e.g., showing bandmates that one is a skilled forager) can be added to the direct payoff of the action (e.g., gaining the nutrients of the prey captured). The pride system seems to incorporate the requisite features to solve this adaptive problem. Importantly, data from WEIRD societies indicate close quantitative correspondences between pride and the valuations of audiences. Do those results generalize beyond industrial mass societies? To find out, we conducted an experiment among 567 participants in 10 small-scale societies scattered across Central and South America, Africa, and Asia. Despite widely varying languages, cultures, and subsistence modes, pride in each community closely tracked the valuation of audiences locally (mean  $r = +0.66$ ) and even across communities (mean  $r = +0.29$ ). This suggests the pride system not only develops the same functional architecture everywhere but also operates with a substantial degree of universality in its content.

**Stress sensitivity moderates the influence of birth weight on age at menarche: The examination of Japanese women's timing of puberty**

*Ryoko Takikawa*

*SESSION #5: BLITZ TALKS*

It has been pointed out that prenatal stress affects birth weight and that stress experienced before puberty affects age at menarche (AAM). However, there has not been enough relevant research considering stress sensitivity, the individual differences in how easily physiological stress responses appear. The author previously found that in the highly sensitive types, lower birth weight was associated with delayed AAM while in the non-highly sensitive types, lower birth weight was associated with early AAM among American adult women. The purpose of this study was to examine the effect of birth weight on AAM in consideration of stress sensitivity among Japanese adult women. Birth weight and age at menarche were assessed based on self-reported information. The stress sensitivity type was assessed in the questionnaire. Multiple regression analysis showed that the interaction effect of the stress sensitivity type and birth weight on AAM was statistically significant: in the highly sensitive types, lower birth weight was associated with delayed AAM. The results remained significant even after controlling for each variable that could



influence AAM. The findings of the study may be potential evidence for the possibility that the reproductive strategy of women depends on sensitivity to prenatal stressors.

**"It ain't what you do, it is the way that you do it": Cross-cultural evidence that number and temporal distribution of past partners impact attractiveness.**

*Andrew Thomas et al.*

*SESSION #10: MATING PSYCHOLOGY*

A prospective partner's sexual history conveys evolutionarily relevant information about their desirability in the eyes of others, sexual experience, sexual health, and potential for infidelity. Previously, we demonstrated that people's assessments of a prospective long-term mate are affected by their number of past sexual partners, with both sexes wanting a mate with a bit of a past but not too much. Here, I discuss our latest research which examines a neglected dimension of sexual history – time. Across three studies, 6,281 participants from 10 countries rated a prospective long-term partner's desirability based on their total number of past sexual partners (4, 12, or 32). This information was communicated visually using timelines with past partners clustered around the suitor's sexual debut, evenly spaced out throughout their adult life, or clustered in recent history. From Brazil to Slovakia, participants preferred prospective mates with fewer past partners, but were more forgiving of a rich sexual history if it occurred in the past. However, the passage of time diminished but did not extinguish the effect of total partner number. The central findings as well as cross-cultural similarities, a lack of sexual double standards, sex differences, and the role of sociosexuality will be discussed.

**Differential effects on stress response and social attunement by oral contraceptives and IUDs.**

*Mikayla Tolliver, Anastasia Makhanova*

*SESSION #10: HORMONES AND CONTRACEPTION*

The modern environment is filled with evolutionary mismatches that can be detrimental to health. One mismatch is the use of hormonal contraceptives (HCs), which impact numerous psychological processes, including the stress response. Past research examining this mismatch has focused on oral contraceptives (OCs). However, hormonal IUDs have been growing in popularity. OCs and IUDs differ in drug formulation, method of administration, and physiological effects (e.g., women using IUDs resume ovulating but women using OCs do not). Because of such differences, OCs and IUDs may differently disrupt women's stress response. We examined differences in physiological and social stress responses between naturally

cycling (NC) women, women using OCs, and women using IUDs. For the physiological response, we replicated past research showing a blunted cortisol response among women using OCs (relative to NC women). However, contrary to the single prior study on this topic, we also found a blunted cortisol response among women using IUDs. For the social response, we found that women using OCs, but not women using IUDs, demonstrated lower social attunement than NC women. Given these differences in social attunement versus physiological attunement, researchers should examine IUDs and OCs independently to understand the unique health implications of this mismatch.

### **Navigation and Storytelling-Mind the Gap!**

*Jeff P. Turpin*

*SESSION #4: EVOLUTIONARY ANALYSIS AND IMAGINATIVE CULTURE*

Resistance to the facts of evolution takes some of its force from the claim that human-like imagination is categorically different from the sorts of thoughts that animate the animal mind. But modern researchers have shown that some animals have cognitive or creative abilities that could be evolutionary precursors to our own. Many of our “special” imaginative abilities have been shown to reside in the brain’s Default Mode Network. Some researchers have noted the similarity between two of those abilities, storytelling and wayfinding, or navigation. No one has yet shown that animals tell stories; but most animals navigate. This suggests that our imaginative storytelling ability could be derived from an ability found in virtually all animals—that Faulkner’s Yoknapatawpha County, Robinson Crusoe’s island, or Tolkien’s Middle Earth might have roots in our innate animal sense of territory. If so, the claim creates a solid link between our “special” abilities and the minds of other animals. Thus this paper will be a brief survey of supporting evidence for the claim, and a discussion of the implications.

### **How is pain encoded and decoded in human vocalizations?**

*Daria Valente, Cecile Magnard, Alexis Koutseff, David Reby, Katarzyna Pisanski*

*SESSION #6: THE EVOLUTION AND FUNCTION OF HUMAN NONVERBAL VOCAL COMMUNICATION*

Vocal signals of affective states including pain have likely been shaped by natural selection. Their acoustic forms are thus predicted to reflect their adaptive communicative functions. Here, we combine acoustic analyses of authentic human pain vocalisations with perception experiments to test the prediction that pain cries exploit the hearing sensitivities of listeners. We audio recorded women giving birth

without an epidural. These women self-assessed their pain levels, which increased linearly throughout the labour. Acoustic analyses confirmed a parallel increase in the proportion of “harsh” sounding nonlinear phenomena in women’s pain cries as their labours progressed. This was accompanied by progressive increases in fundamental frequency (pitch) and its variability, call duration, amplitude, and perturbation parameters. Psychoacoustic experiments on naïve and experienced listeners (e.g., midwives, obstetricians) showed that both groups could reliably gauge pain levels from natural childbirth vocalisations, and their judgments could be largely predicted by nonlinear phenomena. These results were further verified using synthetic vocalisations with experimentally manipulated levels of nonlinear phenomena. This study provides converging evidence that nonlinear acoustic phenomena encode pain in human vocalisations and that listeners can in turn decode this information, a capacity that aligns with the putative evolved function of pain vocalisations to elicit aid.

### **Individual differences in social learning emerge through the evolution of developmental flexibility.**

*Piet van den Berg, TuongVan Vu, Lucas Molleman*

*SESSION #3: DEVELOPMENT*

Human ecological success is often attributed to our unrivalled capacity for social learning, which facilitates the spread of adaptive behaviours through populations. All humans rely on social learning to acquire culture, but there is substantial variation across societies, between individuals and over developmental time. However, it is unclear why these differences exist. Here, we present an evolutionary model showing that individual variation in social learning can emerge if the benefits of social learning are unpredictable. Unpredictability selects for flexible developmental programmes that allow individuals to update their reliance on social learning based on previous experiences. This developmental flexibility, in turn, causes some individuals in a population to end up consistently relying more heavily on social learning than others. We demonstrate this core evolutionary mechanism across three scenarios of increasing complexity, investigating the impact of different sources of uncertainty about the usefulness of social learning. Our results show how evolution can shape how individuals learn to learn from others, with potentially profound effects on cultural diversity.

### **Exposure to Immigrants Does Not Moderate the Relationship Between Disgust Sensitivity and Opposition to Immigration.**

*Florian van Leeuwen, Lene Aarøe, Michael Bang Petersen, Kim Mannemar Sønderskov*  
*SESSION #3: POLITICS*

Humans have a motivational system for pathogen avoidance that influences social and political phenomena, such as prejudice toward outgroups. Individuals who are more motivated to avoid pathogenic infection tend to be more opposed to immigrants. Explanations for this relation emphasize lack of familiarity, with people who are unfamiliar with ethnic outgroups being more likely to perceive them as an infection risk and therefore oppose immigration. Exposure to immigrants can increase familiarity with outgroup members. This suggests that exposure to immigrants attenuates the relationship between pathogen avoidance motivation and opposition to immigration. We tested this prediction in four studies using country-level ethnic fractionalization and segregation (Study 1) and proportion of immigrants at the local neighborhood level (Studies 2–4) as indicators of exposure to immigrants. Results showed that exposure to immigrants was related to less opposition to immigration, but that exposure did not attenuate the relation between pathogen avoidance motivation and opposition to immigration. This suggests that long-term exposure to ethnic outgroups is insufficient to make them and their customs nonthreatening for those with strong worries about pathogenic threats. This speaks against explanations that emphasize familiarity and suggest a focus on norms and cooperative interactions.

**Ecology, culture and leadership: Theoretical integration and review.**

*Mark van Vugt, Sirio Lonati, Xiaotian Sheng*  
*SESSION #4: BETWEEN DEMOCRACY AND DESPOTISM: SOCIO-ECOLOGICAL PREDICTORS OF LEADERSHIP*

Why do some individuals and societies want authoritarian leaders, whereas others see democratic leaders as their ideal, and are these preferences "hardwired" or socialized? Cultural and evolutionary explanations are often seen as rivals in leadership research. However, these two perspectives have many overlooked complementarities, which can be appreciated when examining the role of ecological factors in shaping variations in culturally endorsed leadership ideals. In this presentation, we integrate and review multidisciplinary research that clarifies these complementarities. First, we discuss how different leadership ideals might emerge as responses to the specific threats and opportunities provided by the ecology where human groups live. Second, we review research on the link between cultural leader ideals, and specific ecological factors, ranging from more physical (e.g., climate, disease) to more social factors (e.g., population density, sex ratio). Third, we highlight how cultural leader ideals are evoked not just by current ecological

conditions but also emerge through cultural transmission, resulting in potential mismatches between cultural leader ideals and present ecologies. Our review shows that a deeper integration of cultural and evolutionary approaches to leadership is needed to understand why cultural differences in leader ideals emerge and why they persist -- or change -- over time.

**The dominance of women as infant caregivers cannot be explained by inherent heightened female sensitivity to infant signalling.**

*Arnault-Quentin Vermillet, Joshua Skewes, Christine Parsons*

*SESSION #2: CHILDCARE*

Globally, women generally do most of the infant care within couples. A mechanism proposed as underlying the maternal dominance in care is a greater evolved sensitivity to infant crying in women compared to men. In Study 1, we tested the "innate difference in sensitivity to crying" hypothesis by investigating the likelihood of non-parents (N=142) awakening to infant crying and alarm sounds. Women were more likely to wake than men at the lowest volume tested only, regardless of sound type. In Study 2, we estimated the relative burden of night-time care in a sample of new parents (N=220) over one week. We found that, on average, mothers were three times more likely than fathers to check on their infants at night. Finally, in a simulation study based on the results of the Study 1 experiment, we inferred the relative burden of care that would emerge if innate sensitivity to infant crying was the sole driver of night-time care. Our findings suggest that patterns observed in parents were very unlikely to be driven by the minimal gender difference in auditory sensitivity found in the experiment.

**Life without sex: Large-scale study links sexlessness to physical, cognitive and personality traits, socioecological factors, and DNA.**

*Karin Verweij, Abdel Abdellaoui, Laura Wesseldijk, Scott Gordon, Joëlle Pasman, Dirk Smit, Renáta Androvičová, Nicholas Martin, Fredrik Ullén, Miriam Mosing, Brendan Zietsch*

*SESSION #6: EVOLUTIONARY PSYCHOLOGY AND BEHAVIOURAL GENETICS:  
FRUITFUL UNION OR SHIPS PASSING IN THE NIGHT?*

Romantic (typically sexual) relationships are pivotal for personal, health, social, economic benefits, and human evolution. Having no mates during the reproductive lifespan would have been an evolutionary dead end in any ancestral context. Lifetime sexlessness may be a purer indicator of ancestral fitness than some other measures of reproductive/mating success, and could serve as an important variable

to examine evolutionary analysis of selection. Yet little is known about factors contributing to long-term lack of intimate relationships. We investigated phenotypic and genetic correlates of never having had sex in ~400,000 UK residents (40-73 years old) and ~13,500 Australian residents (18-89 years old). The strongest associations revealed that sexless individuals were more educated, less likely to use alcohol and smoke, more nervous, lonelier, and unhappier. Sexlessness was more strongly associated with physical characteristics in men than in women. Sexless men tended to live in regions with fewer women, and sexlessness was more prevalent in regions with more income inequality. Common genetic variants explained 17% and 14% of variation in sexlessness in men and women, with a genetic correlation between sexes of 0.56. Polygenic scores predicted related outcomes in the Australian dataset. Our findings uncover multifaceted determinants of human intimacy of evolutionary significance.

**Reconstructing Situated Inter-generational Learning in a Community of Practice Using Cognigrams: An Ethnographic Case Study and Its Archaeological Implications.**

*Mathilde Vestergaard Meyer, Miriam N. Haidle, Felix Riede*

*SESSION #4: PLAY, CULTURAL TRANSMISSION AND CHILDREN'S LEARNING*

Artifacts and tools are the primary resources of archaeological research, and they provide us with evidence about the evolution of hominin sensory-motor and cognitive capacities. Extended childhood is an evolutionary hallmark of *Homo sapiens* and developmental psychology provides rich insights on how specifically human cognition emerges from infancy to adulthood. Yet, attempts to analyse the cognitive abilities of past children as reflected in their tool behaviour are rare. At the same time, novel theoretical and methodological approaches have boosted the visibility of prehistoric children suggesting that their situated exposure to specific materials and technologies in part conditions their cognitive ontogeny. Applying the cognigram approach to ethnographic observations and museum objects from the Wodaabe of West Africa, we reconstruct a setting of situated learning through developing peripheral participation across different-age learners and teachers. Based on a bow-arrow-quiver set made for playing it is possible to identify different learning processes and aims as well as changing roles within a community of practice of Wodaabe bowyers. Against this background, we discuss the role of play in innovation and, taking our argument into prehistory, we note how the initial emergence of play objects correlates with periods of innovation, not least in relation bow-and-arrow technology.

### **Egalitarianism is not equality.**

*Chris von Rueden, Duncan Stibbard-Hawkes*

*SESSION #4: BETWEEN DEMOCRACY AND DESPOTISM: SOCIO-ECOLOGICAL PREDICTORS OF LEADERSHIP*

Many traditional subsistence groups have been described as 'egalitarian societies'. Definitions of 'egalitarianism' have often emphasized equality in resource access, prestige or rank, alongside generalized preferences for fairness and equality. However, there are no human societies where true equality is genuinely realized. Moreover, recent evidence suggest that individuals in nominally egalitarian societies do not have strong other-regarding equality preferences. We propose a different operational framework for understanding egalitarianism in traditional subsistence groups, highlighting the primacy of 1) autonomy of individual decision-making; and 2) either equal opportunity of input in collective decision-making or freedom from the consequences of others' decisions. We show how this framework dispels naive enlightenment notions of the 'noble savage', and clarifies the processes (e.g. demand sharing, status levelling, residential mobility) by which relative equality is maintained. We leverage this framework to explore how variation in subsistence, resource monopolizability and demography, alongside processes of cultural evolution, affect normative commitments to individual autonomy and to shared decision-making. In so doing, we generate testable predictions which help us understand variation in egalitarianism across cultures, both past and present.

### **Individual Differences in Male Anti-Feminist Attitudes**

*Catharina Walldén, Jeremia Sjöblom, Julia Andersson, Annika Gunst, Jan Antfolk*

*SESSION #5: BLITZ TALKS*

We tested the hypothesis that individual differences in the capacity to attract female partners can partly result in the development of anti-feminist attitudes in men. Building on evolutionary theories of female choice, we hypothesized that men with low (vs. high) mate value and low (vs. high) mate access are more prone to turn against sources, such as feminist movements, that have strengthened female choice, and, therefore, also more likely to hold anti-feminist attitudes. We investigated individual differences in anti-feminist attitudes based on education, income, and socioeconomic status. We used self-reports of mate access, mate value, and anti-feminist attitudes from 159 heterosexual men and examined associations between these self-reports by using structural equation modelling. As expected, men with low (vs. high) mate value displayed more anti-feminist attitudes in terms of sexism. Interestingly, there were no associations between mate value and anti-feminist attitudes regarding supporting restrictions on women's sexual freedom, nor between mate access and anti-feminist attitudes. We also found that low-income men

reported more anti-feminist attitudes compared to high-income men. Interestingly, the difference in anti-feminist attitudes was not as clear cut between men with low and high education nor socioeconomic status. We discuss these findings further.

**Social perception is attuned to the harshness and unpredictability of others' environments.**

*Keelah Williams, Cari Pick, Oliver Sng, Steven Neuberg*

*SESSION #10: RESOURCES AND ENVIRONMENT*

When we imagine environments with heightened competition over scarce resources, we tend to assume that life within those environments is also highly unpredictable. Yet resource availability and unpredictability do not always go hand in hand; they can produce independent, additive, or even sometimes opposing effects on people's behavior. Given this, it might be useful for perceivers to use information about the harshness and unpredictability of another person's ecology to predict their behavior. Past work has examined this in the form of "ecology stereotypes," but has conflated scarcity and unpredictability. In a series of three experiments (N = 707), we unconfounded scarcity and unpredictability to explore people's stereotypes about their potentially unique effects on behavior. We find evidence that scarcity and unpredictability are nonredundant in shaping people's stereotypes: Within the same resource-level environments, greater unpredictability leads people to stereotype others as more present-focused. This effect occurs when the source of the unpredictability is left unspecified as well as when it is operationalized in terms of death rates due to random violence. Findings suggest that the mind is attuned to both the harshness and unpredictability of others' ecologies, and uses information about both dimensions when predicting people's behavior.

**Male facial cues to low muscular strength elevate attributed aggressiveness within and beyond Europeans.**

*Sonja Windhager, Bernhard Fink, Marina L Butovskaya, Audax ZP Mabulla, Katrin Schaefer*

*SESSION #2: FACES*

Evolutionary scientists suggest that in men, physical formidability indicates provisioning abilities, protective capacities, resource-holding potential, and social status. Male formidability is intricately intertwined with muscular strength and body height. We examined facial correlates of muscular strength together with assessments of attractiveness and aggressiveness in Europeans and Maasai of Northern Tanzania. By employing geometric morphometrics, stimuli images were



produced in the form of facial morphs that represented solely the morphological covariation with handgrip strength. European raters (n=445) judged facial morphs of young European men calibrated to low handgrip strength as relatively weaker and more aggressive than their stronger counterparts. The highest attractiveness was attributed to medium strength. Furthermore, Europeans (n=271) and Maasai (n=96) assessed corresponding strength morphs of young Maasai men. The overall patterns of responses were like the intra-European ratings, albeit Maasai attributed the highest attractiveness to the highest strength. Congruence across the two populations of assessors supports the notion of a shared foundation for facial perceptions of physical strength, with local ecology and societal context shaping the nuances of attractiveness. Possible explanations for the negative strength-aggressiveness relationship such as feature-based overgeneralizations and external validity will be discussed.

### **Playful Making: Identifying Children as Artists in the Upper Palaeolithic through Developmental Psychology.**

*Izzy Wisher, Felix Riede, John Matthews, Murillo Pagnotta, Kristian Tylén*

*SESSION #4: PLAY, CULTURAL TRANSMISSION AND CHILDREN'S LEARNING*

Children's agential behaviours in the archaeological record have often been overlooked. In recent years, there has been a concerted effort to centre children in the past, through an archaeology of childhood. In Upper Palaeolithic art, this has been addressed through rigorous analyses of anatomical measurements of traces produced by hands and fingers. Whilst this successfully identified children as artists in the Upper Palaeolithic, challenges remain: a dependency on anatomical measurements implicitly limits the cases of children's art. In this paper, we utilise developmental psychological research on children's drawings to develop a framework for identifying children's marks in Upper Palaeolithic art. We propose there are fundamental stages in young children's (0-7 years old) drawing development intrinsically linked with motor and cognitive development, rather than cultural influences. We use these properties to evaluate one potential case of children's drawings in Upper Palaeolithic cave art: the so-called Panel of the Masks from Las Monedas cave (Cantabria, Spain). We identify several characteristic features of young children's marks from different developmental stages on the panel. We argue this approach has significant potential for not only identifying children's art, but facilitating nuanced insights into the playful, yet deeply meaningful, engagements imbued within Palaeolithic children's art making.

### **A shared intentionality account of human social bonding.**

*Wouter Wolf, J. Thielhelm, M. Tomasello*

*SESSION #4: COOPERATION*

Many mechanisms of social bonding are common to all primates, but humans seemingly have developed some that are unique to the species. These involve various kinds of interactive experiences - from watching a movie together to having a conversation - whose common feature is the triadic sharing of experience. In a series of studies with adults, children and great apes, we show that sharing experiences through joint attention facilitates social bonding in both species, but that humans seem to do so in a special way, by creating shared metacognitive representations about their experience being shared. These results fit into a larger picture of a shared intentionality account of human social cognition, proposing that humans evolved sophisticated social cognitive abilities in order to survive through cooperation. These same social cognitive abilities seem to have shaped the way in which we connect with others, explaining why humans engage in such unique social bonding activities used to sustain large scale social networks comprised of mostly non-kin, and why certain modern forms of social interaction (e.g., virtual lectures) might be less effective for social bonding purposes.

### **The wisdom and madness of interactive crowds with a structured network.**

*Jingyu Xi*

*SESSION #9: CULTURAL EVOLUTION AND SOCIAL LEARNING*

Animals acquire knowledge from both individual learning and social learning. In a collective learning situation with a fully connected social network structure, the self-organizing group dynamics can reduce suboptimal bias in a high-risk high payoff setup. However, social information is not always equally accessible to all agents due to cognitive and physical constraints, and the amount and quality of social interaction are determined by how information travels through the structured social networks. In order to understand how social information in diverse social network structures may alter the dynamics of collective decision making by social learners, we used a multi-agent reinforcement learning simulation in a repeated armed risky bandit task. By varying social network structures from the ring lattice to the perfect graph, the results showed that (1) the hot stove effect was mitigated even under the minimum social influence in the sparsest ring network, and that (2) informational efficiency did not qualitatively change the trend of collective behavioral rescue, although the informationally efficacious networks amplified the existing risk-taking biases. (3) Most interestingly, the increasing social conformity bias on the individual level has a similar function to that of the increasing network density on the collective level.

**Normative decision-making about harvest division among Derung co-farmers is driven by tradition, not payoff expectations.**

*Minhua Yan, Robert Boyd, Sarah Mathew*

*SESSION #3: VALUES AND PROSOCIALITY*

Understanding how people decide which behavioral variant to adopt in a normative context is the foundation of understanding group-level norm evolutionary dynamics, and the role norms have played in shaping human evolved psychology and evolutionary history. The classical rational choice theory argues that a payoff-maximizing agent should balance the behavioral options' ecological/economic payoffs with their social payoffs and choose the option that maximizes this aggregated payoff. This study documents the behaviors and self-reported behavioral motivations of participants from a small-scale society in a context with an established norm, both when observations by others are present and when they are absent. Contrary to what the rational choice theory predicts, most Derung people do not actively calculate the ecological or social payoffs when deciding which behavioral variant to adopt, even though they have clear personal preferences and accurate guesses about majority preferences to do so. Instead, Derung people report following the tradition as their behavioral motivation regardless of whether they are under social observation. This normative decision-making algorithm is consistent with some previous findings in WEIRD societies, suggesting that normative social structures may have shaped the human social learning and decision-making psychology. With this normative decision-making algorithm, individually costly norms can be maintained without costly policing from other group members.

**Interfering with evolved responses: behavioral effects of blunting fear with acetaminophen**

*Savannah Yerman, Pat Barclay*

*SESSION #2: BLITZ TALKS*

Emotions are psychological mechanisms that evolved to cause adaptive behavior. If these emotions are artificially disrupted, it should cause behavioral changes to our otherwise useful emotions. For example, fear promotes behaviors which keep us safe, and so blunting fear (especially unknowingly) could be problematic in some dangerous situations. Previous research has shown that acetaminophen (paracetamol) blunts a wide range of affective states and evaluations, presumably through the same mechanisms by which it dulls the affective component of physical pain. Most of this work has used self-report or neural measures, with limited

investigation of the drug's behavioral effects. We recruited 266 participants to investigate the behavioral consequences of blunting fear with acetaminophen. Participants were given either 1000 mg of acetaminophen or placebo capsules before taking part in a frightening virtual reality plank walk at extreme heights. Those on acetaminophen walked faster across the plank, took less time to step onto it for the first time, and had lower heart rates (relative to resting) than the placebo group. These findings suggest that acetaminophen might promote risky behavior in dangerous environments, but also could be potentially useful in clinical settings where an individual is experiencing fear that is disproportionate to the danger posed.

### **Preschoolers Selectively Invest in Grateful Recipients in a Trust Game.**

*Joakim Zahl, Francesco Margoni, Erik Fonn, Lotte Thomsen*

*SESSION #3: DEVELOPMENT*

To sustain the evolution of cooperation, individuals must recognize and discriminate against non-cooperators. Trivers (1971) posited that gratitude is part of the reciprocal system, moving individuals to return favors. We hypothesize that displays of gratitude engender trust, thereby increasing benefactors' willingness to invest in individuals who express gratitude, even in the face of the potential risk of not receiving a return on their investment. We tested this by implementing a modified Trust Game for preschoolers. Children aged 4 - 6 decided whether to give candies to grateful, ungrateful, or neutral characters. If the child chose to give candy, the recipient received three additional candies, which could either be retained or shared back with the child, presenting an investment risk - losing their candy or gaining more than if they kept their candy for themselves. Two studies involving Italian (N = 56) and Norwegian (N = 70) preschoolers showed that they preferentially invested in the grateful recipient over ungrateful or neutral characters. No significant difference was observed between ungrateful and neutral characters. This suggests that gratitude signals altruistic intent, fostering trust and promoting further cooperation

### **Ontogeny of Accuracy and Political Biases in Boy's Judgements of Men's Prosocial and Competitive Traits in Conambo, Ecuador.**

*James Zerbe, Thomas J. H., Morgan Brenda, J. Bowser, John Q. Patton*

*SESSION #3: VALUES AND PROSOCIALITY*

What is the potentially adaptive role of slow growth and prolonged ontogeny in Homo sapiens' life history evolution? Slow pre-adult growth has been hypothesized as a functional learning period where individuals acquire the abilities and skills necessary for navigating the varied challenges of adulthood (Kaplan et al., 2000),

including competence in strategic social contexts (Flinn & Ward, 2005). Though, other perspectives think this is not necessarily the case (Jones et al., 1999). To clarify this, data from an Amazonian hunter-horticulturalists community is used to assess the developmental dynamics of social competency acquisition (adult-typical ability). Research participants include men and boys who make social judgements in a photo-ranking task when prompted to relatively evaluate conspecific men about their prosocial and warriorship reputations, social status, and hunting ability. Following a previous approach, a Bayesian cultural consensus analysis models agreement, individual accuracy, tendency to make ties, and group bias in rankings probabilistically. Rankers' accuracy is modeled as a function of their age which enables inferences about the length and completion of social skill development to be made and advance our understanding of the evolution of human ontogeny. Results forthcoming.

### **One millenium of psychological changes in China, fiction as cognitive fossils.**

*Ying Zhong, Nicolas Baumard, Valentin Thouzeau*

*SESSION #1: IMAGINATIVE CULTURE*

Psychology is critical to understanding human history. When aggregated, changes in people's psychology - in the intensity of social trust, romantic love or openness-to-experience - can lead to important changes in institutions, social norms, and cultures. Yet, studying the role of psychology in shaping human history has been hindered by the difficulty of documenting the psychological traits of people who are no longer alive. Recent developments in psychology suggest that cultural artifacts partly reflect the psychological traits of the individuals who produced or consumed them. In this paper, we utilize a comprehensive database of Chinese fiction, covering a period from 622 to 2022, to document and explain the changes in psychological traits in Chinese history. Over time, we observe an increase in the importance of prosociality (love, friendship, reciprocity), self-development and openness, and a decrease in the importance of social control (status, kinship, puritanism). We then explore the ecological determinants of these trends. Consistent with hypotheses in sociology and behavioral ecology, we show that periods of economic growth such as the high Qing dynasty, the early Republic and the present era are associated with a greater incidence of prosociality, self-development and openness, while period of economic decline such as the late Qing and the Cultural Revolution are associated with a greater importance of social control. These patterns, echoing the principles of modernization theory, parallel similar trends observed in Western societies. Our findings suggest the presence of overarching mechanisms that drive psychological and cultural transformations across different historical and geographical contexts and that, contrary to some perceptions, the trajectory of China's will bend towards greater openness and social trust. These results indicate how people varied in their

preferences in different era toward love, self-development, exploration, and cooperation in the long history.

**Unifying evolutionary psychology and behavioral genetics - discussion.**

*Brendan Zietsch*

*SESSION #6: EVOLUTIONARY PSYCHOLOGY AND BEHAVIOURAL GENETICS:  
FRUITFUL UNION OR SHIPS PASSING IN THE NIGHT?*

I will serve as a discussant for the symposium 'Evolutionary Psychology and Behavioral Genetics: Fruitful Union or Ships Passing in the Night?' I will comment on the work presented as well as aspects of the topic that weren't covered in the talks, and offer thoughts on future directions for evolutionary behavioral genetics.

Discussion panel participants: *H. Clark Barrett, Rebecca Sear, David Schmitt, Natália Dutra, Helen Davis, Dorsa Amir, David Coall*

*SESSION #6: ETHICAL CHALLENGES IN THE EVOLUTIONARY BEHAVIOURAL SCIENCES*

No abstract.

## POSTER ABSTRACTS

(LISTED IN ALPHABETICAL ORDER BY PRESENTING AUTHOR'S LAST NAME - IN BOLD)

### **Reading Between the Moves: Dynamic cues and Social Perception**

*Mohamed Ismail Abdul Kader*

Evolutionary and social psychological theories suggest that social perception plays a key role in making decisions on mate choices, relationships, friendships, etc. Previous studies have explored social perception using static cues like facial symmetry, skin colour, and body shape from static stimuli such as photographs. However, real-life judgements are made on moving bodies and less is known about the dynamic cues that may have an influence on our perceptions. This study chose two contrasting forms of movements—walking and dancing—to study the perception of three basic factors: attractiveness, competence and warmth. While walking is a simple and common form of movement, dancing is a complex form of movement which also plays a role in wooing and courtship. To separate dynamic from static cues, motion-capture technology was used. Normal videos and motion-captured videos of walking and dancing were collected from 100 individuals along with their photographs which were rated for attractiveness, competence and warmth by 102 raters. Sexual dimorphism ratings were collected based on the motion-captures walking and dancing videos. Multiple regression analysis showed both static and dynamic cues were significant predictors of said social factors. The study also found sex and sexual dimorphism had a significant effect on the perception of attractiveness, competence and warmth. This study also explored the differences in social perception between the two forms of movements chosen. These findings suggest that movements play a significant role in social perception and sex and sexual dimorphism in movements has a strong influence on the way we perceive each other.

### **Heart of darkness: a mathematical approach to study the roots of sadness**

*Oreste Affatato, Thomas Haarklau Kleppestø, Leif Edward Ottesen Kennair*

Sadness is one of the fundamental human emotions whose dysregulation or dysfunctionality can lead to a dark turn towards pathology. While most of the research, particularly in the psychological and medical field, has been devoted to study what is considered sadness in its pathological form, little has been done in trying to elucidate the function of normal sadness. As a consequence of this, the evolutionary significance of sadness remains subject of debate. We propose to study the evolutionary stability of the sadness-related behaviors using a mathematical

approach. In particular, we propose several modelling strategies that aim at predicting the evolutionary stability of sadness under different possible scenarios. Moreover, we discuss the evolutionary stability of sadness-related behaviors in comparison with strategies that lack the sadness response.

### **An Experimental Paradigm for Triggering a Depressive Syndrome**

*Maxwell Altman, Lily Martin, Candice Chiu, Marta Maslej, Courtney Aucoin, Paul Andrews*

Research investigating whether depression is an adaptation or a disorder has been hindered by the lack of an experimental paradigm that can test causal relationships. Our study aimed to induce multiple symptoms of depression, particularly those related to rumination, in a non-clinical sample through a controlled social experiment. Symptoms targeted included sad mood, anhedonia, feelings of worthlessness or guilt, and difficulty concentrating. In our first experiment, 134 undergraduates were randomly assigned to Exclusion or Inclusion groups. Excluded participants underwent a modified Cyberball paradigm, designed to make them feel socially excluded, followed by a dual-interference task to assess their working memory. Excluded participants self-reported increased sadness and decreased happiness, scored higher on multiple measures of depressive rumination, and demonstrated an impaired ability to concentrate. This study has been replicated twice, with similar sample sizes, revealing congruent effects on mood and rumination. Our paradigm represents a reliable and potentially valid means through which depressive symptoms may be induced and explored in a non-clinical sample. Inducing such symptoms in a healthy population supports adaptationist hypotheses of depression, particularly those which argue that depression can be a normal response to life-stressors. Future researchers may use our paradigm to test other adaptationist hypotheses of depression.

### **Maternal Birth Spacing and the Risk of Postpartum Depression**

*Jan Antfolk, Annika Gunst, Felix von Renteln, Julia Paavonen*

Because the relationship between the mother and her offspring is vital to human reproduction, the prevalence of postpartum depression symptoms is an evolutionary conundrum. It has been proposed that such symptoms might stem from an evolutionary mother-offspring conflict over maternal resources. Here we tested the hypothesis that maternal postpartum depression is associated with increased interbirth intervals. We measured depression symptoms in 645 Finnish mothers during



pregnancy, and at three and eight months after delivery. We found that postpartum depression measured at eight months after delivery was associated with longer interbirth intervals. Interestingly, this association was not mediated by sleep disturbance, suggesting that the conflict is mediated through some other mechanism. Depression symptoms measured during the pregnancy and at three months after delivery were not associated with interbirth intervals. We argue that considering mother–offspring conflict in studies of postpartum depression is important to better understand the behavioral mechanisms that drive and sustain maternal psychological unhealth and allow to develop targeted interventions to enhance the well-being of both individuals.

### **Why do people avoid the Dictator role in the Dictator Game?: Examining the design features of the reputation management mechanism**

*Sakura Arai*

In the Dictator Game, the first player (Dictator) decides how to divide the money between themselves and the second player (Receiver), who can only receive however much the Dictator shares. Surprisingly, 36% of adults choose to be a Receiver rather than a Dictator if given the choice (Yamagishi et al., 2013). Why do people avoid the role of Dictator, giving up a perfect opportunity to pursue self-interest? Here, we investigate whether Dictator Role Avoidance (DRA) is a byproduct of an evolved reputation management mechanism that detects and avoids the risk of hurting one's reputation as a cooperation partner. First, we test whether DRA is associated with a general tendency to avoid situations that could damage one's reputation. Second, although one might expect DRA to increase cooperation in order to protect one's reputation, the evidence is mixed (Hashimoto et al., 2022; Yamagishi et al., 2013). In fact, the risk of damaging one's reputation should be low as long as one cooperates, making DRA unnecessary. That is, the mechanism should only produce DRA given one's preference to defect. By manipulating reputation risk, we also examine whether DRA predicts (a) defection when risk is low and (b) strategic cooperation when risk is high.

### **Disgust Expressions Enhance Conformity in a Group Setting**

*Julian Arky, Jessica Frantzen, Kristiana Klein, Ziyi Zhou, Keelah Williams, & Debra Lieberman*

We explored whether verbally expressing disgust toward a moral violation would enhance people's willingness to condemn the violation in a group setting. Three

research assistants served as confederates and provided their ratings of the immorality of nine different moral violations. In the control condition, confederates and participants (N = 44) provided their ratings on a scale from 1-10 (not at all immoral to extremely immoral). In the experimental condition, confederates and participants were asked to provide their “general reaction” to the violations in addition to their rating. For three of the nine moral violations, each confederate used disgust language in their reaction (e.g., “That’s pretty gross”). In both the control and experimental conditions, the ratings provided by the confederates for these three violations were inflated in their severity as compared to typical immorality ratings for these violations. We found that participants in the disgust condition reported higher ratings on the first violation than participants in the control condition, and women reported higher ratings than did men. These findings provide some initial evidence that describing a moral violation in disgust terms can increase people’s agreement with the severity of that violation.

#### **Using a controlled stressor to test the sex differences in depression.**

*Courtney Aucoin, Maxwell S. Altman, Paul W. Andrews*

Globally, self-identified women are 2 to 3 times more likely than self-identified men to be depressed. Depression is conventionally viewed as a disorder—the result a malfunction in the brain which causes a syndrome of cognitive, affective, and behavioural changes. However, I am interested in testing the disorder narrative against the differential environment hypothesis (DEH), which views depression as a normal emotional response that is triggered by complex stressors. According to the DEH, women’s rates are higher as they are more likely to be exposed to the stressors that trigger depression than men. Our paradigm allows us to experimentally manipulate the depressive stressor, ensuring that all participants are exposed to the same stressor. Women entered the lab with higher rates of depression, yet when controlling for baseline differences in mood, men and women did not differ in their depressive response to the paradigm with one exception; women developed lower self-esteem. It is unclear whether this is a real sex/gender difference in the experience of the symptom or a reporting difference and this will be explored through further qualitative analysis. These results will be discussed further as well as the results of the current replication study.

#### **Evolutionary Perspective on Gender Differences in Post-traumatic Distress: The Case of Status Loss Events.**

*Roy Azoulay, Eva Gilboa-Schechtman*

Women report greater post-traumatic distress (PTD) than men following physically threatening events. However, gender differences in PTD following social stressors such as status losses are understudied. Whereas the social construction account points to a general sensitivity in women following any type of stressor, the evolutionary account suggests enhanced sensitivity to status losses in men, especially following inter-males aggressions. These propositions were examined in two studies (Study 1, N = 211; Study 2, N = 436). Participants were asked to recall a status loss and to fill out measures assessing PTD and depression severity. In line with the evolutionary account, men, as compared to women, displayed enhanced PTD following status loss. Status losses conducted by men against men were associated with greater PTD than were instances involving other target-aggressor pairings. Finally, age was negatively associated with PTD in men but not in women. The examination of evolutionary challenges modifies the standard view linking the female gender to enhanced sensitivity to trauma. Thus, the pattern of enhanced sensitivity to stressful events appears to be affected by gender- and development-specific adaptive challenges.

### **Empathic signaling as a mechanism of formation and maintenance of social capital among women of Matlab, Bangladesh.**

*Sojung Baek, Joon Hwang, Nurul Alam, David A. Puts, Mary K. Shenk*

Throughout evolutionary history, human females have faced ecological pressures, such as exogamous marriage, that may have selected for specialized psycho-behavioral tendencies to promote same-sex dyadic relations that function to provide social support. Empathic response has the potential to enable subtle social strategies among women, whose use and acquisition of social status and power may be limited in male-centric societies. Motivated by signaling theory, I seek to understand the signal value of empathic response and whether the value is associated with the signaler's social network, and thus her access to social capital. In Bangladesh, social norms of patrilocality and women's seclusion in the domestic sphere provide a good opportunity to test the effect of empathic signaling. Women over the age of 13 in three neighborhoods (126 individuals) were interviewed to collect data on social support networks, psychological well-being, and both provision and receipt of empathic response. Multilevel models and exponential random graph models are applied to explore how empathic signaling is associated with social capital in women's dyadic relationships. Preliminary findings suggest that relationship value is related to both provision and receipt of empathic response, but that only receipt of empathic response is associated with women's well-being.

## **Men, Women, and Coyotes: Sex Differences in Perceptions of Danger and Fear**

*Kortne Bajor, Glenn J. Scheyd, Valerie G. Starratt*

Given that humans are a sexually dimorphic species in which males develop to be significantly larger and stronger than females and that sex differences in reproductive biology lead men and women to benefit from different and often competing mating strategies that are not always consensual, men inherently represent a potential danger to women. This potential danger translates to real and practical danger in terms of both sexual and non-sexual violence against women perpetrated primarily by men. Women appear to be keenly aware of this danger and routinely engage in behaviors specifically designed to protect against being victimized by men. The preponderance of anecdotal evidence suggests that men underestimate the extent to which women are affected by the chronic potential threat from men. As compelling as these anecdotal data may be, to the best of our knowledge this effect had not previously been empirically tested. We address this gap in the literature across multiple studies with varied methodologies, which confirm that perceptions of danger, fear, and related behaviors are moderated by sex, the nature of the potential danger, and whether the participant is reporting on their own perceptions or estimating the perceptions of other men or women.

## **Occam versus Williams: The roles of simplicity and adaptationism in psychological theorizing**

*Michael Barlev, Steven L. Neuberg*

I will argue—using examples from social, cognitive, developmental, and comparative psychology—that psychological theorizing has been, implicitly or explicitly, knowingly or unknowingly, guided by ontological parsimony, a principle stressed by the medieval philosopher William of Occam as well as by many scholars who came before (e.g., Aristotle) and after (e.g., Newton, Einstein). I will argue that theorizing about the structure of psychological systems—indeed, all biologically evolved systems—should instead begin by considering the functions for which these systems evolved, as suggested by evolutionary biologist George Williams in his seminal *Adaptation and Natural Selection* (1966). En route, I will explore the minimal commitments of this structure-function theorizing (called adaptationism) and what adaptationist psychological theories look like.

## **Were Husbands Older Than Wives in Hunting-Gathering Societies? Marriage-by-Marriage Data from the "Pagan" Hunters and Sealers in the Canadian Census of 1891—and We Know Their Names**

*Gordon Bear, Brett Pelham*

The first nationwide Canadian census to identify marriages was that of 1891. Searching the digitized records for illiterate married hunters whose "religious affiliation" was "pagan," we found 177 with both spouses' ages, all in Ontario. In 80.2% the man was older, and in 12.4% the woman was older, a ratio of 80:12. Our search for "pagan" sealers yielded 99 couples, all on Vancouver Island. The ratio of husband-older to wife-older was 83:9. The ratio was high for hunters in their twenties (70:24), thirties (85:9), forties (82:12), fifties (78:9), sixties (78:11), and seventies (100:0), and similarly for their wives and for the sealers. Yes, many of the ages were multiples of 5 or 10, but for spouses whose ages were neither, the ratio was 78:13 for hunters and 75:16 for sealers. For three populations of indigenous American hunters and sealers, the ratios were 80:8, 83:11 and 82:7 (reported last year at HBES). Are we glimpsing here a primordial pattern? In contemporary populations the older the husband relative to his wife—up to a point—the higher their infant-survival rate and the larger their completed family (Pelham, JPSP, 2021).

## **Forgiveness of Emotional and Sexual Infidelity from an Error Management Theory Perspective: A Study of Couples in Two Nations**

*Mons Bendixen, Kaitlyn P. White, Laith Al Shawaf, David M. Buss, Leif Edward Ottesen Kennair*

Following one's own transgressions in a romantic relationship, Error Management Theory predicts a bias toward not believing in one's partner's stated forgiveness (i.e., negative forgiveness bias). A possible function of this bias would be to instigate reparative behaviors to mend the transgression. In the current study, we aimed to replicate prior findings (Bendixen, Kennair, & Grøntvedt, 2018) where Norwegian students were found to underestimate a romantic partner's forgiveness following one's own infidelity. Using samples from Norway and the US, we examined the extent to which this bias was related to infidelity type (sexual and emotional) and to the sex of the participant. Heterosexual couples (Norway: N = 125 and US: N = 71) responded independently and privately, providing their reactions to hypothetical emotional and sexual infidelity scenarios. Participants rated the likelihood of their partner expressing forgiveness, their own likelihood of believing in their partner's forgiveness, and their own willingness to forgive an unfaithful partner. The results suggest a strong negative forgiveness bias effect in both nations. The effect was stronger for own ratings (belief-expressed) than for ratings including cheated

partner's expressed forgiveness. In general, expressed and believed forgiveness was higher for emotional infidelity compared to sexual infidelity. Similarities and differences across nations are discussed.

### **Simulating Cooperative Partner Choice With Reinforcement Learning Using Agent-Based Models**

*Dylan Benkley, Leda Cosmides*

Despite an abundance of research on cooperative partner choice it is still unclear how some of the adaptive problems are solved at an algorithmic level. Using agent-based models I show a potential solution lies in reinforcement learning (RL). In these models, agents engage in multiple rounds in which they must reciprocally choose a partner and then play a Prisoner's Dilemma (PD) game for rewards. After multiple rounds agents reproduce proportional to their total payoff and the cycle repeats. Offspring inherit two traits: (1) Cooperativeness (i.e., agent's probability of cooperating in the PD) and (2) Exploration (i.e., agent's exploration parameter in the RL algorithm). In simulations of varying conditions higher cooperativeness evolves and stabilizes in a population of agents with RL partner choice mechanisms (several RL and non-RL algorithms are tested). Agents also evolve to be highly successful (i.e., average total payoff increases across generations). Moreover, three factors are particularly favorable to the evolution of cooperation: (1) the presence of an outside option, (2) an outside option with a low reward value, and (3) more partner choice rounds. These models show that a mechanism that uses RL to choose rewarding cooperative partners is plausible and robust.

### **The effect of mating-related and threatening situational contexts on makeup use in women - the study of actual behavior**

*Malgorzata Biesiadecka, Aleksandra Szymkow, Katarzyna Galasinska*

Human interest in improving physical appearance is deeply rooted in evolution (Davis & Arnocky, 2020). The important context for understanding appearance-enhancing behavior is the one related to mating, as women can strategically shape their image to gain benefits both in inter- and intrasexual selection (Davis & Arnocky, 2020; Valentova et al., 2021). However, to date, the vast majority of makeup research has been limited to examining everyday makeup use (Batres et al., 2018; Mafra et al., 2020), with very few exceptions (Kellie et al., 2021), while the amount of makeup and the form it takes can vary depending on the situation. If makeup is used as a strategic tool, then we should observe its applications varying according to specific

contexts. Indeed, our preliminary study (Biesiadecka, Szymkow & Baryla, 2023) confirmed it. The ongoing experiment we want to present was designed to test whether the amount, prominence, and diligence of makeup application are higher in a mating context compared to no-mating contexts, and lower in a threatening context. Actual behavior is measured (amount, diligence and expressiveness of makeup assessed by expert judges in photographs taken before and after makeup application). Additionally, the mediating function of such motivation is tested. Preliminary results will be presented.

### **Exploring the Interplay Between Gender Role Attitudes and Testosterone in Expectant Parents**

*Arial Bloshinsky, Anastasia Makhanova*

Although traditional gender role attitudes are typically examined from a social roles perspective, it is also important to consider them from an evolutionary biological perspective. From an evolutionary perspective, traditional gender roles align men with resource management and women with nurturing (Rogers & Amato, 2000; Livingston & Judge, 2008; Cotter et al., 2011). Furthermore, the Challenge Hypothesis proposes that resource management is associated with higher testosterone levels, whereas nurturing is associated with lower testosterone levels (Wingfield et al., 1990). Therefore, gender role attitudes may be associated with people's testosterone levels. Leveraging existing data from a longitudinal study involving expectant parents, we will explore the association between gender role attitudes and testosterone. We hypothesize that there will be an association between traditionalism and testosterone and that this association will be moderated by gender. Among expectant fathers we predict testosterone will be positively associated with traditional attitudes, emphasizing resource management. Whereas, among expectant mothers, we predict testosterone will be negatively associated with traditional attitudes, emphasizing nurturing. Additionally, we will explore whether these associations are influenced by a partner's gender role attitudes. Overall, this research will contribute valuable insights into nuanced dynamics of gender role attitudes and hormonal profiles.

### **Survival of the Mis-fittest: The Case for Rebranding Social "Darwinism"**

*Melissa Blundell Osorio*

Charles Darwin transformed the way we understand the world, and his work remains a cornerstone of modern science more than a century later. Academics from across

a range of disciplines were impacted and influenced by his work, and anthropologists in the 19th and early 20th centuries were not an exception. Today, some of these anthropologists are still closely associated with Darwinian ideas—primarily the Social Darwinists, such as Edward Tylor and Henry Lewis Morgan. When discussing Darwin's influence in anthropological thought, though, what is often missing in the discourse is how faithful the application of Darwinian ideas actually was to Darwin's original theoretical contributions. A close analysis of these thinkers' works reveals that, ironically, the theorists who are most closely associated with Darwin are the ones whose ideas stray farthest from Darwin's original contributions, by ignoring or misrepresenting several key Darwinian ideas. Other anthropologists, such as Franz Boas, were clearly deeply influenced by Darwin as well. Despite displaying a deep understanding of Darwin's work and ideas, and applying them accurately and effectively in his work, Boas's name is rarely associated with the father of evolution. A more critical examination of the label Social Darwinism, and perhaps a rebranding, is in order.

### **Visualizing facial beauty: A noise-based reverse correlation study**

*Jeanne Bovet, Thomas Pollet*

Numerous evolutionary hypotheses attempt to explain why some faces are found more attractive than others. For example, it has been suggested that feminine features are found attractive in women because they are cues of high reproductive potential. This study explores whether a data-driven approach yields results comparable to conventional theory-driven investigations of facial attractiveness. We use a noise-based reverse correlation method, a data-driven technique that generates visual proxies of mental representations, based on judgements of randomly varying stimuli. We produce visualisations of female and male faces high and low in attractiveness. Subsequently, we explore how these mental representations (or “classification images”) of attractive faces are perceived across dimensions such as age, femininity/masculinity, weight, and happiness. Our findings reveal that mental representations of attractive women are rated as younger, thinner, more feminine, and happier compared to less attractive faces. Male attractive faces are rated as younger, thinner and happier, though not necessarily more masculine than their less attractive counterparts. Results are discussed in link with current evolutionary explanations for mate preferences and facial attractiveness. Furthermore, our methods and results hold relevance for the field of first impressions, underscoring the multidimensional nature of attractiveness and its links with social perceptions and stereotypes.



## Height preferences in mate choice and endorsement of gender norms

*Alexandra Dial, Gillian Brown*

Height preferences might reflect condition-dependent mating strategies, whereby tall men are deemed attractive due to potential links with health and resource acquisition. Height preferences could also reflect socially constructed 'male-taller' norms in Western societies, leading to the prediction that the importance of height in a potential partner would correlate positively with sexist attitudes and negatively with feminist attitudes. Participants (N= 112 women, 110 men; heterosexual, UK-based) completed: i) questions about height preferences, ii) three gender norm measures (Liberal Feminist Attitude and Ideology Scale, Ambivalent Sexism Inventory, Traditional Masculinity and Femininity Scale), and iii) two open-ended questions about why height is important to them. Women who placed greater importance on height scored higher on sexist attitudes, lower on feminist attitudes, and were less likely to find a partner shorter than themselves acceptable. Men who were less willing to accept a taller partner placed more importance on height and were more likely to describe themselves as being traditionally masculine. Women wanted to feel 'feminine/protected', whereas men wanted to feel 'masculine/dominant' relative to their partner. These findings suggest that between-individual differences in height preferences are related to the extent to which individuals endorse traditional gender norms, particularly those related to protection and dominance.

## Hoarding Information for Survival: The Survival Processing Effect in Joint Encoding Tasks

*Dilan Çabuk-Çolak, Çağlar Akçay, Terry Eskenazi*

In shared tasks people often encode information related to their task partner even when it's irrelevant to themselves, named Joint Memory Effect (JME). JME may be stronger in tasks with evolutionary value, such as when processing information in a survival context. Using the survival processing paradigm in a joint encoding task, we asked participants to imagine themselves either in a survival or a moving scenario while alone or with a confederate. We presented words in three semantic categories and asked participants to rate words from their assigned category for usefulness in the imagined scenario, while the second and third categories were rated by the confederate and to be ignored by both, respectively. A surprise recall test showed that participants in both groups recalled more items from their partner's category than items from the unassigned category (JME). Crucially, JME was bigger in the survival group as confederate's words were remembered better in the survival group, compared to the moving group. Indeed, participants in the survival group encoded as many items from their partner's category as those of their own. These findings

suggest a social information hoarding strategy that may be adaptive if two individuals encounter a survival situation together.

### **Functional roles of cortisol in the exploration of novel environments**

*Tikal Catena, James Roney*

Glucocorticoid responses to novel environments are consistently observed in nonhuman species, and are positively associated with increased locomotion and spatial dispersion. These responses and their effects are typically interpreted as stress responses. However, glucocorticoids' associations with motivational processes and spatial learning suggest an alternative explanation: these transient changes may instead reflect an adaptive biobehavioral response promoting environmental exploration. In this study, we compare human subjects' cortisol responses to a novel environment (experienced through ambulatory immersive virtual reality) to their responses to control lab sessions. We hypothesized that cortisol concentrations would increase when encountering the novel environment, independently of psychological stress. We also examined whether cortisol responses to a novel environment have functional effects on foraging strategy, promoting higher exploration of foraging alternatives. Following controlled exposure to the novel environment, participants completed a task within it whereby they freely foraged from four 'patches'. Novel environment exposure by itself did not predict increased cortisol, but there was a significant positive association between cortisol responses to the novel environment and self-reported preferences for day-to-day spatial exploration. Additionally, cortisol change during the foraging task was positively correlated with participants' switches between foraging patches. These findings provide preliminary evidence for an unexplored function of glucocorticoids.

### **Understanding agentic and communal narcissism in a life history approach**

*Bin-Bin Chen*

This study examined agentic and communal narcissism, proposed by an agency-communion model of narcissism, within an evolutionary life history framework. The sample comprised 252 college students. Participants completed a set of self-reported measures of agentic narcissism, communal narcissism, a slow life history strategy, future orientation, childhood environmental unpredictability and prosocial and coercive resource control. The results indicated that agentic narcissism was negatively associated with a slow life history strategy; communal narcissism was positively associated with both future orientation and a slow life history strategy.

Furthermore, childhood environmental unpredictability was positively associated with agentic narcissism, which was in turn associated with both coercive and prosocial resource control. The same associations were not found for communal narcissism. These results define the evolutionary origin of agentic and communal narcissism.

### **Cognitive evolutionary-group therapy for depression: a case of study**

*Andreza Conceição de Souza Tavares, Cezar Pinto, Cristiane Leandro Rodrigues, Silvano Barbosa Agostinho Howat-Rodrigues, Anna Beatriz Carnielli Maciel, Mariana Grassi Cerqueira, Ana Lídia da Cruz Nunes, Andréa Ambrósio Tokumar, Rosana Suemi*

In this presentation, we are outlining a protocol for Cognitive Evolutionary Group Therapy for Depression (CETG) and we are also describing a case study – a patient who underwent this intervention – selected from a Randomized Clinical Trial (<https://ensaiosclinicos.gov.br/rg/RBR-7kh27st>). CETG is a short-term (12 weekly sessions) intervention conducted in groups of 8 to 12 participants. CETG is based on the evolutionary explanations of depression that link it with a loss of fitness. We wanted to test whether guiding the participants to increase certain dimensions of fitness, assessed at intake via the Evolutionary Fitness Scale, will be associated with a reduction in depressive symptomatology. The intervention sessions covered cognitive restructuring, evolutionary-inspired behavioral activation, social skills training, and mindfulness. The patient that we are presenting completed self-report assessments, including the Patient Health-Questionnaire-9, Evolutionary Fitness Scale, Analytical Rumination Questionnaire, and the World Health Organization Quality of Life-BREF pre-and post-treatment and at three months follow-up. The results showed a significant reduction in depression symptomatology, rumination, improvement in quality of life, and increased fitness, especially in the social capital and health dimensions of it. Implications of these results are also discussed.

### **The Sister Guarding Hypothesis**

*William Costello, Carin Perilloux, David M. Buss*

Research on kin influence has predominantly emphasized parental influence over offspring mating behavior. For example, The Daughter Guarding Hypothesis (Perilloux et al., 2008) posits that humans possess adaptations prompting greater interference in daughters' mating compared to sons'. However, due to genetic relatedness and close proximity, siblings may also have adaptations to influence each other's mating decisions. We propose the Sister Guarding Hypothesis,

investigating whether individuals are more motivated to influence sisters' mating choices than brothers'. Given women's higher reproductive risks as the more investing sex, poor mate choices or unwanted pregnancies have graver consequences for daughters/sisters than sons/brothers, particularly in the preindustrial environments where our psychology evolved. We hypothesize that, akin to daughter guarding, siblings possess psychological adaptations leading to greater interference in sisters' mating decisions. Predictions include participants exhibiting more concern and likelihood of interference in sisters' sexual decisions, and placing greater importance on approving of sisters' sexual partners. An act nomination question also aims to identify specific behaviors influencing siblings' sexual decisions. This research contributes to a nuanced understanding of how kinship dynamics shape sexual behavior. All data will be collected and analyzed before HBES 2024.

### **Cross-Sex Theory of Mind: Opposite Sex Sibling Effects.**

*William Costello, David M. Buss*

Despite significant sex differences in sexual psychology, with men displaying higher desire for variety and women experiencing greater distress about sexual violence, misinterpretations persist. Men tend to underestimate the impact of sexual violence on women, and both sexes overestimate each other's openness to casual sex. However, the factors contributing to accurate cross-sex mindreading abilities are unclear. We explore whether having close relationships with opposite-sex siblings during puberty, exposing individuals to proximate cues about the other sex's sexual psychology, enhances mindreading abilities. Research suggests that adolescents with opposite-sex siblings develop faster in romantic competence, possibly due to shared experiences. Gendered Fitness Interests Theory posits that attitudes toward gender and sexuality align with kin reproductive interests. We anticipate those with opposite-sex siblings to possess more accurate cross-sex mindreading abilities, aligning with the gendered-ness of family. Considering rape myth acceptance (RMA) as a predictor of sexual violence propensity, we predict men with sisters to exhibit lower RMA, as rape myths are costly to female kin. All data will be collected and analyzed before HBES 2024, contributing to our understanding of factors influencing accurate cross-sex mindreading abilities and their implications.

### **Why isn't There More Incel Violence? The Male Sedation Hypothesis \* Published in Adaptive Human Behavior and Physiology.**

*William Costello, David M. Buss*

Involuntary celibates (Incels) comprise an online community whose identity centers on their perceived struggle to form romantic relationships, attributing their challenges to genetic factors, evolved mate preferences, and social inequities. Despite humans' deep ancestral history of incels, the modern incel community is an evolutionarily novel group that fosters a shared victimhood identity. Here, we critique the literature associating incels with violence. Contrary to common beliefs, empirical evidence contradicts the notion that incels are notably prone to violence. Instead, they exhibit a lower propensity for violence compared to the general population, with a focus on self-directed harm, specifically suicidality. This is puzzling considering the evidence in the evolutionary psychology literature for The Young Male Syndrome, which describes the tendency for sexless young men to harm society. We offer one speculative hypothesis as to why modern day incels are not as violent as we might expect. The Male Sedation Hypothesis suggests that online virtual worlds, such as pornography, may pacify the potential for violence among sexless young men, providing a counterfeit sense of sexual fulfillment and reducing motivation for real-life mate competition. Future research is needed to test whether this hypothesis can explain the lower levels of violence among involuntarily celibate men.

**How Potent is the Black-Pill? Predicting Harmful Attitudes and Beliefs Among Incels (Involuntary Celibates) \* Publication currently under review at Psychological Science**

*William Costello, Joe Whittaker, G. Andrew G. Thomas*

Incels are a subculture community of men who form their identity around a perceived inability to form sexual or romantic relationships. The community operates almost exclusively online, providing an outlet for misogynistic hostility. There are growing concerns about violence from incels, who have been highlighted as an (inter)national security threat. This study presents the largest ( $n = 561$ ) primary investigation of incels (involuntary celibates) to date. Consistent with previous research, we find ethnic and political diversity, poor mental health, suicidality, and neurodiversity among incels. While incels showed ideological consistency, those who felt that violence was "Often" justified against those wishing to harm incels were few (5%). Pathway analysis predicting harmful attitudes and beliefs (e.g., displaced aggression, hostile sexism, and justification of violence) indicates that mental-health and ideological adherence have twice the predictive power compared to networking. Additionally, indirect pathways to these harmful attitudes and beliefs are identified, involving the dark triad (narcissism, psychopathy, and Machiavellianism), right-wing political orientation, autism spectrum quotient, mate value, and a history of bullying and abuse. These results suggest that interventions focusing on mental health and ideology may be more effective than those targeting networking. Implications and directions for future research are discussed.

## **Network Ecology of Marriage**

*Tamas David-Barrett*

The practice of marriage is an understudied phenomenon in behavioural sciences despite being ubiquitous across human cultures. This talk presents a new framing in a model and empirical evidence, both inside the Structural Microfoundations Theory of the society. The modelling part shows that replacing distant direct kin with in-laws increases the interconnectedness of the family social network graph, which allows more cooperative and larger groups. In this framing, marriage can be seen as a social technology that reduces free-riding within collaborative group. The empirical part presents data from a new compiled global marriage dataset, and from a 7-language survey/experiment designed to test the model's predictions. Both empirical approaches support the model's results. This talk offers a solution to the puzzle of why our species has this particular form of regulating mating behaviour, uniquely among pair-bonded animals.

## **Evolutionary building blocks of natural theory**

*Hugo Decker*

While human nature plays a cardinal role within natural law theories, the science primarily devoted to excavating human nature presents significant challenges for natural lawyers. Even when sidestepping the is-ought question, evolutionary theory renders Aristotelian essentialism questionable, rationality – as the distinctive feature of human existence – is dubious and views our high-minded feelings, such as maternal love, as tools to boost our reproductive success. This paper, however, undertakes the opposite exercise. Instead of finding conflicts, it starts from the basic assumption that certain building blocks of the natural law are partly biological, reflecting our evolutionary past (e.g., our cooperative abilities, social instinct and certain readily learned moral norms). After briefly describing the natural law, the present paper searches for symmetries between evolutionary biology and the natural law theory. It concludes that – while agonism on certain key domains remains – evolutionary theory and natural law may, on specific topics, reinforce each other against opposing forces.

### **Maladaptive dietary patterns: Do social media cues trigger evolved sugar-rich food cravings?**

*Paulien Decorte, Karolien Poels, Tim Smits, Sara Pabian, Paul Bolls, Charlotte De Backer*

Easy access to hyperpalatable foods combined with evolved cravings evoke maladaptive eating patterns in modern societies. How overexposure to social media cues may contribute to this process remains unclear: do they also trigger evolved mechanisms? Our study exposed participants to short video's endorsing sugar-rich recipes, manipulating the message for popular social media endorsement cues: taste and/or convenience. Sweet craving is a deeply-rooted human universal: we expected cues emphasizing taste would trigger sweet cravings. Alternatively, convenience would not trigger as strongly, since it is a modern strategy to navigate fast-paced lives, not evolutionarily rooted. Using a within-subjects repeated-measures experiment, N=106 participants were exposed to high vs. low taste/convenience cues in dessert videos. Self-reported and psychophysiological measures captured unconscious emotional and cognitive responses (ECG, fEMG and EDA). Self-reports show that taste incites food preparation intentions over convenience ( $M=2.8-3.7$ ,  $F=175.6-274.9$ ,  $p<.001$ ), but combined they evoked the strongest responses ( $M=3-4.2$ ,  $F=18.9-37.6$ ,  $p<.001$ ). Psychophysiological results, upon interpretation with self-report data, indicate that our evolutionary predisposition for taste has pervaded unconscious and inherent expectations of social media cues in food videos. We conclude that overexposure to social media cues endorsing hyperpalatable foods may contribute to maladaptive dietary patterns in modern environments, alongside easy access.

### **Assortative preferences for personality and online dating apps: Individuals prefer profiles similar to themselves on agreeableness, openness, and extraversion**

*Jessica De La Mare, Anthony Lee*

Established couples tend to have similar personalities (i.e., assortative mating); however, the mechanism for this effect is unclear. Individuals may initially be attracted to others who are like themselves (i.e., have assortative preferences). Alternatively, couples may become more similar over time. These explanations have been difficult to disentangle. Assortative mating may be less common in online situations as barriers related to social homogamy are removed. The current study investigates which, if any, of the Big Five personality traits were assortatively preferred in an online environment. Participants (205 females and 178 males) viewed 100 ostensible dating profiles comprised of random pairings of facial images and personal descriptions, the latter of which were pre-rated for perceived personality. Participants indicated whether they would like to "match" with each

profile, mimicking responses made on dating applications, and completed the Big Five Inventory (BFI-44). Participants showed assortative preferences for agreeableness, openness, and extraversion, but not for conscientiousness or emotional stability. These results suggest that people exhibit assortative preferences in an online dating app environment. If these online preferences translate to long-term relationships, this could help explain similarities found in established couples identified in previous research.

### **Ejaculate Adjustment in Response to Sperm Competition Risk in Humans**

*Tara DeLecce, Gavin Vance, Virgil Zeigler-Hill, Lisa L. M. Welling, Todd K. Shackelford*

Previous research suggests that human males, like males of many mammalian and avian species, adjust their ejaculate quality in accordance with sperm competition risk. Specifically, men who spend less time with their regular female partner since the couple's last copulation produce ejaculates with more sperm at the couple's next copulation (Baker & Bellis, 1993). We conducted a conceptual replication of this research to investigate whether sperm competition risk predicts ejaculate adjustment in human males using additional measures of sperm competition risk (e.g., perceptions of partner infidelity, presence of potential sexual rivals) and updated laser-optic semen analysis technology. We collected data from 34 heterosexual couples (individuals aged 18 to 32 years) who completed self-report surveys on their relationship dynamics and provided six ejaculate samples (3 copulatory, 3 masturbatory) across a 45-day period. Time spent together since the couple's last copulation was not associated with ejaculate quality. However, sperm concentration for copulatory ejaculates was higher for men who perceive that their partner has more male friends and coworkers (i.e., potential sexual rivals). Discussion situates the current results within the literature on human sperm competition and suggests several directions for future research.

### **Cross-Sex Theory of Mind: Opposite Sex Sibling Effects**

*Melis Demiralp, David Buss, William Costello*

Despite significant sex differences in sexual psychology, with men displaying higher desire for variety and women experiencing greater distress about sexual violence, misinterpretations persist. Men tend to underestimate the impact of sexual violence on women, and both sexes overestimate each other's openness to casual sex. However, the factors contributing to accurate cross-sex mindreading abilities are unclear. We explore whether having close relationships with opposite-sex siblings during puberty, exposing individuals to proximate cues about the other sex's sexual



psychology, enhances mindreading abilities. Research suggests that adolescents with opposite-sex siblings develop faster in romantic competence, possibly due to shared experiences. Gendered Fitness Interests Theory posits that attitudes toward gender and sexuality align with kin reproductive interests. We anticipate those with opposite-sex siblings to possess more accurate cross-sex mindreading abilities, aligning with the gendered-ness of family. Considering rape myth acceptance (RMA) as a predictor of sexual violence propensity, we predict men with sisters to exhibit lower RMA, as rape myths are costly to female kin. All data will be collected and analyzed before HBES 2024, contributing to our understanding of factors influencing accurate cross-sex mindreading abilities and their implications.

### **Sex Differences in Jealous Reactions to Bisexual Same-sex and Opposite-sex Infidelities**

*Melis Demiralp, William Costello*

Jealousy, an evolved adaptation to motivate mate-guarding to prevent infidelity and mate-poaching, is traditionally understood through paternal certainty, where men are more distressed by sexual rather than emotional infidelity. This model aligns with heterosexual relationships, but with 20.8% of Gen-Z now identifying as LGBTQ+, the dynamics in mixed-orientation relationships become significant. One study showed that men were more distressed by female partners' opposite-sex infidelity due to concerns about cuckoldry (Confer & Cloud, 2011). This area is particularly relevant due to rising mixed-orientation relationships and merits further investigation. Our study reexamines these findings, specifying the sexual orientation of partners and infidels as bisexual, heterosexual, or homosexual. Different threat levels to relationships can be interpreted based on the sexuality of the involved parties. We introduce a bi-negativity scale to establish whether jealous reactions change when acknowledging bisexuality. We also explore perceived danger and observer sympathy in reactions to infidelity. Regarding women's responses to a male partner's infidelity, we propose competing hypotheses: Women will report greater distress over: 1) Same-sex infidelity due to fears of their partner actually being homosexual, 2) opposite-sex infidelity due to potential investment shifts to another woman and her offspring. Preliminary data will be analyzed before HBES 2024.

### **The evolutionary psychology of BDSM: Insights from a factor-analytic study of 136 sexual kinks in 33,627 adults**

*Ryan Dobson, Aella, Geoffrey Miller*

Sexual kinks offer insights into human sexuality, but remain under-studied from an evolutionary perspective. For example, in BDSM, Dom/sub 'power exchange' might eroticize sex differences in dominance and status. Other kinks may tap into other sexual selection themes such as antagonistic seduction, resistance-as-screening, and sensory exploitation. We ran a global online survey (N=33,627 after exclusions), where adults rated how arousing they found 136 sexual kinks, traits, activities, and experiences. Exploratory factor analyses revealed 7 main factors of kink arousal, including a strong Dom/sub power exchange factor (eigenvalue over 25), with high loadings on master/slave scenarios, obedience, bondage, mindbreaking, and nonconsent. Additional arousal factors included feminine traits, romance/sensuality, animal transformation (e.g. monster play, furies), gender transformation (e.g. genderplay, futanari, sissification), incest/age play, and body disgust. Factor structure was very similar across both sexes, but women showed higher arousal means for the Dom/sub factor and romance/sensuality factor, whereas men showed higher arousal means for the feminine traits, incest/age play, and body disgust factors. Higher female arousal in response to Dom/sub scenarios is consistent with high female demand for male Doms and Masters in BDSM, and with an evolutionary history of female hypergamy. We discuss implications for evolutionary psychology and sex research.

### **Women and Men, Harm and Censoriousness: Sex-Differentiated Reactions to Information about Sex Differences**

*Ryan Dobson, April Bleske-Rechek, Parker Lay, Kora Witthun, Wesley Johnson, Michael Bernstein*

Some of the most controversial conclusions in psychology involve evolutionary or genetic explanations for sex differences in educational-vocational outcomes (Buss & von Hippel, 2018; Clark et al., in progress). In this talk, we describe the results of an online experiment investigating reactions to that exact kind of controversial information. In an online experiment, U.S. middle-aged adults (n=154) and U.S. college students (n=397) reviewed a handout claiming that women in STEM are no longer discriminated against in hiring and publishing, and that sex differences observed in STEM and at high levels of the corporate ladder are better explained by evolved differences between men and women in personality traits, life values, lifestyle preferences, and specific cognitive abilities. We described the person who provided the handout as either a male or female professor. We assessed participants' receptivity to the information/messenger and their perceptions that the information/messenger should be censored. Contrary to the liberal ideal of impartiality (Merton, 1942; Rauch, 2014), participants were not objective recipients of information. However, middle-aged adults and college students were differentially affected by messenger identity. Our findings are consistent with a large evidence

base demonstrating that humans' evolved cognitive architecture works against their being impartial recipients of information.

### **Intrasexual competition and willingness to engage in risky weight loss tactics: Sex differences and similarities**

*Shelli L Dubbs, D. Vaughn Becker, Cari Pick*

Intrasexual Competitiveness has been theorized to be related to the development of anorexia nervosa (AN) and bulimia nervosa (BN) in women. A university sample was used to test the relationship between gender and intrasexual competition (ISC) on the willingness to engage in risky weight-loss behaviors symptomatic of AN or BN. A gender-neutral scale of intrasexual competition was created, allowing for a direct comparison of male and female respondents. The results revealed that greater intrasexual competitiveness in women (but not men) was related to an increased self-reported willingness to engage in risky dieting behaviors (e.g., going on a crash diet, fasting, and taking diet pills). The strength of the relationship between ISC and willingness to use laxatives and/or vomiting was greater in women than men. These findings support the notion that ISC may in part contribute to the development of AN and BN in women.

### **Effects of language on children's dehumanizing and essentialist beliefs about autistic people**

*Deanna Durben, Zoë Robertson, Vikram Jaswal*

Autistic people are often dehumanized, and children develop negative attitudes towards autistic peers from a young age. Essentialist beliefs about a group may also impact dehumanization, but past results have been mixed and not yet studied in autism. We investigated how language and essentialist beliefs impact non-autistic children's dehumanization of autistic peers. To experimentally test the effects of language, we used a novel group paradigm depicting two autistic groups: one was described in a deficit-oriented way, consistent with status quo descriptions of autistic people (e.g. "something is wrong with her brain") and the other in an alternative, humanizing way ("she thinks differently"). After hearing the vignette, 8–10 year old non-autistic children (N = 124) rated both groups on three dehumanization scales and an exploratory essentialist beliefs measure. As hypothesized, the language used to describe autistic groups impacted children's beliefs: Participants rated autistic peers as less human when they were introduced with status quo vs. humanizing alternative language. Some, but not all, of the essentialist beliefs we measured were

also linked to higher dehumanization. We believe that our findings will help researchers understand the causes behind the dehumanization of autistic people and work toward reducing them.

### **Mismatch-resistance and the problem of evolutionary novelty**

*Jonathan Egeland*

In evolutionary medicine and other related fields, the concept of evolutionary mismatch is used to explain phenomena whereby traits reduce in adaptive value and eventually become maladaptive as the environment changes. This paper argues that there is a similar problem of persistent adaptivity—what has been called the problem of evolutionary novelty—and it introduces the concept of mismatch-resistance in order to explain phenomena of traits that retain their adaptive value in novel environments that are radically different from the organisms' EEA. The possible role of variability selection in the evolution of mismatch-resistant traits is discussed, and it is suggested that mismatch-resistance provides a useful tool for making progress on certain issues related to evolutionary theory, such as the modularity debate, cases of adaptivity outside of organisms' ancestral environment, and the viability of naturalism as an overarching philosophical framework for understanding the natural world.

### **"Ape language" after all: Chimpanzees can produce words perceivable to human ears**

*Axel Ekström, Charlotte Gannon, Jens Edlund, Steven Moran, Adriano R. Lameira*

Nonhuman great apes have been claimed to be unable to learn human words due to a lack of the necessary neural circuitry. We recovered original footage of two enculturated chimpanzees uttering the word “mama” and subjected recordings to phonetic analysis. Our analyses demonstrate that chimpanzees are capable of syllabic production, achieving consonant-to-vowel phonetic contrasts via the simultaneous recruitment and coupling of voice, jaw and lips. In an online experiment, human listeners naive to the recordings' origins reliably perceived chimpanzee utterances as syllabic utterances, primarily as “ma-ma”, among foil syllables. Our findings demonstrate that, in the absence of direct data-driven examination, great ape vocal production capacities have been underestimated. Chimpanzees possess the neural building blocks necessary for speech.

## **How the Environment Impacts Behaviour: Measuring Female-Female Competition**

*Reuben Fakoya-Brooks, Ruth Mace*

In theory, intrasexual competition (ISC) in female mammals is influenced by environmental factors such as adult sex ratio, and the number of available resources. No robust study has yet to investigate the environmental effects on the type and amount of ISC displayed in humans, and how this may spatially change depending on geographical context. With this in mind, we have developed an adaptation of the behavioural economic: All-Play Auction game experiment, which will be used in combination with self-report measures of attitudes to competitive and ISC behaviour, to assess the environmental effects of adult sex ratio and low socio-economic background/ environment (a proxy for low resource availability) on female-competition by comparisons made between the competitive behaviour of adult men and women. The study will collect behavioural data from the UK using the online platform Prolific as well as targeted recruitment from the Kent, UK region; a county that encompasses both rural and urban areas with large wealth disparities and different adult sex ratios. The projects objectives will aim to answer the following questions: a) Are women more competitive in more resource scarce environments? b) Do environments with a skewed sex ratio result in women being more competitive?

## **Exploring expressions of jealousy in real romantic and friendship dyads**

*Ana Maria Fernandez, Belen Cordero, Maria Teresa Barbato*

Basic emotions have an adaptive origin, as evidenced by research on their expression. However, the study of more complex emotions, such as jealousy, has not been fully unveiled. Jealousy is a recurring theme in interpersonal relationship research and has a clear adaptive function of protecting valued close bonds. Thus, jealousy should also be noticeable by non-verbal expressions. In this investigation, mechanisms driving the elicitation of jealousy are identified and evoked, following predictions from an evolutionary perspective regarding the role of jealousy for protecting a valued relationship from potential rivals. Facial expressions and non-verbal behavior were experimentally assessed using real images of a social rival compared to a non-social rival (e.g., a favorite movie) in romantic couples (n=48) and same-sex friends (n=48). It was hypothesized that jealousy would be associated with a higher frequency and duration of negative posture and facial expressions, as opposed to positive expressions characteristics of love. The results contribute to knowledge about the non-verbal expression of jealousy in an experimental laboratory setting, representing the first attempt to document jealousy expressions in

a dyadic format. We discuss the challenges posited by the undesirability of jealousy which may cover up its expression in controlled laboratory settings.

### **Is political orientation an evolved trait?**

*Martin Fieder*

Political orientation such as the left-right dichotomy found worldwide has a substantial genetically heritable component, indicating an evolutionary background of our political orientation. Accordingly, we suggest that there has been selection for both left- and right-wing attitudes, as both may have been important for survival in small-scale societies: a "left-wing" more open attitude that promotes new discoveries, and a "right-wing" attitude that warns against potential dangers. We therefore examined whether political attitudes might lead to higher fertility. Analyzing the World Values Survey, for most countries around the world, we found a reproductive advantage for both the left and the right, with particular fertility benefits for the extremes on both sides. Whereas for all Western industrialized societies, we found a reproductive advantage only for right-wing individuals. By analyzing two European surveys (SHARE & Gender & Generation Survey) we further find that the reproductive advantage for right-wing individuals in those countries may lead to a higher proportion of right-wing individuals in subsequent generations.

### **Embrace the Romance: Evolutionary Insights into the Success of Hallmark Channel**

*Allison Dyer, Maryanne L. Fisher*

Hallmark Channel has established an enduring presence in the romantic cinema space, captivating a predominantly female viewership. Hallmark Channel's dominance has garnered attention, yet comprehensive research explaining its appeal remains limited. Using a Darwinian literary framework used to study romance novels, we investigate whether features of Hallmark movies align with adaptive heterosexual female mating preferences, covering aspects like commitment, love, reproduction, and gene quality. The dataset comprises 527 Hallmark Channel romance movies (2002-2022), and we explore the alignment of Hallmark movie titles and posters with evolved female mate preferences. Preliminary findings suggest an emphasis on themes of love and commitment in titles and posters, which could indicate that Hallmark movies effectively resonate with females' adaptive preferences for long-term, committed relationships. This alignment could provide initial insight into why Hallmark Channel's romantic narratives hold widespread appeal among its predominantly female viewership. This research contributes to the discourse on the intersection of evolutionary psychology and popular media,

providing insights into the congruence between romance cinema and adaptive female mating preferences. Ultimately, the study deepens our understanding of the widespread appeal of Hallmark Channel movies among adult women, unravelling the evolutionary underpinnings of the romance genre.

### **Green Crusaders Unmasked: How the Right Messenger Profiles can Supercharge Familial Nudging in the Realm of Carbon Recycling**

*Maryanne Fisher, H. Komatsu, N. Tanaka, M. Zinck*

This study explores the intersection of pro-environmentalism and mating efforts, with a focus on the role of messenger attractiveness in promoting acceptance toward environmental protection. A preliminary survey gathered over 500 responses from Australia, Canada, the UK, and the US to determine the most effective messenger profiles. Eight candidate profiles were presented, revealing a preference for female messengers irrespective of the respondent's sex, suggesting that ideal messengers may not need to be of the opposite sex to the information receivers. This counters typical assumptions within evolutionary psychology, indicating the complexity of the relationship between attractiveness and pro-environmentalism. The new survey will further investigate this finding by combining the two identified profiles with messages promoting carbon recycling technologies, using familial nudging as a persuasive tool. Data are from Canada, Japan, Norway, and the US (N= 3500), with the aim to understand how these messenger profiles can potentially enhance the effects of familial nudging. The research provides novel insights into the dynamics of environmental messaging and its potential implications for pro-environmental behavior.

### **Political radicalization is explained by evolutionary psychology**

*Agner Fog*

Humans become authoritarian, militant, and intolerant when their tribe or nation is threatened, while groups living in peace and security become egalitarian and tolerant. This psychological flexibility is explained by a theory called regality theory. The evolutionary explanation is that a group needs a strong leader in case of war. The leader can suppress free riding and reward brave warriors. Simulation models show that traditional group selection theory cannot explain collective fighting, but a model where people support a strong leader in case of collective danger makes collective fighting possible. Statistical studies in both traditional and modern societies confirm the prediction that collective danger makes people authoritarian while

individual danger does not. The level of perceived collective danger has a strong influence on the hierarchy, cultural values, and religious zeal of an ethnic group. Political radicalization, extremism, and terrorism are all symptoms of perceived collective danger. Political attempts to suppress radicalization by force are doomed to failure because they are only worsening the feeling of persecution that is the cause of the radicalization. You cannot fight radicalization by exacerbating its root cause. Counterterrorism is counterproductive.

### **Performing Oral Sex on a Committed Partner May Serve as Compensation for Perceived Mate Value Discrepancy Among Heterosexual Men: Evidence from Pre-Registered Study**

*Natalia Frankowska, Aleksandra Szymkow, Andrzej Galbarczyk*

Maintaining romantic relationships has long presented a significant adaptive challenge in human evolutionary history (Conroy-Beam et al., 2016). This challenge prompts various strategies, including selecting partners with similar mate values (MV) or monitoring mate value discrepancies (MVD) between romantic partners (Buss & Shackelford, 1997; Goetz & Meyer, 2018). Our study aims to explore whether the motivation to sexually satisfy a committed partner through active oral sex functions as a mate retention and compensation strategy for MVD among heterosexual men with lower MV than their partners. Our pre-registered correlational study validated that differences in MV favoring the partner predict the frequency of oral sex among heterosexual men. This relationship is mediated by the motivation to sexually satisfy a partner. Surprisingly, contrary to predictions from the Behavioral Immune System theory (Ackerman et al., 2018), the frequency of oral sex, despite its health risks, in men predicted by MVD in favor of their partners is not moderated by their subjective perceived vulnerability to disease (PVD) (Duncan et al., 2009). These results deepen our understanding of the strategies employed by heterosexual men in committed relationships marked by MVD on both sides.

### **I Lost My Number, Can I Have Yours? Bodily Femininity and Masculinity Relate to Confidence in Early Courtship Behaviors**

*David Frederick*

Evolutionary psychologists have posited that sexual selection processes caused males and females to evolve preferences for testosterone- and estrogen-linked traits much as muscle mass and voice pitch. Many of these traits perceived as “masculine” or “feminine” are somewhat sexually dimorphic and represented as prestigious in



popular media. At HBES in 2023, evidence was presented that men reporting more masculinized traits reported greater confidence in early courtship situations (e.g., flirting). The current study collected data from 813 women in addition to 662 men via MTurk, and also measured how body image relates to comfort during sex. Facial masculinity and erect penis size were the strongest predictors of dating confidence for men, with general athleticism dominating if entered alongside physical traits. Among women, breast size and stomach muscle tone were the strongest predictors of dating confidence. Body fat level, stomach muscle tone, upper body muscle tone, and facial femininity were the strongest predictors of feeling desirable as a sexual partner for women. The findings highlight the importance of dating confidence and body satisfaction as potential mediators between sexually selected traits and mating behaviors.

**“Blue Beards”: A two trait co-evolutionary model of ritual as exapted trigger of prosocial response potentially solving Dawkins “Green Beard” problem.**

*Karl Frost*

Analytic and agent-based models are used to analyze two-trait coevolution of a novel behavioral trait exapted from a pre-existing behavioral trait to generate altruistic response. Some “ritual” behaviors are argued in this way to generate prosocial responses arising from genetically evolved behavioral dispositions. Some empirical work supports this assertion. Exaptation potentially solves otherwise intractable cooperation problems among co-ritualists. Dawkins’ famous “green beard” model demonstrates how a visible trait (like a ritual or “green beard”) that acts as a signal of altruistic intent is vulnerable to invasion from those with the trait who do not share altruistic intent. An exapted trait, however, likely has extrinsic benefit, potentially changing the evolutionary dynamics. Contrasting Dawkins’ signaling model, I call such exapted signals or ritual behaviors, “blue beards”. I model the two-trait coevolutionary dynamics: ritual performance (“blue beard”) vs exapted response. Analytic models show that different trait combinations may move to fixation or have enduring coexistence, depending on parameters of public goods benefits/costs, exapted trait benefit, and ritual cost. Similarly depending on these parameters, simulations show in both gene-gene coevolution and gene-culture coevolution that any trait combination can be stable or that there may be cycling through trait frequencies, analogous to Lotka-Volterra predator-prey dynamics.

**Exploring Creativity as a Signal in Inter- and Intra-Sexual Selection**

*Katarzyna Galasinska, N. Frankowska, A. Szymkow*

Creativity is considered one of the most desirable traits in a partner, regardless of gender, and may be an adaptation related to sexual selection. However, there is a lack of research focusing on women in this context, which appears to be a significant oversight given the likelihood of mutual mate choice among humans. Our previous research, exploring creative divergent thinking concerning intersexual selection, provided some evidence supporting this hypothesis. Firstly, our findings indicated an increase in creativity among women during the fertile phase of their cycle. Secondly, we observed that higher ratings of attractiveness in potential opposite-sex partners correlated with greater fluency and flexibility of thinking in women. Thirdly, we discovered that women exhibited more creativity when selecting long-term partners compared to short-term ones. Finally, we identified a mediator effect, indicating that choosing a long-term mate increased interest, subsequently leading to increased originality of ideas. Considering creativity as a potential signaling mechanism within intrasexual selection, we conducted a study to investigate how women (and for comparison, men) demonstrate creativity when facing competition from a rival.

### **Ranking-based social influence produces lock-in**

*Alexandros Gelastopoulos, Pantelis P. Analytis, Gaël Le Mens, Arnout van de Rijt*

Individual choices are influenced by the past choices of others, a phenomenon observed across contexts in the social and behavioral sciences. Social influence can lock in an initial popularity advantage of an option over a qualitatively superior or inherently more appealing alternative. A necessary condition for lock-in is that influence is so strong that the inferior option is chosen at least as frequently as its relative popularity. Yet many canonical experiments that demonstrate the existence of social influence do not satisfy the lock-in condition, suggesting that many systems may self-correct over time. We theoretically identify a property that makes it easier to satisfy the lock-in condition, namely when choices are informed by popularity \*ranks\* rather than the number or proportion of prior choices by others. We demonstrate the existence of ranking effects in several recent experiments, and show that lock-in occurs when the ranking effect is sufficiently large to overcome inherent differences in appeal between options. Our results reconcile conflicting past empirical evidence and link a prevalent social influence mechanism with the possibility of lock-in.

### **Sources of fitness interdependence are associated with perceived shared fate and cooperation**

*Diego Guevara Beltran, Jessica Ayers, Jeremy Koster, Lee Cronk, Athena Aktipis*

Fitness interdependence arises when individuals' outcomes covary in ways that influence their survival and reproduction, such that partners cooperate when their outcomes become positively correlated. At the proximate level, shared fate (perceived yoking of rewarding/aversive) outcomes, predicts partner valuation and cooperation. However, what sources give rise to shared fate? We examine whether eight theoretically informed sources of interdependence (e.g., coresidence) predict shared fate and cooperation towards acquaintances, cousins, and siblings in a small-scale population of horticulturalists (N = 146). We find that relatedness, hunting/fishing, horticulture, and commensality are associated with higher shared fate. However, shared fate was associated with higher cooperation across all domains of interdependence (e.g., alloparenting, helping after hurricanes). In ongoing analyses, we will assess the stability and validity of shared fate with a subset of the sample recruited 2-4 weeks later. People reported their shared fate and decided how to allocate resources between themselves and the same three targets. Results will inform basic predictions derived from fitness interdependence theory and help determine the strength to which multiple sources of interdependence shape shared fate and cooperation in a small-scale population of horticulturalists, providing the first empirical support that shared fate is associated with cooperation in a non-industrialized population.

### **Does perceiving mental disorders as true self predict stigma attached to mental illnesses?**

*Olha Guley, Julie Heller, Daniel Nettle*

Humans have evolved social cognitive mechanisms for making judgments about the character and behavior of others. These mechanisms tend to discriminate "true self" – the actions that are diagnostic of person's character and what they would do if not constrained – from things that are externally or situationally imposed. It is not yet known whether the symptoms of mental illness are perceived to be part of the true self or not. We studied this question in three quantitative studies, examining public perceptions of seven prevalent disorders (ADHD, autism, OCD, depression, anorexia, schizophrenia, and bipolar disorder, as classified by DSM-5-TR) within a general public sample in the UK. Our findings indicate that ADHD, autism, and OCD are more commonly associated with an individual's true self, in contrast to depression, anorexia, and schizophrenia. Bipolar disorder is perceived moderately in this context. The studies also explore whether these perceptions can predict the level of stigma associated with selected disorders, offering insights into the dynamics between public perceptions of mental disorders and the stigma attached to them.

## **Influence of Violator Gender and Ethnicity on Shunning Likelihood across Violation Scenarios**

*Robert Hale*

Shunning likelihood was examined in an on-line experiment. Three scenarios were presented to college student participants: Resource Sharing, Mate Poaching, and Clothing appearance. Each participant was presented with all three scenarios, and one of four potential combinations of violator gender and ethnicity (Female/Black, Male/Black, Female/White, or Male/White). Gender and Ethnicity manipulations involved using violator names shown to be identified as gender and ethnicity specific. Participant rating of shunning likelihood was analyzed using a repeated-measures ANOVA, with the Greenhouse-Geisser correction. Significant ( $p < .05$ ) main effects for scenario and violator gender were found. Shunning likelihood ratings were significantly different between all scenarios, with highest shunning likelihoods involving Mate Poaching, then Resource Sharing, and last, Clothing appearance. Male violators were rated as significantly more likely to be shunned than female violators. However, significant ( $p < .05$ ) interaction effects were found for scenario X gender of violator. While under the Resource Sharing and Mate Poaching scenarios, male violators were rated as significantly more likely to be shunned than female violators, but in the clothing scenario, female violators were more likely to be shunned than male violators. These results replicate previous work that demonstrates shunning is both violator gender and violation context sensitive.

## ***Is breathiness a vocal attractiveness trait?***

*Pavel Šturm, Míša Hejná, Lea Tylečková*

This study investigated the role of breathiness (vocal softness) in perceived physical attractiveness. Most vocal attractiveness research has investigated the role of other potential traits, although lay discourses strongly suggest that breathiness plays a key role in this area. However, it is not clear which types of vocal attractiveness are signalled by which types and degrees of breathiness. Linguistic literature suggests that breathiness likely is an important vocal attractiveness trait, particularly in female voices. Here, we looked at whether increased breathiness is perceived as physically more attractive. Secondary questions were also explored: Do heterosexual female/male listeners rate variably breathy male/female voices, respectively, in the same manner? To what extent do non-heterosexual listeners' perceptions match those of heterosexual listeners? Three degrees of breathiness were manipulated using Danish sentences (modal, moderately breathy, very breathy). The participants who completed the whole experiment and who were included in the analyses comprised 36 female and 10 male L1 speakers of Danish. 27 females and 9 males

identified as heterosexual. Breathier male voices were rated as less physically attractive, while the opposite was the case for female voices. Non-heterosexual listeners patterned with heterosexual listeners on the whole; however, they also displayed much more individual variation.

### **Drinking as a Costly Signal: High Sociosexuality Men have Low Sensitivity to the Effects of Alcohol**

*Liana Hone, B.D. Bartholow*

Men high in sociosexuality—attitudes/behaviors/desires concerning sex measured via the Sociosexual Orientation Inventory-Revised (SOI-R)—tend to drink more than low sociosexuality men. This could be in service of costly signaling (e.g., avoiding negative consequences despite drinking), but for this strategy to be biologically plausible, high sociosexuality men need to be able to drink relatively large quantities without experiencing negative consequences (i.e., evince low alcohol sensitivity—measured via the Self-Rating of Effects of alcohol; SRE). Thus, we sought to test for an association between SOI-R and SRE. In two studies (N=47; N=341), as predicted, high sociosexuality men evinced higher SRE scores. In general, men with high SRE scores tend to drink more and experience more consequences, but paradoxically, at a given number of drinks (which has costly signaling relevance), they are more resistant to consequences (e.g., hangovers, blackouts, regretted sex). Here, we show that high sociosexuality men also have high SRE scores, elucidating one pathway through which costly signaling via drinking may be operating. Thus, it is biologically conceivable that high sociosexuality men may avoid more consequences than those with lower SOI-R/SRE scores when in heavy drinking contexts. High sociosexuality men, drink-for-drink, may have a slight upper hand in costly signaling.

### **The value of evolutionary perspectives to psychiatrists**

*Adam Hunt, Tom Carpenter, Matt Butler*

Evolutionary explanations of psychiatric conditions exist, but rarely suggest novel treatments, which is the core aim of clinical psychology and psychiatry. However, various proponents and practitioners of evolutionary psychiatry suggest that understanding evolutionary perspectives on disorders provides them with benefits as clinicians, with possible benefits for patients. Here we report the results of a focus group study with psychiatric trainees recently introduced to evolutionary psychiatry. Four focus groups were asked questions about the roles of evolutionary perspectives in psychiatric training, key concepts, and practical benefits. Several themes emerge

from the qualitative analysis, including improvements in psychiatric nosology, positive effects on self-stigmatisation of patients, and positive effects on theoretical and scientific understanding for the psychiatrists. Limitations of uncertainty of explanations and poor background education in evolutionary theory were noted. We suggest that these focus groups indicate directions for researchers in evolutionary psychiatry to conduct further research, and point towards useful strategies for education of psychiatric trainees. Evolutionary psychiatry may not offer novel treatments in the forms of pharmaceuticals and novel therapies, but improve clinician understanding and clinician-patient dynamics in ways which are positive, and potentially even therapeutic.

### **Examining the Role of Gender Expression in Mate Retention Tactics**

*Olivia James, Keelah Williams*

In romantic relationships people use different strategies to retain their partner, such as making themselves look nice, warding off romantic rivals, or by making their partner jealous. The evolutionary challenge of mate retention has been a topic many researchers have studied, however much of their research focuses on understanding how sex influences mate retention behaviors. Few studies have investigated whether gender expression, one's feelings of masculinity, femininity, or gender nonconformity, could impact one's choice in mate retention tactics. The present study seeks to understand whether gender expression moderates the relationship between sex and mate retention tactics for both heterosexual men and women. Participants (N = 437) were recruited through MTurk where they were asked about their likelihood to engage in 19 mate retention tactics adapted from Buss and Shackelford's (1997) Mate Retention Inventory (MRI). Participants gender expression was assessed through a scale developed by Wylie et al. (2010). Linear regression analyses found evidence of gender expression moderating mate retention tactics such as violence against competitors, appearance enhancement, and commitment manipulation. Furthermore, analyses found that specific mate retention tactics are performed more by gender conforming individuals (masculine men and feminine women); whereas others were performed more by gender nonconforming individuals (feminine men and masculine women). Results suggest that dynamics in romantic relationships go beyond sex differences and can be influenced by an individual's gender expression. Additionally, these results suggest that gender expression may serve an evolutionary function in maintaining romantic relationships that should be further investigated in future research.

## **The Influence of Age on Perceived Social Support and Relationship and Life Satisfaction: Representative Sample from The Czech Republic**

*Liliana Janáková, Zsófia Csajbók, Anna Fišerová, Zuzana Štěřbová*

Numerous evolutionary studies highlight the pivotal role of social support in shaping the dynamics of interpersonal relationships. However, it is unclear how perceived social support changes as people age. In a representative online study, 2321 individuals (51% women) aged 18 to 50 years (mean age 34 years, SD 9 years) provided their basic socio-demographic information and completed The Multidimensional Scale of Perceived Social Support, Relationship Assessment Scale, and Satisfaction with Life Scale. The results showed that women receive higher perceived social support than men on average. For women, perceived social support from friends and partners slightly decreased as they aged, while social support from family remained the same. For men, a significant decrease in social support was found only in friends, while social support from family and partners remained stable. Both relationship and life satisfaction were positively associated with social support from family, friends and partners. Importantly, the age effects were weak, indicating that social support remains relatively stable across life. The results indicate that social support is crucial for humans throughout their lifespan due to their highly social nature.

## **Trust-based cultural transmission can form polarising group identities**

*Fredrik Jansson, Anandi Hattiangadi, Magnus Enquist*

This study examines how trust-based influence in cultural evolution leads to cultural polarisation and identity formation. Contrasting to previous models, we assume full network connectivity, no negative updating, and that cultural transmission takes place between individuals with mutually consistent beliefs. In the model, agents can hold beliefs in propositions or counter-propositions, for example, P can be a belief in human-induced climate change and Q that vaccines are safe and effective, and not-P and not-Q their opposites. Agents trust those who hold beliefs not inconsistent with their own (sender filtering). We also compare this to an alternative model (belief filtering) where agents consider the belief in question rather than the sender. We find that sender filtering produces clusters of shared beliefs, where initially unrelated beliefs can become strongly correlated, with the largest factions typically polarised at the extremes, adopting completely contrary beliefs. The model shows that these belief clusters function as identity signals, where adherence to one belief increases the likelihood of adopting other beliefs within the same cluster. This contrasts with belief filtering, where polarisation occurs only if beliefs are intrinsically connected. Finally, the results suggest that digital technologies, through algorithms like collaborative filtering, could exacerbate polarisation and identity formation.

## **Psychometric Challenges in the Measurement of Normative Ambiguity**

*Jonathan Jones, Benjamin Giguère*

Ambiguity was an inherent feature of the social environment in which our ancestors lived, possibly shaping the evolution of cognitive processes crucial for reproductive success and survival. In this context, social norms can contribute to creating a common understanding of expected behaviours, promoting trust, cooperation, and group cohesion, ultimately benefiting individual fitness. Nevertheless, the relationship between ambiguity and norms remains understudied, with the evidence suggesting that ambiguity can amplify the effects of norms. This study sought to define “normative ambiguity” and understand its precise impact on (descriptive) norms. A literature review indicated that ambiguity was associated with a) the interpretation of a situation, b) normlessness, and c) norm conflict. We proposed a novel measure based on this conceptualization and conducted tests of convergent and discriminant validities with relevant constructs (N = 330). The initial expectation of a three-factor solution for the measure was challenged, revealing a more concise two-factor structure. Results show that normlessness correlates positively with identity-uncertainty and self-control but negatively with individualism and confidence in open-ended responses. Measuring norm conflict faced difficulties, with mostly non-significant correlations. The study of ambiguity can provide insights into the development of social intelligence, such as the ability to navigate complex social dynamics.

## **PsychTable: An Open-Science Taxonomy of Human Evolved Psychological Adaptations**

*Niruban Balachandran, Daniel J. Glass, Olivia G. Jewell, Melanie MacEacheron, Katrina Hercules*

PsychTable.org is an open-science, mass-collaborative taxonomy of human evolved psychological adaptations (EPAs). PsychTable evaluates the evidence for EPAs by aggregating citations of scholarly literature about proposed EPAs and allowing expert users to rate how strongly each piece of literature supports or challenges each EPA. The website uses an evidentiary algorithm to generate information about how strongly each EPA is supported in the literature. PsychTable is a dynamic reference tool providing a novel way for scientists, educators, students, and the general public to interact with the growing global body of knowledge about evolved mechanisms of the mind. The collaborative nature of the site allows for continuous review of older evidence associated with each EPA as well as the incorporation of new evidence as



it is uncovered. Previous presentations on PsychTable have focused on the development of the concept and demonstrated the site at various stages of progress. As part of this poster, we demonstrate the fully functional website where, via QR-code, visitors can explore and examine the content which has already been added by users. We also welcome discussions of how we can improve upon PsychTable's functioning and the various directions that PsychTable may take in the near future.

### **Beliefs about Hierarchy and Competition are Stronger Predictors of Authoritarianism than Beliefs about Threat.**

*Nicholas Kerry, Thomas Costello, Youngjae Cha, Alice Chirico, Marta Pizzolante, Jeremy Clifton*

One of the most influential and enduring hypotheses in political psychology is that authoritarian thinking can be understood as a strategic response to belief that the world is a dangerous place. This hypothesis is rooted in the idea that humans have evolved to prefer tighter social structures when threatened. While there is substantial empirical evidence supporting a link between dangerous world belief and authoritarianism, measurement issues may have led to confounding. Three studies (two pre-registered) with samples from the USA, UK, South Korea, and Italy (N=2,489) tested the dangerous worldview hypothesis using measures which were better able to distinguish between conceptually related worldviews and between general authoritarianism and more culturally specific ideological beliefs. These studies found that threat-related world beliefs were poor predictors of authoritarianism when accounting for covarying world beliefs, such as belief that the world is competitive. Further, beliefs that the world is inherently hierarchical (i.e., where some things and people are just better than others) and competitive (versus cooperative) were considerably stronger predictors of both general- and right-wing authoritarianism than beliefs about danger. These findings challenge the dangerous worldview model of authoritarianism.

### **The attractive personality: Dissecting aspirational and similarity preferences for personality and politics**

*Thomas H. Kleppesto, Mons Bendixen, Marius Stavang, Håvard Karlsen, Hans Fredrik Sunde, Nikolai Eftedal, Leif Kennair*

A recent meta-analysis (Horwitz et al., 2023) highlighted a much stronger correlation between partners in political values (0.58), compared to the big five personality traits (0.08-0.21). We aim to investigate if such correlation patterns are mirrored in peoples

ideal mate preferences, addressing the extent to which individuals seek similarity or aspire to traits they perceive as more desirable in a mate. Prior research suggests preferences for mates that mirrors one's own openness but has lower neuroticism and higher agreeableness, conscientiousness, and extroversion. Our project seeks to replicate these findings and further elucidate the 'attractive personality' profile at the facet level within the big five framework, utilizing the IPIP-NEO-60 instrument. For instance, if people desire partners with higher agreeableness, we will explore which facets that are sought after. We will examine preferences for political personality, measured via Social Dominance Orientation. Overall, this allows us to identify potential sex differences in aspirational and similarity-driven mate selection for both big five personality and political traits. Our research aims to contribute to the key problem in evolutionary psychology of identifying a high-resolution map of the non-cognitive traits that humans are attracted to, while still accounting for individual differences.

### **Predictors of Suicidality among American Adults: An Evolutionary Perspective**

*Bryan Koenig, Kirsten, L. Graham, Daniel Hatch*

Mental health and suicide rates have been getting worse over time in the USA (Klein & Schoenborn, 2001; Saunders & Panchal, 2023). Evolutionary psychology and evolutionary medicine provide important ways of conceptualizing mental health and suicide. A leading evolutionary theory builds on inclusive fitness theory (de Catanzaro, 1986), suggesting that suicide might adaptively address situations in which someone's presence reduces their own inclusive fitness. The bargaining hypothesis proposes that depression and suicide-related behaviors are costly signals used to negotiate social support (e.g., Gaffney et al., 2022). Infection with the parasite *Toxoplasma gondii* has been correlated with suicidality (e.g., Ling et al., 2011). The current presentation reports findings that test these proposals using college-student data from two survey datasets, 1397 college students and 1023 MTurk workers. Key results follow. Supporting these evolutionary explanations, suicidality and depression were higher among participants with minoritized identities, higher perceived burdensomeness, less social support, lower self-perceived mate value, and higher exposure to risk factors for toxoplasmosis. However, family size was unrelated to suicidality.

### **Let's talk and befriend: Evolutionary dynamics of divided societies caused by signaled personality**

*Hidenori Komatsu, Maryanne L. Fisher, Nobuyuki Tanaka, Aoshi Suzuki, Yasuhiro Hashimoto, Guanghao Liu, Yu Chen*

Virtue Signaling refers to behaviors that involve making statements that appear morally upright at a low cost, sometimes resulting in social conflict. Although this relatively new concept has been examined through the lens of evolutionary psychology, little is known about whether a divided society characterized by such behavior can be moderated through dialogue and how the resulting dynamics can potentially impact biological adaptiveness. To address these issues, we developed evolutionary simulation models that incorporate agents that evolve through personality signaling. These agents have Actual Big Five (ABF) and Perceived Big Five (PBF) dimensions, with PBF modified from ABF by the products they purchase. These dimensions were utilized to assess the compatibility of agents with potential mates. Agents are biologically evolved to maximize their gene copies within the population, while products are evolved through communication among agents about which products to buy. Using these models, we explored how influencers (i.e., Virtue Signalers) affect the distribution of PBF clusters and the number of populations. Our findings suggest that the introduction of influencers with opposing attitudes may counterintuitively result in a population decline. We also discuss the potential effects of introducing a third enemy group to mediate between these two opposing attitudes.

### **Words are not Wind - How Joint Commitment and Reputation Solve Social Dilemma**

*Marcus Krellner, The Anh*

The ability to enter joint commitments in order to facilitate collaboration was an important step in our evolution. Children outperform apes in collaboration tasks already at an early age, and soon after they become sensitive to commitments. Commitments can simplify coordination problems, i.e. any situations equivalent to the stag hunt game. For coordination, any commitment is beneficial. However, if there is a possibility to free ride, i.e. any situations equivalent to the prisoner's dilemma, commitments cannot fulfil the same purpose and seem even puzzling. We use an evolutionary game theory model to give unique insights in the benefits of joint commitments in social dilemmas. We show that a reputation system, which judges action only after a joint commitment was made, can prevent free riding. This finding is critical, since much research from anthropology, philosophy, and psychology on joint commitments made the assumption that past collaborations were mostly mutually beneficial and had little possibilities to free ride. This assumption has been harshly criticized, and we show that it is in fact not necessary, and that joint commitments can help overcome social dilemmas and could therefore even more significant than previously assumed.

## **Preverbal infants differentiate between socially included and excluded agents**

*Bjørn Dahl Kristensen, Erik Kjos Fonn, Joakim Haugane Zahl, Lotte Thomsen*

Navigating and maintaining social affiliation is a critical task of human life. If parsing the social world into affiliative groups form a core, generative mechanism of the evolved human mind, even preverbal infants may differentiate instances of inclusion and exclusion. On the one hand, whether novel agents are socially included or excluded may serve as an important cue of their value as social partners and so preverbal infants might expect that third-party observers of exclusion will themselves continue to discriminate by avoiding the previously excluded. On the other hand, emerging evidence points to a preverbal sympathy response for victims of aggression, suggesting that preverbal infants might instead expect third-party observers to sympathetically approach the victims of exclusion. Here, we presented 11-13 mo. infants to animated depictions of a repeatedly included agent, and a repeatedly excluded agent. At test, a neutral observer alternated between approaching and affiliating with the included or excluded agent. We obtained evidence that infants looked longer when the included agent was approached ( $BF_{10}=13$ ). These results demonstrate that even preverbal infants differentiate agents based on whether they were previously included or excluded by other groups and expected a third-party to affiliate with the excluded agent.

## **Hagioptasia: An Evolutionary Lens on Human Behaviour**

*Daniel Laidler*

Exploring the evolutionary underpinnings of hagioptasia, a natural human tendency to imagine a preternatural quality of 'specialness' in certain places, people, or things. This concept, transcending cultural and geographical boundaries, suggests a shared evolutionary heritage influencing human cognition. This presentation considers hagioptasia's evolutionary origins, examining its role in shaping social behaviours and shaping cultural evolution. Examine hagioptasia's impact on social hierarchy, emphasising its connections with status-related behaviours and competitive instincts observed in communal mammals. Uncover its pervasive influence on cultural constructs, including religious and spiritual beliefs and compliance with concepts of social class. Drawing parallels between hagioptasia and emotions like *sehnsucht* and nostalgia, the presentation unveils shared emotional responses across cultures. It explores hagioptasia's role in the appreciation of art, music, fashion, and celebrity. Practical implications for well-being are addressed, emphasising how understanding hagioptasia provides nuanced perspectives on managing positive and negative

emotional outcomes. This presentation offers an interdisciplinary lens, bridging evolutionary psychology, cultural studies, and emotional well-being, enriching our comprehension of human evolution, psychology, and culture. Challenges to existing theories arise as hagioptasia emerges as a natural psychological mechanism triggering emotions universally, extending implications beyond academia.

### **I See Dead People: Measuring the Severity of Horror Media-induced Intrusive Memories**

*Madison LaSaga, Jonathan Fawcett, Marc Andersen, Mathias Clasen, Robyn Cumben, Jedidiah Whitridge, Christopher Quinn-Nilas*

The “paradox of horror” contends that we enjoy horror despite being frightened by it. Nevertheless, many individuals find themselves feeling haunted by intrusive memories of particularly scary scenes. Presumably, those who enjoy the horror genre do not experience intrusive memories of horror media content as severely as those who do enjoy it. Investigating experiences of intrusive memories of horror media content could provide insight on factors (e.g., emotion regulation) which affect one’s ability to manage intrusive memories of real-life horrors. However, no measure of severity of intrusive horror memories currently exists. Our objective is to develop and validate a scale which measures the severity of these horror media-induced intrusive memories. Our proposed subscales include distress, vividness, interference, intentionality, and perceived control. Our research team aims to develop and test a pilot set of items – using Exploratory Factor Analysis to empirically test the underlying factor structure and modify the scale accordingly. In a subsequent sample, we will utilize Confirmatory Factor Analysis (including invariance testing across horror and non-horror fans) to further validate the factor structure. By introducing this novel scale, we aim to bridge the research gap between recreational fear and the cognitive mechanisms of controlling unwanted thoughts and memories.

### **A Tight Squeeze: Exploring Obstetric Outcomes and Behaviours in Non-Human Primates**

*Isabelle Leavy*

The high rates of obstructed labour in childbirth observed across human populations are often considered to be a consequence of the combined effects of a narrow pelvis resulting from obligate bipedalism and increases in brain size during human evolutionary history. This so-called obstetric dilemma is assumed to be unique to humans, however, other primates such as *Hylobates* and *Macaca* exhibit a

comparable “tight fit” between the foetal head and pelvic outlet, despite the fact that they are not bipedal. In this study, I explore parturition events in non-human primates to answer the question: are high rates of obstructed labour unique to *Homo sapiens*? I present data on maternal behaviour, morphology, and birth outcomes collected from publicly available videos of non-human primate parturition accessed via YouTube. I analyse variations in birth behaviour and body positioning and correlate these data with pelvic morphology, social support and outcomes such as obstructed labour or infant death. The results of this study can be applied to better understand and support birth in captive primates and to shed light on elements of human obstetric evolution.

### **The Puzzle of Low Birth Rates: A Deep Dive into Social Status Uncertainty and Evolutionary Mismatch**

*Amy Lim, Hernando Granados-Chong*

Many modern affluent nations are experiencing birth rates below replacement levels. Several countries, including Canada, Korea, and Singapore, have recently reported historically low birth rates. In modern societies, a person's social standing can change drastically overnight due to digital avenues of wealth acquisition, the presence of high-paying careers, promotions, or inheritance. Such cues in the contemporary environment are likely to have interfered with our assessment of status and fooled us into thinking that status and resources are insufficient to pursue mating and reproduction. Drawing on an evolutionary life history mismatch perspective, we examine how social status uncertainty can influence reproductive preferences. With a correlational design (total N = 209), our study found that perceptions of social status uncertainty led people to perceive lower levels of socioeconomic status, contributing to a preference for slower reproductive life history strategies. These data demonstrate that insufficient resources to raise children resulting from uncertainty of social status incentivizes people to prioritize social status acquisition and slow reproduction. Our findings provide support for an evolutionary life history mismatch and offer an explanation for extremely low fertility rates in modern affluent nations.

### **Status and Aggressive Reactivity: A Case Study of NEET Incels**

*Miriam Lindner*

Studies document the association between low social status and aggression in men; an inclination that might be exacerbated among involuntary celibates (incels), who grapple with hopelessness, diminished self-worth, and sexual frustration. This study applies a mixed-methods approach to real-world conversations on the main,

unmoderated forum of self-identifying incels. Specifically, it investigates the association between low status and expressions of self- and other-directed aggression across three groups: incels of particularly low status, e.g. those identifying as NEET (Not in Education, Employment, or Training); incels enjoying some status (e.g., incels in college); and a control group (each N = 500). Qualitative and quantitative (e.g., NLP) analyses show that NEET incels (vs. high-status and control) are more likely to employ aggressive language. Further, analyses suggest that NEET incels are more likely to express fantasies about self-directed (e.g. self-harm) vs. other-directed aggression.

### **Watch me be self-controlled**

*Xingyu (Shirley) Liu*

This study provides a novel test of the associative social learning account of social evaluation, connecting self-control to cooperativeness signaling, and offering insights into the cognitive underpinnings of self-control. Expanding on prior research (Fitouchi et al., 2022) that links self-control to cooperation, we propose that self-control signals cooperativeness, and is therefore influenced by social evaluation. We hypothesize that social evaluation, particularly when reputation is at risk, heightens reported self-control and cooperative behavior. Additionally, we investigate whether self-control, like other cooperative-signaling behaviors, "misfires" even without social evaluation or reputational risks (McAuliffe et al., 2019). Participants, randomly assigned to three conditions with varying levels of social evaluation and reputational risk, completed a self-control questionnaire before playing a Prisoner's Dilemma Game (PDG). In the Recipient-Partner condition, the participant's future PDG partner could see their self-control score; in the Recipient-Stranger condition, only the experimenter could see their self-control score; and in the No-Recipient condition, self-control scores were anonymous. We expect participants in the Recipient-Partner condition to demonstrate higher self-control and increased cooperation than the No-Recipient condition. Outcomes of the Recipient-Stranger condition will illuminate whether self-control reflects a broader concern for any social evaluation or remains specific to cooperation contexts. Data collection is underway.

### **Does Social Contract Reasoning Extend across Logic Tasks?**

*Sergio A. Lopez, Julia Lombard, Ethan Eisenberg, Glenn Geher*

Based on the ubiquitous nature of reciprocal altruism in the human experience, Cosmides and Tooby (1992) provided now-classic findings suggesting that human logic seems to improve dramatically when stimuli are presented in terms of social

contract reasoning. Their stimuli were based on the Wason Selection Task, used commonly by cognitive researchers. Our in-progress study, distributed via Qualtrics, will examine whether this effect generalizes when using the Conjunction Task, another classic logic task that participants tend to perform incorrectly, despite its apparent simplicity. In the conjunction task, participants are presented with a brief scenario and then are asked which of two items is more likely: (a) one incongruous fact or (b) that same incongruous fact along with congruous fact. We will use both social-contract-relevant and non-social-contract-relevant stimuli to investigate if Cosmides and Tooby's findings generalize with this alternative logic task. In replicating these findings using another cognitive task we aim to provide converging evidence for the evolutionary function of cheater detection. In essence, we expect that individuals will make less conjunction errors when stimuli contain socially relevant information, such as cheating behaviors and/or breaching of social contracts.

### **Slow Down, You're Doing Fine: Examining the Relationships Between Awe, Expanded Time Perception, and Life History Strategy**

*Julia Lombard, Dr. Glenn Geher*

This two-part study fills an important gap in the literature on the self-transcendent emotion awe: Awe's relationship to behavioral ecology and the mechanisms of awe and time expansion. Awe is thought to expand one's perception of time by shifting attentional resources away from the self and toward an awe-inducing stimulus. In this way, awe may create distance from the self and generate a greater sense of connectedness. Perhaps awe's many positive outcomes can be attributed to shifts in time perception. In Part One, we focus on the dispositional components of the awe experience. As life history ecology has often been implicated in perceptual alterations of time, we examine its relationship to dispositional awe, the individual tendency to experience the emotion. Specifically, we predict that slow life history ecology is positively associated with greater dispositional awe. In addition, we examine individual differences in time perspective as a mediator of dispositional awe's well-documented outcomes, such as life satisfaction and subjective wellbeing. In Part Two, we experimentally induce awe to examine its impact on retrospective perceptions of time. We expect that individuals exposed to an awe-inducing stimulus will overestimate the time of the intervention as compared to those exposed to a neutral stimulus.



## **Local or universal social norms? Qualitative findings on bystander barriers in bias-based bullying in several countries and contexts**

*Minna Lyons*

Humans may be among the only species that have evolved social norms (both local and universal) that could be based on shared intentionality, moral emotions, and capacity for collective action. The evolutionary knowledge of social norms could be useful in public health interventions, such as bystander anti-violence education. Although bystander perceptions of peer norms are likely to guide intervention decisions, we currently have very little knowledge of bystander peer norms in different cultures and contexts of violence. The question is- does the perception of social norms influence bystander behaviours in a similar way across contexts (i.e., universal barriers), or are there differences in countries/contexts of violence (i.e., local barriers)? In this presentation, I will discuss qualitative results (focus groups, interviews, and online survey with open-ended responses) from Colombia (contexts of sexual harassment, racism, and LGBTQ harassment); Finland (context of racism); and Guatemala (context of sexual harassment). Using an inductive, thematic analysis, I will explore the social norms in relation to bystander behaviour, discussing the findings in relation to local and universal social norms, and implications to evolutionarily-informed bystander interventions.

## **Evolutionary Cognitive Enhancement: Stimulating Whole-Body Problem-Solving Capacities**

*Fereidoun Malaei*

This article argues that understanding the primary functions of cognitive processes in our evolutionary past can contribute to developing more effective cognitive enhancement methods. Throughout evolutionary history, the adaptive problems our ancestors faced forged interconnected cognitive and motor mechanisms capable of various movement-based problem-solving processes. However, the physical and social challenges these cognitive-motor capacities originally evolved to address are no longer prevalent in modern societies. Accordingly, many adaptive problem-solving mechanisms associated with diverse types of body movements are often underutilized and insufficiently developed in modern contexts, contributing to cognitive decline with age. From this view, and considering current cognitive enhancement techniques such as cognitive training, neurostimulation, physical exercise, and combined cognitive and physical training, the present article introduces an evolutionary-inspired cognitive enhancement framework. This framework advocates for developing strategies and training methods that stimulate our evolved cognitive-motor adaptations, particularly by incorporating adaptive

problems and their relevant whole-body movement solutions into modern technologies and computer-based tools.

### **Rethinking Cognitive Control Assessment from an Evolutionary Perspective**

*Fereidoun Malaei, Jamin Halberstadt, Gisela Sole*

Our hunter-gatherer ancestors confronted recurring social and physical challenges that required well-embedded connections and synchronization between cognitive processes and the body for effective resolution. Indeed, solving adaptive problems necessitates regulating and generating various forms of whole-body physical activity (WBPA), such as walking, running, climbing, swimming, jumping, crawling, balancing, throwing, catching, dancing, and imitating others. However, in the modern era, psychologists have developed computerized cognitive tools (e.g., executive control tasks) to measure and manipulate cognitive functions. The conventional method for conducting these tasks requires participants to sit in front of a computer screen and respond to cognitive stimuli using a keyboard. This approach emphasizes cognitive systems without considering the potential impact of whole-body problem-solving capacities. Here, we propose a schematic model highlighting the role of WBPA in assessing executive control. Then, we present a scoping review result on three commonly used executive control tasks (Stroop, Simon, and Flanker tasks), revealing a gap in prior research, which has not adequately explored the role of body engagement in cognitive control assessment. We also introduce methods capable of incorporating traditional forms of WBPA into modern computer-based cognitive assessment. Finally, we advocate for developing cognitive assessment tasks to engage adaptive cognitive-motor capacities.

### **Enhancing the appeal of healthy food through food sharing: A replication study on induced pleasure**

*Katrien Maldoy, Charlotte De Backer, Karolien Poels, Helen Duh*

Throughout human history cooperation was a key to success in the acquisition and redistribution of food. Sharing food was a necessity and eating together became a celebratory moment of joined forces to acquire a varied diet, needed to survive. Today still eating together and/or sharing food evokes and communicates pleasure and social closeness, especially in the context of hyperpalatable foods. Previously, we have shown that images framing healthier food choices in a context of sharing food or merely eating together (not sharing food/utensils) can also trigger pleasure and appeal. We recommended to endorse food sharing and/or eating together as

strategies to promote healthy eating to combat overweight and obesity. The original study, conducted in Belgium, was therefore replicated in Johannesburg, South Africa – currently experiencing a high prevalence of obesity. Preliminary results based on N = 98 participants present unexpected deviations from earlier findings: the sharing of healthy food was found to induce less pleasure and appeal, compared to eating together without sharing food. These results indicate that we may have to reconsider whether eating together and food sharing are universally pleasurable or if food characteristics and cultural factors can enhance or hinder its effects.

### **Widow responses and family outcomes following death of the breadwinner at the turn of the twentieth century in Nancy, France**

*Gillian Stewart, Konstantinos Angelopoulos, Rebecca Mancy*

Understanding how families responded to the death of the breadwinner during a period of limited institutional and private insurance can reveal mechanisms of human coping behaviour in the aftermath of a catastrophic family shock. We constructed a longitudinal dataset by tracing the families of all married males aged 26-49 who died between July 1895 and March 1897 in Nancy, France. The dataset is constructed from archives held in the city of Nancy containing an exceptional series of annual municipal-level censuses, augmented by military and genealogical records. Quantitative analysis reveals that in terms of subsequent accommodation quality, deaths of additional family members and education of male offspring, the impact of the husband's death was, to a large extent, mitigated. Some widows remarried, but many started to work; where the opportunity existed, they took over the existing family business. The impact of the death of the breadwinner on accommodation quality varied among neighbourhoods. Our analysis implies the role of household-specific opportunities, probably working alongside network effects, in influencing the behaviour of the widow. That the widow often took on a more significant income generation role in the family suggests that social stereotyping constraints on behaviour gave way to practical considerations.

### **Cognitive foundations of speech repression and 'cancel culture': mobilisation-maintenance, threat-detection, and status acquisition.**

*Antoine Marie, Michael Bang Petersen*

Political and religious movements often bind around shared mobilizing narratives. In their most devoted activists, participation in the movement triggers righteous motivations to repress speech to protect the narrative from being challenged, with

truth and nuance as the casualties. The ideological narratives are often threat-based, denouncing an evil or villains encroaching on a sacred value, such as national grandeur, the faith, or class, racial, or gender equality. Think for instance of McCarthyism, the persecution of heretics during the Middle Ages, or contemporary 'cancel culture'. Here, we propose that motivations to repress speech may derive from three main evolved cognitive foundations. First, highly sensitive dispositions to detect threat, from human outgroups in particular. Second, motivations to try to keep ingroup members mobilized around cherished causes and against rival groups, by using moral talk emphasizing collective benefits. Third, motivations to signal personal devotion to moralized causes to accrue prestige within the ingroup. In line with arguments about self-deception and persuasion, strategies of ingroup mobilization and signaling need not be conscious.

### **Worldwide Value Divergence**

*Danila Medvedev, Joshua Conrad Jackson*

Has modernization brought a global consensus on what people consider important, desirable, and just? We use survey data from 1981–2022 ( $n = 406,185$ ) to test whether social values have become more similar (converged) or dissimilar (diverged) across 76 countries. We find evidence of global value divergence. Values that emphasize tolerance and openness have diverged most sharply. Countries with high value homogeneity or high per-capita wealth tend to have values that are dissimilar from the rest of the world. Affluent Western countries have developed values that are especially distinct. Our final analysis shows that countries with similar levels of wealth have held similar values over the last 40 years. However, in the 21st century, geographic proximity has emerged as an increasingly strong correlate of value similarity between countries, indicating that values have diverged across most countries and converged across countries in the same geographic region. The worldwide divergence of values might exacerbate the WEIRD problem in behavioral science and contribute to the growing anti-Western sentiment in parts of Asia, and Africa, and Eastern Europe.

### **Distress in the ranks: Perceived disadvantage predicts poorer psychological well-being**

*Sandeep Mishra, Shadi Beshai, Justin Feeney*

Social status is a core proxy of fitness in humans. Social rank theory suggests that mental distress is in part a consequence of lower social status (rank) within a social

dominance hierarchy. Actors likely understand their place in such hierarchies via proximate "hot" cognitions tied to social comparison. We examined if various manifestations of perceived disadvantage -- tendencies toward unfavorable, emotionally-laden social comparison -- were associated with poorer mental well-being. Disadvantaged appraisals of self (self-esteem), self relative to others (malicious and dispositional envy, relative deprivation), and self in the world (justice sensitivity) were all strongly and significantly associated. Measures of perceived disadvantage collectively predicted substantial variance in depression and anxiety, showing effect sizes similar to some of the strongest previously identified psychological predictors of mental distress. Taken together, these results provide further evidence supporting social rank theories of mental distress. These results also add to a growing body of evidence suggesting that an adaptive approach to understanding mental distress may offer paths to better, more targeted interventions to foster resilience.

### **Evolving Threats: Explaining Definitional Ambiguities and Precautionary Responses to Terrorism**

*Michael Moncrieff*

Predatory coalitional conflict, a lethal form of collective aggression aimed at annihilating the enemy, has shaped psychological adaptations for recognizing and responding to such threats. It is hypothesized that a mental template exists in the human mind, which evolved not to detect modern-day terrorism per se but to identify and respond to situations of predatory coalitional conflict. The presentation will explore the cues and psychological mechanisms that potentially trigger precautionary systems in response to such perceived threats. In contemporary settings, terrorists, though incapable of eliminating their targets, manipulate these cues, activating the coalitional predation template. A crucial implication of the model is that matching the input cues of the coalitional predation template may be what causes the well-documented hyperbolic responses to the relatively minimal threat that terrorism poses. The model helps account for public reactions to terrorism and other phenomena, such as the tendency to attribute mental illness to certain violent acts and the similarities between terrorism and war crimes. As the mental template did not evolve to respond specifically to acts of modern-day terrorism, arriving at an unambiguous and widely accepted definition of terrorism may not be possible. Preliminary data testing the proposed model will be discussed.

### **An investigation of the methods and individual differences in the study of need-based helping**

*Megan Mulhinch, Dani Grant, Michael McCullough*

Humans have a unique propensity for helping people in need, but the proximate psychological reasons for helping remain poorly understood. Psychologists have primarily attempted to disentangle motives for helping through Dictator Game experiments, wherein participants' allocations are ostensibly explained by the desire to improve another person's welfare as an end unto itself. However, most Dictator Games rely on one-shot between-subjects designs, which by fiat focus on characteristics of populations instead of characteristics of individual subjects. Additionally, using only a single measure of behavior places an upper limit on the reliability of the measure. Both psychometric concerns obscure inferences about participants' allocations. Here, we report the results from an experiment using a novel method for measuring prosocial behavior in the laboratory. Participants allocate real money to three target types in 26 trials: anonymous others, real identifiable individuals, and real charities. We investigate how the targets' perceived need and benefit from the donation influence participants' willingness to donate money to them. In addition, we use numerous individual differences measures to identify the strongest predictors of an individuals' propensity to help. Thus, our method has unique affordances that strengthen our understanding of who helps those in need, and why they do so.

### **Sex differences in pathogen disgust do not seem to covary with patriarchal culture.**

*Giuseppe Occhiuto, Marco Liuzza, Tullio*

Women usually display higher levels of pathogen disgust sensitivity, as compared to men. However, it is not clear to what extent these differences are to be ascribed to patriarchal cultural norms. To this purpose, we explored whether sex differences across countries correlate with country-wise differences in patriarchal norms. We utilized previous data on individual differences in pathogen disgust from 31 different countries collected by Tybur and colleagues (2016) on four different gender equality indices: Global Gender Gap Index (GGGI), Gender Development Index (GDI), Gender Inequality Index (GII), and Gender Empowerment Measure (GEM). First, we conducted a factor analysis on the 191 countries from which the four gender equality indices are available, conducted an exploratory factor analysis, and computed factor scores. Then, we conducted a Bayesian multilevel linear model analysis using individual data from Tybur et al. (2016) and tested whether differences in pathogen disgust sensitivity were predicted by the interaction between participants' sex and the gender equality factor scores. Our results do not support an effect of patriarchal culture: women appear to be more disgust-sensitive than men, regardless of the

levels of gender equality. These results may corroborate evolutionary accounts for sex differences in pathogen disgust sensitivity.

### **On the evolution and emergence of linguistic recursion**

*Nathan Oesch, Lindsay Grandison*

Hauser, Chomsky and Fitch (2002) have prominently argued that recursion is one of the most defining features of human language. But is this perspective accurate? In support of this view, a recent online study I conducted, found a tentative causal relationship between adult mentalizing (i.e. theory of mind) and syntactic recursion (Oesch and Dunbar, 2017). Yet, while informative in its own right, establishing a more definitive causal relationship, would not only require participants with impaired mentalizing, such as those with autism spectrum disorder (ASD), but diverse battery of mentalizing and language measures, and broader range of diverse participants. Therefore, the current study recruits ethnically, geographically, and developmentally diverse male and female adults (n=400), including half of those with ASD, via an online questionnaire. Participants will then be asked to complete a diverse battery of tasks related to mentalizing, verbal measures, non-verbal measures, and social measures. The central predictions are: 1) Recursive syntax scores, will be lower among neurotypical participants with lower mentalizing scores, suggesting it is mentalizing, in particular, which selectively affects recursion, and 2) recursive syntax, will be lower in a particular sub-group of autistic subjects, further suggesting a direct causal relationship between mentalizing and linguistic recursion.

### **Signal Cost Suppresses Dishonest Reputation Signalling in an Indirect Reciprocity Context**

*Yohsuke Ohtsubo, Yuta Miyazaki, Hiroki Tanaka*

Cooperation among strangers is often explained by indirect reciprocity, whereby each individual acts altruistically toward other individuals with 'good' reputation but not those with 'bad' reputation. Although indirect reciprocity models assume that actors are passive in terms of their reputation (i.e., their reputation is automatically determined by a shared social norm), empirical studies have shown that actors are active in building and maintaining their reputation (Tanaka et al., 2016). For example, non-cooperators whose intention is justifiable (e.g., not helping 'bad' individuals to punish them) often attempt to express their justifiable intention: Abandoning the resource that could be used to help 'bad' individuals is one of such signals. Notice that this is a costly act that cannot be faked by individuals who simply

want to save their resource for themselves. It has not yet been examined whether the reputation signal needs to be costly (i.e., whether people would abuse the signal, if it were non-costly, to fake their exploitative intention). An indirect reciprocity experiment manipulating the signal cost (non-costly vs. costly) showed that participants sent dishonest signals (signals disguising their exploitative intention) more frequently in the non-costly signal condition than in the costly signal condition.

### **The Impact of Social Media Content on Reputation and Willingness to Associate**

*Angélica Oliveira, Pat Barclay*

Reputation shapes survival and reproduction through its impact on social status, affiliations, and resource access. In the digital age, social media sharing may signal personal traits and group membership, directly shaping one's epistemic reputation and, consequently, their fitness. To investigate the impact of social media content on reputation and willingness to associate, we created four simulated Twitter accounts. Each account presented different amounts and types of news, with one account containing fake news. Participants (N = 443) were randomly assigned to one of these four conditions and asked to rate the accounts on 17 traits including willingness to associate with them. Results: Participants rated accounts sharing news as having more negative traits and fewer positive traits, less autonomous thinking, and fewer social interactions compared to accounts that did not share news. Specifically, accounts sharing fake news received lower ratings for positive impressions, autonomous thinking, and social interactions, and higher ratings for negative impressions. Moreover, participants indicated less willingness to associate with accounts that shared news, particularly fake news. If we understand the signals driving content dissemination on social media, we can more effectively combat misinformation and the spread of harmful content.

### **Examining affective antecedents of status attainment linked to extraversion**

*Sabine Ostermann, Julia Stern, Tobias Kordsmeyer-Storp, Lars Penke*

Social status has far-reaching fitness consequences in human groups and the attainment of social status is a fundamental human motive. Extraversion is one of the most robust predictors of attaining informal social status in human groups. Recently, research has focused on the proximate mechanisms behind this association, including situational moderators and motivational, behavioral and perceptual mediators. We extend this literature by investigating affective and physiological mediators in social interactions and its relation to the status referral at zero-acquaintance. We rely on data from a large observational laboratory study (N = 450)



that investigates the influence of personality on social interactions in small groups. In the laboratory, four to six subjects discuss a story of a moral dilemma and rank protagonists according to the morality of their behavior collaboratively. Prior and after this group interaction, hormone samples are taken and subjects report their own affective state as well as personality perceptions and interpersonal judgements of their group members in a round robin design. We are going to present results of this project on the indirect effect of self-assurance prior and hormonal (testosterone) reactivity in response to the group interaction predicting social status.

### **Salient signaling by single men: The impact of relationship status on men's conspicuous consumption**

*Jacob Dalgaard Christensen, Tobias Otterbring, Carl-Johan Lagerkvist, Jill Sundie*

Conspicuous consumption has been hypothesized to deliver reproductive benefits, and appears to be more likely to occur in situations where mate acquisition motives are active—at least, among men. However, most research in this domain has been experimental in nature, and predicting real consumer spending patterns with contextual factors such as sexual strategy proves difficult, as such contextual factors inspired by evolutionary theorizing are not typically collected in large consumer datasets. To examine whether mating effort is indeed tied to conspicuous consumption outside of the lab, relationship status was proposed to serve as a proxy variable. Across two studies, including an experiment to test the feasibility of relationship status as a proxy for mating effort (Study 1) and analysis of over 100,000 representative observations of conspicuous consumption from American households (Study 2), we find converging evidence for the thesis that single men are particularly prone to consume conspicuous goods, both compared to mated men, and to women (regardless of their relationship status). The present research suggests that relationship status may be a theoretically and practically relevant proxy for other previously documented predictors of men's conspicuous consumption, enabling broader investigations of conspicuous consumption within “big data” from public and organizational sources.

### **How is Intercourse Frequency Predicted by Relationship length, Relationship quality and Sexual Strategies using Couple Data in Two Nations: A Replication Study**

*Leif Edward Ottesen Kennair, Kaitlyn P. White, Laith Al Shawaf, David M. Buss, Mons Bendixen*

Sexual intercourse frequency in couples is predicted by several factors, including relationship length, relationship satisfaction, and relationship quality. In a previously

published study, we found that intercourse was more frequent in couples where women reported less restricted sexual attitudes. By contrast, men's sociosexual attitudes were not associated with intercourse frequency. In the current study, we sought to establish whether these findings replicated in two new samples from Norway and the United States. We measured men and women's sociosexuality, relationship length, and various dimensions of relationship quality. Structural Equation Modelling analyses were performed on data from heterosexual, romantically involved couples recruited at a Norwegian university ( $N = 125$ ) and a US university ( $N = 71$ ). Median relationship length was 17 and 21 months for the Norwegian and the US samples, respectively. Intercourse frequency decreased with increased length of relationship. Both men and women's ratings of relationship passion were associated with frequency of having sex, while the non-passion relationship quality factors were not associated with the outcome. However, despite replicating the model for most variables, this time, in both US and Norwegian data, only the man's sociosexuality emerged as a predictor of intercourse frequency. We discuss similarities and differences across nations.

### **Conditions for the redundancy of higher levels of selection in the evolution of genetic or cultural traits, with applications to the evolution of aggression, social exchange and fairness**

*Juan Perote-Peña*

I propose a formal game theory model to answer the question of under which conditions group selection can interfere with individual selection in the sense of changing the frequency of an individual genetic or cultural trait evolved at the individual level in domains of interactions or conflict situations that affect pairs of individuals. I prove that when the domain of interaction at the individual level competition and the domain of interaction at the group level are isomorphic (the strategic situation is basically the same), group formation is non-assortative and the groups' adaptive fitness is fully translated from the individuals in the group, group selection adds nothing to explain the evolution of the trait and therefore can be considered redundant as a driving force of evolution. The resulting model is then applied to different cases and domains of interaction like the evolution of aggression in the hawk-dove game, the evolution of social exchange (assimilated to peaceful trade and division of labor) and the domain of interaction of fair division in the ultimatum game, that serve as possible examples of the redundancy of competition at the group level in explaining the genetic or cultural evolution of the traits involved.

## **A Cross-Cultural, Multi-Method Investigation of Children's False Belief and Aspectuality and Understanding**

*Ljubica Petrović, Tonico Deodato, Hannes Rakoczy, Daniel B. M. Haun, Roman Stengelin*

Understanding others' minds is fundamental to human cognition, integral to communication and cooperation, and indicative of broader meta-representational skills essential for social functioning. Central to this ability is comprehending that beliefs can be false and are aspectual (i.e., represent objects or situations only under certain aspects). Theoretical frameworks propose a developmental unity between false belief and aspectuality understanding indicative of broader meta-representational skills emerging in early- to middle childhood. Yet, existing data and paradigms predominantly reflect Minority World contexts, raising questions about their generalizability to Majority World communities. Our study includes participants from two small-scale, subsistence-based communities in rural Namibia (Hai | | om and Khwe) and an urban German community (Leipzig). We employ a multi-method approach using interactive and pretense-heavy tasks to test the suitability of task formats in different cultural contexts. We will present preliminary findings, discussing the implications for current theories of cognitive development and highlighting the need for a more inclusive and culturally sensitive approach in the study of childhood social cognition and meta-representation.

## **The role of loudness in vocal intimidation**

*Kasia Pisanski, Katarzyna Pisanski, Andrey Anikin, Daria Valente, Clément Cornec, Gregory Bryant, David Reby*

Across many species, a major function of vocal communication is to convey formidability, with low voice frequencies traditionally considered the main vehicle for projecting large size and aggression. Vocal loudness is often ignored, yet it might explain some puzzling exceptions to this frequency code. We show, through acoustic analyses of over 3,000 human vocalizations and four perceptual experiments, that vocalizers produce low frequencies when attempting to sound large, but loudness is prioritized for displays of strength and aggression. Our results show that, although being loud is effective for signalling strength and aggression, it poses a physiological trade-off with low frequencies because a loud voice is achieved by elevating pitch and opening the mouth wide into a-like vowels. This may explain why aggressive vocalizations are often high-pitched and why open vowels are considered "large" in sound symbolism despite their high first formant. Callers often compensate by adding vocal harshness (nonlinear phenomena) to undesirably high-pitched loud vocalizations, but a combination of low and loud remains an honest predictor of both perceived and actual physical formidability. This loudness-frequency trade-off adds

a new dimension to the widely-accepted frequency code and requires a fundamental rethinking of the evolutionary forces shaping acoustic signals.

### **Impact of Hormonal Contraceptive Use on Women's Social and Financial Decision-Making: A Multi-Study Investigation**

*Shivani Dayal, Smrithi Prasad*

There is growing evidence suggesting that hormonal contraceptives (HC) can influence women's status-relevant outcomes. However, research specifically examining the associations between HC use and social and financial status-relevant decision-making remains inconclusive or insufficient. We analysed data from five datasets (Total N= 422) to examine whether there were differences between HC users and non-users across a broad array of social and financial decision-making outcomes. Our results revealed that the choice to use HCs did not predict differences in decision-making. Specifically, no differences emerged between HC users and non-users across: (i) risk-taking outcomes measuring deliberative and affective risk preferences; (ii) decisions to compete in a dot estimation task; (iii) resource allocation decisions in the dictator and ultimatum games; and (iv) individual gains in integrative negotiations. While our findings suggest a lack of direct effects between HC use and social and financial status-relevant decision-making, they do not rule out the possibility of interactions between HC use and social context impacting these outcomes. Other factors that contribute to hormonal variations, such as menstrual cycle phases, may also influence decision-making. We discuss the implications of these findings and provide recommendations for future research examining the relationship between HC use and social and financial status-relevant decision-making.

### **The logic of guesses: Cognitive adaptations for communicating probabilistic beliefs**

*Tadeq Quillien, Neil Bramley, Christopher Lucas*

There seems to be a tension between being correct and being specific. For example, you could make a guaranteed-to-be-true prediction about the winner of an upcoming race by saying that "someone will win the race", but this would strike most people as completely vacuous. Here we propose to identify the underlying adaptive problem that gives rise to the tradeoff between accuracy and specificity. We argue that the problem is one of communication under constraints. Ideally, the speaker would be able to tell what they think is the probability of each possible outcome, but doing so would take too much time, or be cognitively costly. Therefore, speakers offer simple guesses in order to communicate a compressed version of this probability distribution. We formalize our adaptationist theory using tools from information

theory, and test its predictions in four experiments. We find that our information-theoretic account captures people's ratings of guess quality (Experiment 1), what guesses people make (Experiment 2), what inferences listeners make on the basis of a guess (Experiment 3) and how people evaluate a guess relative to the correct answer (Experiment 4). We also argue that known biases in probability judgments (like the conjunction fallacy) support our account.

### **Emotional Reactions to Best Friends' Decisions: The Influence of Revealed Welfare Tradeoff Ratios and Monetary Allocations**

*Sean Reilly, Jaimie Krems, Eric Pedersen*

Friendships are associated with various health and psychological benefits. Emotions play a pivotal role in friendships—serving to negotiate for better treatment or to strengthen the positive treatment one is already receiving. Here, we explore people's emotional reactions (anger, gratitude, jealousy) to best friends' monetary tradeoff decisions. We propose that emotional reactions are driven by best friends' revealed welfare tradeoff ratios (rWTRs), which index how much the best friend values the participant relative to how much the best friend values other people. Participants (N=383) witnessed their best friends make hypothetical decisions splitting money between themselves, an acquaintance, and the participant. Across trials, we manipulated best friends' rWTRs and monetary allocations to participants and acquaintances, testing their independent and interactive effects on emotional reactions. Results revealed main effects and interactions for both rWTRs and monetary allocations. Both higher rWTRs and greater monetary allocations were associated with more gratitude, less anger, and less jealousy. But, when participants received less money than acquaintances, lower rWTRs were associated with heightened feelings of anger and jealousy—a pattern not observed when participants received more money than acquaintances. Findings underscore the dynamic interplay between rWTRs, monetary allocations, and friendship dynamics on emotional reactions.

### **Psychological causes and consequences of reading romantic fiction in women**

*Rachel Reyes, Cari Goetz*

We tested two hypotheses to better understand how individual differences relate to reading romantic fiction in women. Our compensatory hypothesis suggested that women read romance novels to experience attraction and relationship-related feelings that they are not experiencing in their real lives. In support of this hypothesis,

we predicted a positive association between loneliness and romance novel consumption among single women and a negative association between relationship satisfaction and romance novel consumption among women in relationships. We also proposed a contrast effect hypothesis which suggested that because romance novels feature male protagonists who embody women's ideal mate preferences that reading romance novels may influence women's standards for mates. We predicted that singleness would be associated with greater consumption of romance novels, and that this relationship would be mediated by mate preference standards. Participants completed a survey that consisted of a reading measure, loneliness scale, mate preference standard scale, a set of questions depending on relationship status (committed or not committed), and demographic questions. Results will provide insight into which women are motivated to read romantic fiction, and how reading romantic fiction influences women's mate preferences and relationship status.

### **Can Strict Workplace Policies Promote Intersexual Conflict?**

*Tania Reynolds, Simon Restubog, Karl Aquino*

Recently, the #MeToo movement shed light on the incongruence between men and women's sexual strategies. The resultant strict organizational policies on sexual harassment might portray the sexes as antagonistic, with men as sexual aggressors and women as ready to levy allegations about ambiguous interactions. These strict organizational stances might therefore foster conflict between the sexes (intersexual conflict) by depicting men and women as antagonistic. Three studies examined whether intolerant organizational stances towards sexual allegations undermine benevolence towards opposite-sex individuals and motivations to form relationships with them. In Study 1, 282 married employees who perceived their organizations as intolerant of sexual (but not gender-based) harassment less often engaged in at-home sexual behavior with mates. In Study 2 (N = 853), organizational intolerance (vs tolerance) towards a sexual allegation increased disapproval of a female accuser relative to the accused man. These changes corresponded to reduced sexual desire and heightened male interest in sex robots. In Study 3 (N= 335), organizational intolerance towards a sexual (vs nonsexual) accusation reduced benevolence towards opposite-sex individuals and donations to charities preventing their suicides. Findings suggest strict regulation of workplace sexuality might corrode cross-sex goodwill and stoke intersexual conflict.

## **Honest signaling of intent can overcome the ‘tragedy of the commons’ by aligning individual interest with group cooperation**

*Gilbert Roberts*

Investing in a good reputation can be worthwhile when it provides an honest signal of intent to cooperate. I have previously shown the conditions in which this can enable mutually beneficial cooperation in reciprocating pairs. However, group cooperation often involves public goods games where mutual cooperation is unstable even in repeated games without additional measures such as punishment. Here, I model the conditions in which honest signalling of intention to contribute can bring about mutual cooperation in 3-person public goods games. In the model, individuals can decide whether to signal by investing in a good reputation; whether to choose partners based on their signals; and whether to cooperate with partners. I propose that investing in a good reputation can pay when there is a cost to cheating because free-riders lose access to profitable partnerships. I discuss the model in the context of understanding the evolution of morality. I propose that moral individuals honestly signal that they will act in a way that aligns with the interests of other parties. In this way they can overcome the social dilemmas inherent in group cooperation.

## **Stereotypes of intrasexual aggression: People expect men and women to use different tactics**

*Nina N. Rodriguez, Jaimie Arona Krems, Daniel Szyzner*

Early research into conflict tended to focus on what might be called male-typical aggression, involving physical and face-to-face tactics (e.g., punching). However, a consensus has now formed around the fact that women also aggress but tend to eschew such tactics in favor of what are typically more subtle and non-physical tactics (e.g., gossip). People should be correspondingly attuned to the likely tactics of aggression they might face from men and women. But despite decades of research, aggression scholarship has largely failed to examine people’s expectations of aggression—which people will use which tactics—in a way that includes female-typical aggression. Here, we examine a range of tactics. U.S. and South Korean data suggest: (1) People hold sex-specific stereotypes about aggression tactics; (2) There are some cross-cultural regularities in these aggression tactic stereotypes; and (3) these stereotypes might not track the current reality of aggression usage. Notably, people expect men (vs. women) to use threats and direct aggression in response to conflict, whereas people report that they themselves are most likely to do nothing in response to conflict. Findings underscore the importance of examining responses to conflict that include a range of aggressive—and non-aggressive—actions.

### **Wisdom in partner choice: Wise writers are judged more positively and more often chosen as social partners**

*Amanda Rotella, Igor Grossmann*

How do people perceive wisdom? In psychology, wisdom is studied as a suite of reasoning processes (e.g., intellectual humility, recognition of uncertainty, perspective taking, understanding context) that facilitate social decision-making. Engaging in these processes – termed wise reasoning – varies within individuals. Wise reasoning is most often used in contexts of value to the target, we advance that wise reasoning can serve as a partner choice signal. In our pre-registered studies, we hypothesized that people would form positive impressions of people who use wise reasoning, compared those who do not. In two within-subject experiments, we presented participants with real short texts (~300 characters) of a social conflict (Study 1; N = 216) or a workplace conflict (Study 2; N = 273). Across both studies, wise writers were rated more positively (e.g., moral, kind, trustworthy, intelligent), less negatively (e.g., less aggressive, selfish), as having slower strategies (e.g., SOIs, family oriented, stable environment, non-impulsive), and more often chosen as partners, compared to unwise writers (Cohen's  $d$ 's:  $0.35 < d < 1.67$ ). These results suggests people judge reasoning processes to make social decisions, and that wise reasoning can be used as a social signal influencing partner choice.

### **Interindividual differences linked to cooperative and competitive tendencies in transparent dyadic interactions**

*Johannes Ruß, Darius Lewen, Vladislav Ivanov, Anna Fischer, Igor Kagan, Viola Priesemann, Alexander Gail, Annekathrin Schacht, Lars Penke*

In this study a new method is used to study social interactions in the lab using a more naturalistic approach, the dyadic interaction platform. The platform is a novel see-through display that can be placed between two participants and is simultaneously controlled by both of them. Participants can act on the same visual objects displayed on the screen dynamically and in real-time. This transparent dyadic interaction through the platform emulates a naturalistic interaction while still maintaining well-controlled laboratory conditions. A game was developed for this platform that allows participants to continuously move in-between and collect different types of resource points. Variability between the dyads and the players in the types of resource points collected and their overall movement indicates towards a more cooperative or competitive tendency. Using this game and the platform allows to explore how interindividual differences in personality and steroid hormone levels relate to



decision making in naturalistic social interactions, while prior studies only used trial-based decision games and nontransparent interactions.

### **Disentangling Desire: A New Scale for Assessing Status and Resource Preferences in Human Mate Selection**

*Sascha Schwarz, Lisa Klümper*

Since the 1920s, research on human mate selection has consistently shown a focus on preferences for status and resources. Traditional methodologies, such as single-item measures and experimental manipulations using vignettes or visual representations, have predominantly been employed to assess these preferences. However, it remains theoretically ambiguous whether these approaches accurately measure preferences for status, for resources, or if they conflate the two. From a psychometric perspective, the reliability and validity of these traditional methods are questionable. Our study introduces a novel scale specifically designed to separately assess individual preferences for status and resources in a potential long-term partner. We present first data validating the newly developed scale. The development of this scale addresses previous methodological shortcomings and offers a more direct, reliable, and valid approach for examining individual differences in mate preferences for status and resources. Furthermore, this tool facilitates a clearer understanding of whether, and in what cultural or social contexts, preferences for status and resources align or diverge. This contribution is a significant step forward in refining the theoretical and empirical study of individual differences in mate selection.

### **Sex-Related Grief: The Case for Opposite-Sex Twin Survivors**

*Nancy Segal*

Twin loss is a devastating event, receiving limited attention in the evolutionary-psychological literature. Extant studies have found greater grief among MZ than DZ twins, and among MZ males and females than same-sex DZ males and females, respectively, consistent with kinship-genetic theorizing. Focusing on the relatively neglected opposite-sex pairs, the present study predicted greater grief between female than male survivors. However, a competing hypothesis (male grief will exceed female grief) was assessed given: 1--the uniquely close relations typical of male-female twins, associated with females' "maternal overprotection" valued by males, and 2--uncertain paternity—twin brothers, but not twin sisters, can be certain that cotwins' offspring are their genetic nieces/nephews. A Twin Loss Survey was

completed by 780 survivors whose age at loss was 15+ years to assure development of their social relationship. The sample included 14 opposite-sex males and 129 opposite-sex females. The male-female representation may reflect males' reduced longevity/reduced willingness for research participation. Grief intensity ratings (1:lowest-7:highest) of three randomly-generated female samples ( $n_s=14$ ) were, therefore, compared with the male ratings. Female ratings exceeded male ratings, with one comparison reaching statistical significance [ $t(7.06)=-2.06, p<.03$ ];  $\bar{x}_{\text{female}}=6.21(0.58)$ ;  $\bar{x}_{\text{males}}=5.36(1.45)$ ], supporting previous findings. Larger opposite-sex samples focusing on male-female twin pairs' unique relationship are warranted.

### **Understanding sexual harassment from a human sexual strategy perspective**

*Øyvind Imenes Sivertsen, Mons Bendixen, Leif Edward Ottesen Kennair*

Advances in our understanding of sexual harassment brought a focus to individual differences that increase risk of both perpetuating and experiencing sexual harassment. From a human sexual strategy perspective, traits such as sociosexual orientation may reflect differences in mating strategies; also, it may explain the overlap between harassment of same-sex and opposite-sex in terms being different types of acts against different targets but with a common short-term sex objective. In the current study, we investigated rates of sexual harassment victimization among university students in Norway and hypothesized risk factors, including sociosexuality (SOI-R), personality and organizational tolerance for sexual harassment. The sample consisted of 594 students of which 67% were women. For men, sociosexual orientation correlated significantly with both victimization of same-sex ( $r = .40$ ) and opposite-sex sexual harassment ( $r = .39$ ). For women, sociosexual orientation was significantly correlated, although less strongly, with victimization of same-sex ( $r = .19$ ) and opposite-sex ( $r = .16$ ) sexual harassment victimization. The strongest correlate for same-sex harassment victimization was opposite-sex harassment victimization, at respectively  $r = .76$  for men and  $r = .56$  for women. SEM analyses including all predictors will be presented. The results be discussed within a human sexual strategy framework.

### **The Impact of Socio-economic Status on Endocrine Reactivity in Social Defeat**

*Konstantina V. Karastoyanova-Gibson, Martin A. Sharp, A.S. Emad, Al-Dujaili, I. Greener, H. Burns*

At population level, lower socio-economic status (SES) is associated with poorer health and reduced opportunities to fully participate in society. Reasons for this exist

within a latticework of socio-cultural, economic, political, and biological influences. The social gradient in health robustly illustrates how inequalities and social rank predict distribution of chronic disease, with subordination linked to limited resources and lack of control, rather than from health behaviours or access to medical care. However, specific biopsychosocial mechanisms through which status affects health outcomes are not empirically tested. By exploring endocrine reactivity in response to an experimental social defeat task, cognitive moderators of this link (threat and challenge cognitions), and the relationships of key psychosocial factors to endocrine reactivity, advances research of health inequalities. The results demonstrate that the overall circulating testosterone (T) levels were higher in the high SES compared to low SES group in experimental conditions of success and defeat. Participants also displayed higher overall levels of circulating cortisol (C) levels compared against a comprehensive time-matched baseline. Moreover, the study suggests that T potentially plays an important role in the neuroendocrine reactivity that affects behavioural implications of social defeat/victory, before situating these within the broader contextual framework of socio-economic disadvantage (SED).

### **Radical Romance: A longitudinal investigation of causal relations between romantic-sexual rejection and extremist dispositions**

*Marius Stavang, Mons Bendixen, Thomas Kleppestø, Asbjørn Dyrendal, Andrew Thomas & Leif Edward Ottesen Kennair*

With the rise of the incel phenomenon and acts of extremism being linked to experiences of romantic rejection, theories are put forth on how romantic exclusion can cause extremist dispositions (Lindner, 2023). While associations between rejection, aggression, misogyny and socio-political attitudes have been demonstrated in experiments and cross-sectional studies, evidence that romantic rejection comes before extremism in natural mating markets is yet to be provided. Longitudinal designs are particularly apt to investigate causality in terms of time precedence in naturalistic settings. We conduct a 9-month a panel study with 4 assessments per 3 months to investigate whether romantic acceptance-rejection and relational transitions (entering/exiting relationships) precede changes in extremist dispositions. In 2023, single and coupled students from diverse campuses responded to surveys in May (T1, n=542), August (T2, n=152), November (T3, n=102), with a final round set for February 2024 (T4). Participants report their current relationship status, recent mating efforts and experiences of romantic acceptance and rejection (measured with the Mating Effort, Acceptance & Rejection scale, presented at HBES 2023). Extremist dispositions are measured with the Extremism Scale, Radicalist Intentions-, Social Dominance Orientation-, Left-Wing Authoritarianism-, and Ambivalent Sexism scale. Longitudinal multilevel modelling is used for between- and within person analysis.

### **Gaslighting, Partner Personality, and the harms of coercive control.**

*Michael Stirrat*

Gaslighting is a form of intimate partner abuse that appears to be used to maintain control of a partner by altering their perceptions, thoughts, actions, affective state as well as their self-perception and reality-testing. Compared with other forms of intimate partner abuse there has been little empirical research published to date. The present research had two aims: i) to identify links between traits of the dark triad model and the usage of gaslighting; and between gaslighting and gender; and if dependency may lend vulnerability to experience gaslighting in romantic relationships. ii) to investigate the harms of gaslighting by testing whether victims of gaslighting are more susceptible to depression than those who haven't experienced gaslighting. A group of 624 adults (97.6% female), aged 18- 61 years ( $M = 24.27$ ,  $SD = 8.33$ ) participated in this study. Our results showed that there was a significant association between Machiavellianism, Psychopathy and Dependency with gaslighting in romantic relationships, however there was not a significant association between the usage of gaslighting and gender. We also found a strong positive correlation between Gaslighting and Depression.

### **Beyond Kinship: Understanding the Influence of Shared Identity on Helping Decisions in High-Cost Scenarios**

*Shayan Syed, Laurence Fiddick, Athena Kamburis*

Previous studies have found that, as the cost of helping increases, individuals tend to prioritize helping kin over non-kin (Burnstein et al., 1994; Stewart-Williams, 2007), as predicted by Hamilton's (1964) inclusive fitness theory. The exception to this trend is close friendships, where friends are often afforded as much help as family (Stewart-Williams, 2007). This finding raises a question: why are friends often treated similarly to family, particularly when the cost of helping is higher? The following study aimed to answer this question through the exploration of whether this effect was driven by a sense of identification with friends, especially the feeling that friends are similar to family. Exploration was also extended to other groups that individuals may strongly identify with: the same gender, ethnicity/race, and belief groups. In low-cost scenarios, participants ( $N = 196$ ) were more likely to help when a sense of shared identity was felt. Whether a group (friends, gender, race/ethnicity, belief) felt like family successfully predicted willingness to help in high-cost scenarios, whereas identification was not a significant predictor in these scenarios, despite identity and

family feeling being strongly correlated. By contrast, in low-cost scenarios, identification, but not family feeling, was a significant predictor of helping.

### **How the behavioral immune system shapes prosocial behavior**

*Aleksandra Szymkow, Natalia Frankowska, Aleksandra Tolopilo*

The project aims to examine the theory of the behavioral immune system (BIS) in relation to prosocial behaviors. The BIS is a motivational system that works to reduce the risk of infection by altering perception, emotions, and actions. It is triggered when signals indicating potential pathogens are detected in the environment, causing a feeling of disgust and motivating avoidance of specific stimuli. However, living in social groups exposes individuals to a range of risks, including threats to physical health and infection. A well-functioning BIS should therefore balance the costs and benefits of avoiding social contact. This means that the decision to engage in helping behaviors may vary depending on the individual and the situation. In three experimental studies, we used visual or olfactory disgust stimuli to manipulate BIS and measured the willingness to provide direct and indirect help to kin or non-kin with or without signs of infection. The results support the flexible nature of the behavioral immune system in the context of prosocial behavior.

### **Active distributions induce expectations of equal resource allocation in infants**

*Denis Tatone, Gergely Csibra*

A recurring theme in ethnographies of sharing across foraging groups is the difference between active and passive transfer, and the distinct relational context each is embedded in. Active distribution by a focal resource provider typically occurs when recipients have standing entitlements to designated shares. In contrast, passive access to a common pool occur when resource flow is only regulated by contingent individual needs. The present study investigates whether sensitivity to the relational obligations that these transfer types make manifest is already present in infancy. To this end, we familiarized 15-month-olds with three different allocation procedures (third-party distribution: A divides a resource lot between B and C; recipient-initiated distribution: A provides a resource lot, which B shares with C; taking from a common pool: A provides a resource lot which B and C take from) and tested whether infants expected equal resource division between recipients. Infants formed this expectation for both types of active distributions, but not when the resource lot was divided via taking. These results suggest that sharing practices defined by active control over the distributive process (whether by a resource provider or a recipient) induce sensitivity to allocation outcomes already in the second year of life.

### **Infants use touch and size difference to infer caregiving relationships**

*Christina, M. Steele, Denis Tatone, Megan Richardson, Azwayla Taylor, Ashley J. Thomas*

Despite the centrality of caregiving relationships in the first years of life, little is known about whether and how infants represent these relationships. Prototypical caregiving bonds are established through affiliative touch between individuals differing in size (e.g., mother and infant). In the present pre-registered study, we investigated whether 8-to-10-month-old infants (N=115) attend to these cues (i.e., touch and size difference) to predict which of two differently sized agents will respond to the distress of a third (small) agent. In Experiment 1 infants expected the larger agent to respond to the distressed agent, but only if these previously engaged in affiliative touch. In Experiment 2, infants did not expect the small agent to respond to the distress of the larger agent, suggesting that expectations of emotional support within caregiving relationships may be asymmetrical. Together, these findings suggest that from an early age humans leverage the availability of multiple cues to recognize caregiving bonds, which help differentiate them from superficially similar affiliative (e.g., friendship) or asymmetric (e.g., dominance) associations.

### **The Anatomy of Creepiness: An Evolved Defense Against Reproductive Hijacking?**

*John Terrizzi, Christian Hart*

We explore the experience of feeling creeped-out as a possible defense against reproductive hijacking. In Study 1, participants (N = 131; 83% Female) responded to 160 statements about the last time they were creeped out by another person. The most highly endorsed characteristics included the participant being alone and the creeper being male, older, wanting attention, being persistent, staring, grinning, and paying unwanted compliments. Women were more likely than men to report being paid unwanted compliments and being worried about being raped. In Study 2, we developed a measure of CREEpiness Propensity and Sensitivity (the CREEPS). Participants (N = 572; 83% Female) completed a series of 104 items that asked them how creeped out they would be by various physical characteristics, situations, and behaviors, as well as how they would feel, behave, and think. A factor analysis revealed three factors that included proneness to be creeped out by physical (Factor 1) and behavioral characteristics (Factor 2) and how emotionally sensitive (Factor 3) they would feel when creeped out. Women scored higher on all three facets of the CREEPS.

### **An Adaptationist Perspective on Suicide and Self-Harming Behaviour**

*Anmol Thind, Courtney Aucoin, Adelaide Swanston, Paul Andrews*

Natural selection should preserve favourable traits and reject injurious traits. Counterintuitively, self-injurious behaviour—such as suicidal behaviour—has persisted through years of evolution. The persistence of suicidal behaviour implies that it must have had adaptive benefits in our ancestral environment. The present study aims to understand what adaptive benefits suicide and self-harming behaviour provided in our ancestral environment. We hypothesize that self-harming behaviour is used to gain information regarding one's value and burdensomeness in their relationships. To answer this question, we are running an online study where participants respond to open-ended questions asking them to write about their strongest thoughts and feelings regarding past circumstances that motivated them towards engaging in self-harming behaviour, as well as circumstances that motivated them to stop. This will provide insight into the root cause of why individuals engage in self-harming behaviour and how a community can respond to promote the cessation of self-harming behaviours using social and evolutionary lenses. Findings from this study will better inform suicide prevention programs on the root causes to target during treatment, thus increasing their efficacy.

### **Behavioral Immune System and Mate Choice: Examining Preferences for Ingroup Similarity**

*Aleksandra Tolopilo, Aleksandra Szymkow, Natalia Frankowska, Michal Olszanowski*

One of the universal qualities considered attractive is good health, which indicates good genes (Little et al., 2011). Despite universal qualities such as facial symmetry (Rhodes, 2006), more recent studies emphasize similarity-to-ingroup as an important but at the same time subjective health-related cue (Bressan, 2021). Here, we investigated how the functioning of the behavioral immune system (BIS) influences individuals' preferences for physical similarity and dissimilarity in partner selection. While mating with closely related individuals (characterized by high similarity) can result in genetic disorders and miscarriage (Bittles, 2001), mating with genetically dissimilar individuals can disrupt gene complexes and suppress genes adapted to specific environments (Bateson, 1983). Previous research on the Behavioral Immune System (BIS) has indicated that the fear of pathogens can lead individuals to be more cautious in their casual social interactions (e.g. Szymkow et al., 2021). In this context, we explore whether this effect also applies to people's preferences for

intimate partners, particularly when considering mixed-race morphs. To the best of our knowledge, this issue has not yet been investigated.

### **Signaling Mismatches Between Digital and Physical Ecologies**

*Oliver Twardus*

What are the consequences of relying on similar signal detection strategies across multiple environments that differ in signaling cost and risk? Digital ecologies are distinct environments where we interact with others, form coalitions, compete, and pursue specific goals. However, they do not exist completely independently from our physical environments. Many of the signals that we rely on in real-world environments - such as identity, membership, and expertise cues - have equivalent proxies in digital environments that differ in their cost and risk. Deceptive signals in digital environments can often have a lower cost to produce or develop, and a lower risk to the signaler if discerned. At the same time, the cost of differentiating between deceptive and honest signals can also differ compared to physical environments, often to the disadvantage of the receiver. These differences are particularly pronounced if receivers rely on the same strategies, such as adaptive gullibility, across environments. Understanding the differences in signaling costs and variations in individual strategies across environments can help us better understand contemporary online issues such as disinformation and impersonation - with the aim of developing more robust environment-specific interventions.

### **Rituals are social tools for evolved minds**

*Radu Umbreş*

Recent theories claim that rituals and instrumental actions engage two distinct sets of cognitive and cultural mechanisms (Jagiello, Heyes & Whitehouse 2022) to provide solutions for problems of social affiliation compared to goal-directed actions. Converging with other critiques (Dubourg, Fitouchi, Baumard 2022) this presentation argues that this dual account fails to persuade on theoretical and empirical grounds. Furthermore, I propose an alternative and parsimonious model grounded in ultimate evolutionary mechanisms. Various phenomena labelled as “rituals” are fitness-maximising social tools, just like beliefs in supernatural punishment (Fitouchi & Singh 2022) or divination (Boyer 2020). Whether as conventions, customs, religious or lay rituals, magic or superstition, rituals engage evolved dispositions and capacities such as coalitionary psychology, honest signalling, relevance-driven learning, etc. The paper presents both widespread cultural practices like funeral rituals or initiation rites



and singular or infrequent practices such as cargo cults or tarot reading as examples of goal-directed actions responding to social costs and opportunities.

### **Changes In Vaginal pH and Lubrication in Response to Sexually Coercive Stimuli**

*Gavin Vance, Jennifer Vonk, Virgil Zeigler-Hill, Todd Shackelford*

A recent review by Gasparini and colleagues (2020) highlights the potential significance of female reproductive fluid (FRF) on post-mating sexual selection, noting that certain qualities of FRG may change in response to preferred or non-preferred sexual partners. The spermicidal hypothesis of vaginal acidity proposes that women's cue non-specific genital responsivity evolved to prevent fertilization by sexually coercive men of unknown genetic quality. Women's vaginal pH, which changes over the ovulatory cycle, and in response to sexual stimulation, may afford a mechanism by which women prevent fertilization by rape. The current research employed a within-subjects design to compare changes in vaginal lubrication and pH in response to different audio stimuli to investigate whether women have evolved a physiological mechanism (i.e. production of more acidic vaginal pH) to avoid fertilization by rape. The main goal of the present research was to determine the effect of coercive versus consensual sexual stimuli on women's genital arousal.

### **Laughter and ratings of funniness in speed-dating do not support the fitness indicator hypothesis of humour**

*Henry Wainwright, Amy Zhao, Morgan Sidari, Anthony Lee, Natalie Roberts, Tiah Makras, Brendan Zietsch*

The 'fitness indicator hypothesis' proposes that our attraction to humour evolved because it is an indicator of genetic fitness. Studies testing this hypothesis have so far yielded conflicting evidence. We assessed a sample of 554 participants' (291 women) stated preferences for various traits including humour production and receptiveness, and their revealed preferences for the same traits through speed dates (i.e. a naturalistic, face-to-face setting). Dates were audio-recorded for a subset of 350 participants (188 women), enabling assessment of revealed preferences based on an objective measure of humour (i.e. laughter frequency.) We tested the predictions that 1) humour is an attractive trait, and 2) men are more attracted to humour receptivity compared to women, and women are more attracted to humour production compared to men. Findings from stated preferences were largely consistent with the hypothesis. Results from revealed preferences found an effect of ratings of funniness on overall partner attractiveness, but no effect of

laughter on attractiveness. Revealed preferences, using both ratings and laughter, also found no effect of humour receptivity on overall attractiveness. Finally, we observed no sex differences in the effects of humour production and humour receptivity, as measured by both ratings and laughter, on overall attractiveness.

### **Imprinting-Like Effects of Adolescent Music: Mating or Coalition**

*XT (XiaoTian) Wang, Norman Li, Lynn Tan*

We tested an evolutionary hypothesis that music experienced during puberty in early adolescence imprints on individuals to promote social bonding or/and mating. We first conducted an online survey with samples from the US ( $n = 230$ ) and China ( $n = 203$ ). Results suggest that most songs and poems identified as “favorites” were learned during early adolescence (Chinese:  $14.8 \pm 5.3$  years; Americans:  $15.1 \pm 8.7$  years). Compared to the recent acquisition of songs and poems, those learned during puberty reminded participants more about friendship and induced stronger emotional reactions. Music from early adolescence also increased positive feelings more than other art forms, such as poems, fine arts, movies, dance, and views of natural scenery, especially when experienced in the company of friends than alone. In Study 2, singing songs from early adolescence (vs. those from recent years) enhanced the trustworthiness ratings of individual facial images and promoted the intentions to cooperate with these individuals. However, early adolescent music did not facilitate mating-related ratings such as facial attractiveness and artistic intelligence. The present two studies provide evidence that early adolescent songs learned during puberty possess imprinting-like effects on friendship formation and trust-building.

### **Visualizing self: Altruism is unaffected by field versus observer representations of self**

*Shelby Weathers, Helena Saven, Coren Apicella*

This study examines the impact of first-person versus third-person visualizations of self on prosocial behavior, building on research that links perspective-taking to differences in moral judgments, agency, and self-awareness. A third-person perspective of self has been hypothesized to induce a heightened sense of social observation and accountability, potentially leading to a greater focus on reputation management and consequently, helping. In two preregistered, well-powered experiments, we test the impact of perspective taking of self on altruistic behavior. Study one ( $n = 271$ ) manipulates perspective taking of self while visualizing a future volunteer activity and assesses its effect on both the intention to volunteer and an actual measure of volunteering. Study two ( $n = 599$ ) extends this investigation to

explore how visualizations of self during memory recall influence the amount of time individuals engage in a charitable activity. Across both experiments we found no evidence of an effect of perspective taking on altruistic behavior. Our results contrast with previous research suggesting that differences in mental visualizations of self influence prosocial behaviors. These findings underscore the complexity of this research area and call for a deeper examination of the theoretical frameworks and methodology used in studies.

### **Tolerance for intimate partner violence and the fear of being single**

*Lisa Welling, Yvonne Kieleszewski, K. Shephard,*

The fear of being single (FBS) is associated with insecure attachment and less selectivity in romantic partners (Sakman et al., 2021; Spielmann et al., 2013). Individuals with an insecure attachment are at a higher risk for intimate partner violence (IPV) and may tolerate more threatening behavior from their partners (Ponti & Tani, 2019). However, the direct relationship between FBS and tolerance for IPV has not been investigated. Participants (N=147, 123 female) completed the Fear of Being Single Scale (Spielmann et al., 2013), the Preference for a Dominant Partner Measure (Giebel et al., 2015), the Relationship-Contingent Self-Esteem Scale (Knee et al., 2008), the Experiences in Close Relationships Questionnaire (Fraley et al., 2009), and the Aggression in Intimate Relationships Scale (Arriaga et al., 2016) to measure the relative contributions of dominance preferences, relationship-contingent self-esteem, attachment style, and tolerance for aggression in a romantic relationship to the FBS. As predicted, FBS was associated with tolerance of IPV, but those high in FBS were also significantly less likely to be the perpetrators of IPV. Additionally, a preference for a dominant partner and high levels of relationship-contingent self-esteem predicted tolerance for IPV. Future research should further investigate aspects of partner quality on FBS and IPV.

### **Does interpersonal synchrony affect 18-month-olds' self-other alignment?**

*Elisa Wiedemann, Dora Kampis*

Humans are extraordinarily social from a young age, and coordinating with others is a ubiquitous human phenomenon, found in societies across the globe. Interpersonal coordination, specifically moving in synchrony with others, fosters cooperation and social bonding across social groups (Mogan et al., 2017), and it increases children's willingness to help from 14 months of age (Cirelli et al., 2014). In this study, we investigate how interpersonal synchrony affects alignment with another person early

in ontogeny. After moving either synchronously or asynchronously with an experimenter, we measure infants' motivation to align their appearance with hers (Kampis et al., 2022), as well as their tendency to copy her demonstrated actions, using a paradigm of imitation and cultural learning (Gergely et al., 2002). We predicted that infants in the synchrony group will be more motivated to align their appearance and their behavior with the experimenter's compared to the asynchrony group. Pilot data confirms this hypothesis, data collection for our final sample is still underway, with results expected in early May. Our findings will contribute to a better understanding of the role of interpersonal synchrony in development, and can inform research on the effects of coordination on self-other alignment in human societies.

### **Trading descendants for persistence – When does it pay off to marry consanguineously?**

*Kai P. Willführ, Johannes Johow, Eckart Voland*

Consanguineous relationships are widespread around the globe and are found in historical as well as contemporary populations. It has been shown that consanguinity is associated with an increased intergenerational transmission of landholdings through the patriline. The concentration of wealth hereby might contribute to the maintenance of high family socioeconomic status as well as its ability to have and raise children. Consanguinity is at the same time associated with fewer descendants due to a pedigree collapse and due to inbreeding depression. In this paper, we develop a theoretical model to estimate the population- and niche-specific thresholds where the benefits of consanguineous marriages compensate the costs. The beneficial aspects of a consanguineous relationship are a function of the effectiveness and availability of hereditary resources. The costs are composed of a static biological component, deriving from inbreeding depression, and from a dynamic and environment-specific component which is basically the fitness detriment resulting from fewer descendants. However, a reduction of descendants might be a welcome side-effect in saturated population where cutthroat competition calls rather for offspring quality than quantity. We use family reconstitution data from the Krummhörn (Germany, 1720-1874) as template for synthetic population to test the explanatory power of our model.

### **Five year old children show cooperative preferences for faces with white sclera**

*Wouter Wolf, M. J. Tomasello*

Humans have a unique eye morphology that includes a distinct lack in scleral pigmentation, causing our eyes to be particularly white in comparison to those of other species. It has been hypothesized that this morphology evolved to make it easier to track the gaze of others, facilitating collaborative and cooperative interactions (i.e., the cooperative eye hypothesis). If so, then human children might already display a cooperative preference for faces with eyes that have visible white sclera. Yet there has not been a direct empirical assessment of children's cooperative preferences for human faces with white sclera. In three pre-registered online studies (total N= 144, 71 Female), we presented 5 year old children with moving 3D face models in which facial morphology was manipulated. We then asked children several questions through which they indicated their cooperative preferences for our stimuli. Children found "alien" faces (i.e., blue skin colour) with human eyes more cooperative than faces with dark sclera (Study 2) but not faces with enlarged irises (Study 1). Importantly, for more human-like faces (Study 3) children showed a cooperative preference for faces with human eyes over faces with eyes that had enlarged irises and dark sclera. These results show that (the visibility of) white sclera shapes how children evaluate social partners and thus illustrates the remarkable importance children already ascribe to the discernability of a partner's eye gaze in their judgement of a social partners' cooperativeness.

### **Deep neural networks generate facial metrics that overcome limitations of previous methods and predict in-person attraction**

*Amy Zhao, Brendan Zietsch*

Understanding what makes faces attractive has been a prominent aim among evolutionary psychologists for decades. Research has found that facial masculinity, averageness, and similarity (to a rater) are associated with facial attractiveness ratings. Early research relied on subjective ratings of these facial characteristics, while more recent research has used objective measures based on facial landmarks. However, each approach has limitations – subjective ratings are prone to rater biases (e.g. rating attractive female faces as more feminine if femininity is seen as a more socially desirable trait), while landmark-based measures do not account for key facial features like hair, skin texture, colour, and contrast. Here we use deep neural networks to combine the strengths of both approaches – incorporating the full richness of facial information while also being objective and thus free of rater biases. In general, we found stronger effects for the prediction of in-person ratings of facial attractiveness using deep neural network measures compared to measures obtained from landmarks. Landmark measures were also highly sensitive to tilting of 2D faces, while neural network measures were not. Our findings show that neural network measures are valid and overcome many limitations associated with past measures.

### **Environmental Adversity—Especially Childhood Unpredictability—Primarily Predicted Distrust in Kin**

*Xiaoyu Ji, Yuqiu Chen, Lai Wei, Zhi-jin Zhong, Jinguang Zhang*

It is a robust finding that childhood and current harshness (e.g., resource scarcity) negatively predicted general trust (i.e., trust in most people), but this finding may be difficult to interpret because people from different cultures tend to construe “most people” differently. Addressing this problem, a recent study found with World Value Survey (WVS) 6 that current harshness negatively predicted ingroup trust—indexed by averaging trust in family, neighbors, and people personally known—but not outgroup trust. Further extending this line of work, we found with WVS 6 and 7 that current harshness negatively correlated with trust in family (significant in 69-81% of the countries and regions, including China) more robustly than with trust in neighbors and people personally known (28-32%, mostly not including China). We further found with a Chinese panel dataset that, childhood unpredictability—a variable overlooked in all prior work—but not childhood or current harshness negatively predicted trust in close family members in cross-sectional, cross-lagged, and fixed-effects models. Childhood unpredictability and harshness did not predict other types of trust consistently. These findings highlight kinship as a distinct, fundamental social category and suggest that different mechanisms underly different types of trust in relation to environmental adversity.