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RABAT 2026

CONFERENCE PROGRAM - ABSTRACTS

13-16 MAY 2026, RABAT, MOROCCO

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13-16 May 2026, Rabat, Morocco

DAY 1

Tuesday, May 13

Social Learning, Culture, and Belief

How experience shapes extraordinary beliefs

Eli Elster (University of California, Davis)

The ubiquity of extraordinary beliefs across human societies, such as conspiracy theories, pseudoscience, and supernatural beliefs, is a longstanding puzzle in cognitive anthropology. Prevailing accounts emphasize cognitive biases and social dynamics but often neglect a key factor: experience. We synthesize recent evidence and identify three pathways by which experience can shape these convictions: by filtering which beliefs feel perceptually plausible, by sparking new beliefs through anomalous and emotionally charged events, and by being engineered through immersive cultural technologies that simulate sensory evidence. These pathways function alongside cognitive biases and social processes, helping explain why certain extraordinary beliefs recur, why they often accompany vivid rituals, and why they can feel convincing despite evidence that challenges their veracity.

Co-authors: Manvir Singh (University of California, Davis, US)

Group Size Modulates Social Learning Strategies and Collective Energy Landscapes in Large Language Models

Kazuya Horibe (Center for Brain Science, RIKEN)

This study investigates the adaptive behavior of Large Language Models (LLMs) in social contexts, clarifying the impact of group size on learning strategies and collective dynamics. We conducted simulations using LLM agents in a multi-player bandit task originally designed to study human social learning (Toyokawa, Whalen, & Laland. (2019). Social learning strategies regulate the wisdom and madness of interactive crowds. Nature Human Behaviour, 3: 183-193.). Hierarchical Bayesian analysis revealed that, analogous to human adaptive strategies reported in the literature, LLMs increased their reliance on social information as group size expanded. However, LLMs demonstrated a sophisticated modulation of strategy beyond simple imitation: while agents in small groups exhibited a strong conformist bias, effectively "blindly" following the majority, those in larger groups qualitatively shifted toward linear frequency-dependent copying. Specifically, large-group agents treated peer choices as probabilistic evidence—matching their adoption rates proportional to observed frequencies rather than amplifying majority dominance—while uniquely balancing heightened initial exploration with a rapid temporal shift toward exploitation. Energy landscape analysis demonstrated that this individual-level strategic shift facilitates the formation of deep basins of attraction (attractors) toward adaptive solutions in large groups, leading to the emergence of robust collective order. We discuss how interventions targeting the structural properties of these energy landscapes could serve as a bottom-up AI alignment method, allowing us to control the emergent behavior of massive multi-agent systems by shaping the thermodynamic-like constraints of their interaction environments.

Co-authors: Masato Abe (Doshisha University, JP); Takahiro Ezaki (University of Tokyo, JP); Wataru Toyokawa (RIKEN, JP)

Who knows what? Bayesian Competence Inference guides Knowledge Attribution and Information search

Marius Mercier (Institut Jean Nicod Département d'Etudes Cognitives, ENS-PSL, Ecole Normale Supérieure - PSL)

Humans acquire much information from individuals more knowledgeable than they are. But when we are ignorant, how can we tell who is knowledgeable? Past research has often focused on indirect cues to knowledgeability, from intonation to prestige. In a series of experiments, we show that people can use the nestedness of knowledge (i.e., if someone possesses a rare piece of knowledge, they will likely also possess more common pieces of knowledge) to accurately infer who is knowledgeable. When told that someone has answered one trivia question right (or wrong), participants (US participants, N>1500) can predict which other questions that individual would be able to answer. To explain these judgments, we compared a Bayesian ideal-observer model (inferring competence) against a set of plausible heuristic alternatives and showed that participants' predictions are best accounted for by the Bayesian model. We extend these results in two ways. First, participants can also select diagnostic questions—i.e., the questions that would be the most informative of someone's knowledge in an area. Second, participants can apply the same inferential process in a different domain, that of basic mathematical skills: when told that someone has been able or unable to solve a simple math problem, participants accurately infer which other problems that individual could solve. Finally, in each case, the participants who themselves performed poorly at a given task were just as able to infer who was knowledgeable, which is critical if they are to identify people to learn from.

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Childhood Development and Social Cognition

Children and adults' expectations about when rules become formalized.

Hannah Hok Kim (Brain and Cognitive Sciences, MIT)

Shared expectations about how people should behave play a crucial role in guiding behavior. These expectations can influence actions, even in the absence of explicit instructions. However, in some cases they are formalized into explicit verbal or written rules. Across three preregistered experiments with U.S. adults (N = 360) and children aged 8–11 (N = 180), we investigated intuitions about when and why formal rules emerge. In Experiment 1, we examined what social conditions adults and children think lead to explicit written rules. In this study, two minimal groups varied on one of five dimensions: intergroup threat, natural threat, resource scarcity, group size, or diversity. Participants were asked which one of these groups has a sign to remind everyone not to Dax. Adults consistently expected formal rules in larger and more diverse groups. Children consistently expected formal rules in larger groups and groups facing group threat. Experiment 2 tested whether these intuitions were driven by intuitions about mechanisms: social problems (ignorance of norms, rule defiance, and the cost of violations) and group interaction dynamics (low within-group intimacy and quibbling about norms). Each of these mechanisms individually predicted formality intuitions (e.g., if a participant thought a more diverse town was where there was likely to be a social problem like rule defiance, they also thought it would have a formal rule). Whereas children believed both social problems and group dynamics predicted formal rules, adults prioritized group dynamics, expecting formal rules especially when groups have low intimacy and frequently quibble about rules.

Co-authors: Ashley Thomas (Harvard University, US); Rebecca Saxe (MIT, US)

If you can't beat them, join them: Preverbal infants expect novel agents to choose the majority group

Erik K. Fonn (Department of Psychology, University of Oslo, University of Oslo)

Society is characterized by the negotiation of group interests, often favoring stronger majority groups. Preverbal infants expect members of larger coalitions to prevail in concrete conflicts, but it remains unknown whether infants parse the social world by ascribing general default coalitional formidability motives to others, even in the absence of intergroup conflict. Here we show that 9–13-month-old Norwegian infants (N = 97) expected an agent to approach the larger of two separate, coordinated groups (Cohen's g = .15–.17), directing their anticipatory gaze toward the larger of two groups as a third-party agent began moving toward them. Supporting the specificity of this looking pattern to group-choice prediction, the effect did not extend to larger sets of objects (Cohen's g = −.11, N = 38), nor to larger groups when the third-party agent moved away from the groups rather than approaching them (Cohen's g = −.05, N = 33). North American and Norwegian adults similarly predicted that a third-party agent would choose the larger group across explicit (N = 1704, d > .11) and implicit measures (N = 33, Cohen's g = .23). Humans infer third-party group formidability motives across ontogeny.

Co-authors: Joakim H. Zahl (University of Oslo, NO); Bjørn D. Kristensen (University of Oslo, NO); Lotte Thomsen (University of Oslo, NO)

Heterogeneity in Agreement, Partiality, and Developmental Trajectories in Men's and Boys' Social Evaluations in Conambo, Ecuador

James Zerbe (School of Human Evolution and Social Change, Arizona Stat University)

Humans are hypothesized to rely on abilities for evaluating conspecifics' traits relevant in cooperative and competitive contexts in small-scale societies. However, the plausibility of this hypothesis has been weakened given observed levels of disagreement across traits and cultural contexts in ethnographic research. This motivates pursuit of the following questions: how much agreement and accuracy characterize men's evaluations of other men's traits? To what degree are disagreements due to political partiality and how homogenous are cognitive tendencies in social evaluations across trait domains? And when do adult-typical patterns of accuracy and partiality (social evaluation competency) emerge during ontogeny? We investigate these questions with male participants in the Amazonian forager-horticulturalist community of Conambo, Ecuador and a photo-ranking method which generates a data set of social evaluations for conspecific men's social status, generosity, trustworthiness, warriorship, strength, and intelligence. Bayesian cultural consensus analyses produce inferences about agreement, individual accuracy as a function of age, discernment, and partiality in rankings. First, results indicate Bayesian estimates of targets' latent traits exhibit greater external validity than a traditional aggregation method. We then present results indicating heterogeneity in social cognitive parameters across the ranked traits. Lastly, rankings from juvenile and adolescent participants, for a subset of the traits, are analyzed to infer the developmental trajectories of social competency acquisition by modeling parameters as a function of rankers' age. These results are interpreted in light of error management theory and the embodied capital hypothesis for the evolution of prolonged development in human life history.

Are Implicit Pupil Responses to Baby-Schema Culturally Tuned? Evidence from A Small-Scale Malaysian and an Urban German Community.

Marie M. G. Michael (Max Planck Institute for Evolutionary Anthropology)

Human responsiveness to baby-schema features - such as large eyes and a rounded face - has been hypothesised to shape human cognition about infants universally: starting from fast, autonomous responses to evoking complex and costly caretaking responses. If universal, baby-schema cues should be a) processed in a specialised and consistent manner, independently of kinship, visual experience or familiarity with faces, and cultural context, and b) should be detectable with implicit measures related to arousal. To assess the generalisability of this response, participant and stimulus samples from diverse communities are essential. In this study we investigate whether pupillary responses to baby-schema cues, a proxy of arousal, are similar in two culturally contrasting populations: an urban German sample, for whom cuteness is a culturally salient concept, and the Batek, a small-scale hunter-gatherer group in Malaysia, for whom it is not. To test this, participants saw community-specific in- and out-group infant faces systematically manipulated within individuals to have varying levels of baby schema, as well as adult faces. First parametric modelling results indicated that the effect of baby-schema condition was modulated by participant community. We will additionally present non-parametric models (GAMMs) to model non-linear temporal dynamics of these responses. In summary, our preliminary analyses suggest that the response to baby-schema cues is modulated by cultural factors and therefore opposes strong assumptions of universality.

Co-authors: Christoph Völter (Max Planck Institute for Evolutionary Anthropology, DE); Pierre-Etienne Martin (Max Planck Institute for Evolutionary Anthropology, DE); Daniel M. B. Haun (Max Planck Institute for Evolutionary Anthropology, DE)

Sexual Competition and Intrasexual Dynamics

When Resources Are Scarce, Who Competes More? Using the All-Pay Auction to Measure Female–Female Competition

Reuben Fakoya-Brooks (University College London)

Although sexual selection theory increasingly recognises adaptive, female–female competition, empirical work continues to rely heavily on indirect or inferred measures. Here, we use the All-Pay Auction (AP), a contest paradigm from behavioural economics, to quantify context-dependent competitive effort using directly observed behaviour. In this one-shot AP, two individuals expend real resources to compete for a fixed monetary reward, allowing behavioural measurement of competitive effort under controlled incentives. Using a UK-wide, population-based sample (N = 336), we link bidding behaviour to individual socioeconomic position, self-reported competitiveness, neighbourhood-level deprivation, and local adult sex ratio using data from the 2021 ONS UK Census data and the 2025 Index of Multiple Deprivation. Participants were randomly paired with same- or opposite-sex opponents of similar age. Experimental analyses reveal that competitive effort increases under resource scarcity at both individual and environmental levels for women and men, with effects contingent on opponent sex. Self-reported competitiveness indicated similar directional patterns but weaker associations. In contrast, tests of mating-market structure provided more qualified support: competitive effort increased when the opposite sex was scarce under aggregate (18–54-year-olds) sex ratios, but this relationship weakened or reversed when the sex-ratio measure was defined differently. These findings validate the AP as a sensitive behavioural measure of competition, demonstrate that female competitive effort is responsive to resource scarcity, and depicts how mating-market effects are highly sensitive to measurement choices.

Co-authors: Ruth Mace (University College London, GB)

How sex ratios functionally calibrate human relationships

Gary L. Brase (Psychological Sciences, Kansas State University)

A multi-level converging lines of evidence framework clarifies the conceptual and empirical foundations for sex ratios as a significant factor that is perceived and used by humans to calibrate intersexual and intrasexual relationships, including mating strategies and behaviors. A wealth of theoretical and phylogenetic evidence at the intentional level supports the role of sex ratios in relationship dynamics based on evolutionary principles, modeling, and across species. A more scattered, but also abundant, collection of findings at the algorithmic support the existence of psychological mechanisms for perceiving and using sex ratios. This includes experimental work across psychology, sociology, and demography that are relatively unintegrated. It also incorporates developmental processes tied to sex ratios, the role of sex ratios on human behaviors cross-culturally and in ancestral environments, and effects of imbalanced sex ratios on human health and well-being. The biological level underpinnings of sex ratio perception and use are less developed, but existing findings are consistent with the above lines of evidence. At each level of explanation, this framework elucidates the converging points across disparate research disciplines and areas, several topics for further research based on clear expectations, and open questions to be studied.

Evaluating Potentially Dishonest Trait Information: Modeling the Adaptive Problem and Potential Solutions

Ashley J. Coventry (University of California Santa Barbara)

Mate choice requires evaluating others' characteristics based on limited observational evidence. Existing computational models of mate choice largely assume that trait information is accurate and honestly conveyed. However, signalers in mate choice have an incentive to deceive so as to appear more desirable to observers. This poses a potential adaptive problem: choosing among partners when all are motivated to look their best. In this talk, I will first formalize this adaptive problem in an evolutionary agent-based model of mate choice. In this model, trait information can be deceptively signaled, but, consistent with existing models, observers naively treat signals as entirely honest. Results from this model demonstrate that when agents lack psychological mechanisms for evaluating the reliability of trait information, deceptive signaling strategies can invade and persist across generations, even when deception is difficult and costly. These findings reveal a limitation of mate choice models that assume honest signaling and underscore the necessity of a psychology designed to regulate inference under deception. Given the apparent necessity of such evaluation mechanisms, I then present models inspired by research on epistemic vigilance that formalize alternative psychological strategies for evaluating potentially deceptive trait information. Together, these models highlight an overlooked adaptive problem in mate choice, identify a core limitation of existing computational approaches, and provide a framework for further integrating models of mate choice with cognitive science of decision making to better understand choice in this critical social domain.

Co-authors: Daniel Conroy-Beam (University of California Santa Barbara, US)

Experimentally manipulating gender inequality affects explicit and implicit gendered attitudes

Robert Brooks (Evolution & Ecology Research Centre, UNSW Sydney)

Given the volume of related theory there is surprisingly little experimental evidence testing the prediction that gender in/equality affects psychological gender-differences and gendered attitudes. Here we experimentally manipulated economic gender inequality and income by assigning 749 participants to one of five fictional societies that differed in average earnings of men and women (women outearned men by a factor of 2:1 or 3:2, men outearned women by these same factors, or incomes were gender equal), and to one of five income percentiles (the 10th, 30th, 50th, 70th, or 90th percentile for their gender) within their assigned society. We measured participants' degree of self-perceived femininity/masculinity, explicit endorsement of traditional gender roles and non-deterministic attitudes regarding gender, implicit endorsement of gender stereotypes and counter-stereotypes, and perceived acceptability of intimate partner coercion. Results revealed that, as women's earnings increased (relative to men's), self-perceived femininity increased, while traditional gender role attitudes decreased. The effects of gender inequality on implicit gender stereotypes were moderated by participant gender and assigned income. Specifically, men assigned low, but not high, income endorsed implicit gender stereotypes less and endorsed implicit gender-counterstereotypes more when women earned more than men. However, we did not observe effects of gender inequality or income on explicit non-deterministic attitudes regarding gender nor on perceived acceptability of intimate partner coercion. Results broadly support current theories regarding the effects of gender inequality on attitudes and beliefs, but highlight the importance of gender and individual income in determining the magnitude and direction of these effects.

Co-authors: Sylvia Harmon-Jones (University of Wollongong, AU); Khandis Blake (University of Melbourne, AU); Auguste Harrington (New York University, AE)

Population Ecology and Foraging

Modelling the effect of sharing, property and storage on the spread of human societies

Martin Hinsch (University College London)

Models of the spatial expansion of ancient human populations usually assume simple local resource competition. Modern observations as well as archaeological evidence show, however, that how access to food is regulated can vary substantially in small scale societies. It has also been found that some aspects of food access - such as sharing or ownership - can have substantial effects on the survival and population dynamics of communities. It therefore seems plausible to expect that how resources are distributed within and between communities affected the spread of modern and ancient societies. We use a series of simple agent-based models to show that population size and expansion speed of an expanding population are substantially affected by interactions between food sharing, ownership and storage, which in turn depend on movement behaviour and the consequences of resource scarcity. We further find that under cultural evolution a clear gradient in behaviour emerges. In the centre agents evolve to remain largely stationary with strong property claims and low sharing, whereas agents at the expansion front are more mobile, share more frequently and and show weaker ownership.

Co-authors: Mark Thomas (University College London, GB); Maria Ivanova-Bieg (University of Mainz, DE)

Seasonality in reproduction and parental age as adaptation to competition of different age cohorts for resources

Hippokratis Kiaris (University of South Carolina)

A slight but consistent preference for reproduction during the summer period is recorded for human populations and is typically attributed to social and other cultural factors. Consideration of the parents' age indicates that this trend may represent a biological adaptation due to competition for resources after childbirth: Analysis of more than 3.5 million birth records retrieved from the CDC Natality database in the U.S. between 2016-2014 confirms that the trend exists, but persists only for mothers younger than 39 and fathers younger than 44 years old and peaking when they are both 30-34 years old which coincides with the period of maximal physical performance. However, mothers 40 or older and fathers 45 or older tended to reproduce more efficiently in winter. The changes in season of birth preference in association with both the mothers' and the fathers' age were progressive and not random, slightly stronger for the mothers than the fathers, and showing good fitness (R sq.= 0.95-0.98) in a polynomial model. As summer period was considered the 6-month period between April and September and as winter period the 6-month period between October and March. These observations are consistent with an evolutionary adaptation according to which summer is the preferred season for reproduction for the majority of the population, while older and thus higher status males and females, by having better access to resources and assistance from daughters and granddaughters, can reproduce at periods of lower competition for resources from other age cohorts.

Exploring the Impact of the Arrival of Neolithic Farmers on Central & Western Europe's Faunal and Botanical Assemblages

Simon Carrignon (MACE, University College London)

Farming reached Scandinavia around 4000 BCE, approximately 1000 years later than regions only 300 kilometers away. Although advancements in ancient DNA (aDNA) research have illuminated population movements of that era, the reasons behind this resistance to agricultural adoption remain unclear. Here, we link botanical and faunal data from the Big Interdisciplinary Archaeological Database (BIAD) with fossil pollen inferred land cover to identify spatio-temporal patterns of change between selected regions. To detect these patterns, we compiled archaeobotanical and zooarchaeological remains from France, Germany, the Low Countries, Poland and southern Scandinavia for the period 5,500-3,000 BCE. The faunal dataset extracted from BIAD includes 2755 archaeological phases collected from 2,105 sites, encompassing 890 botanical and 595 unique zoological taxa. The botanical data included more than 16,000 samples, recording about 5 million counts of botanical material, while the faunal dataset account for more than 6.3 million identified specimens (NISP). These taxa were combined into various functional and categorical groups while sites were manually grouped together to maximize spatial and geographical coverage. We used these datasets to compare three hypotheses that might explain why the colonisation by early farmers, occurred when it did and not earlier: 1. Resistance from local hunter-gatherers strongly based on successfully exploiting aquatic resources. 2. Climatic warming ~4000 BCE that moved the northern frontier of successful cereal growing further north. 3. The farming strategies that made it possible for farming and farmers to expand northwards ~4000 BCE were different from those that had been introduced to Central Europe 1000 years earlier

Co-authors: Stephen Shennan (University College London, GB); Jelena Bulatovic (Göteborgs universitet, SE); Natalia Riabogina (Göteborgs universitet, SE); Jessie Woodbridge (University of Plymouth, GB)

Elephants, Hadza Hunters, and Prey: Cascading Effects of Fear in a Human–Wildlife Network

Brian Wood (Department of Anthropology, University of California, Los Angeles)

This study examines an interaction network in northern Tanzania involving Hadza hunter-gatherers, the prey they hunt, and African savannah elephants (Loxodonta africana), which the Hadza regard as dangerous. Patch choice and landscape of fear models in behavioral ecology propose that foraging efficiency and physical safety should jointly influence decisions about where and when to forage, and that individuals should accept lowered foraging efficiency for enhanced safety. Such tradeoffs have received little attention in studies of human foraging, but new methods make these issues more amenable to study. We use structured interviews, camera trap monitoring, GPS tracking, and path selection analysis to test whether areas frequented by elephants were avoided by Hadza, and examine cascading influences of elephant avoidance on the Hadza's prey. These data document the Hadza's respect and fear of elephants, and show that the Hadza did avoided the zone with elephant detections while foraging. In the avoided elephant zone, the prey hunted by the Hadza exhibited higher daytime activity, suggesting were less fearful of encounters with Hadza hunters.

Co-authors: Dominik Deffner (University of Marburg, DE); Christian Kiffner (Max Planck Institute for Evolutionary Anthropology, DE); Mariamu Anyawire (., TZ); Bunga Paolo (TZ)

Women's Agency, Autonomy, and Social Strategies

The difference a daughter makes: gender of kin and support for women's empowerment in northern Tanzania.

Sophia deMena Alonzo (PhD Student, UCSB)

Women's empowerment can be conceptualized as a sexual conflict trait, benefiting women at a cost to male privilege. Consequently, individuals with a greater stake in the reproductive success of female kin may show increased support for ideologies that benefit women. We examine individual variation in support for women's empowerment, hypothesizing that having more living female kin will be associated with greater support, whereas having more male kin will have the opposite effect. Previous tests of this hypothesis, largely from high-income, low-fertility populations, provide mixed results and rarely consider alternative kin categories beyond offspring. Addressing these limitations, we present a pre-registered analysis of attitudinal survey data from a rural but urbanizing community in Mwanza, northern Tanzania (men: n = 590; women: n = 317). This context is characterized by high rates of intimate partner violence and beliefs in male authority, but also community-level ideological change occurring in tandem with urbanization, generating heterogeneity in gender-role beliefs. We estimated a series of regression models predicting alternative measures of women's empowerment, both with and without covariates adjusting for potential sociodemographic confounds. To account for social desirability bias, we also include supplementary analyses using indirect wife-reported measures. Our analyses provide a robust and novel test of how inclusive fitness considerations shape gender role ideology, providing new insights into the impact of family composition and the cultural maintenance of patriarchal norms.

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Why bride kidnapping?

Ruth Mace (UCL)

Bride kidnapping seems to have been widespread across the world. It was very common until recently in Kyrgyzstan. Here we present a study of bride kidnapping in Kyrgyzstan based on a detailed sociodemographic study of two villages. One hypothesis is that men use it as a strategy to avoid paying bride price. We show that that is not the case, as bride price was at least as high if not higher after the capture of brides. We also show that it is reasonably wealthy individuals who do it. They are securing younger brides and having more offspring, so bride kidnap appears to be a reproductive rather than a financial strategy. We also show that the practice is transmitted down the family line (until recently). We also show that a number of elder brothers is a positive predictor of a man practicing bride kidnapping and a negative effect on the probability of a woman being captured.

Co-authors: Narhulan Halimubieke (UCL, GB); Yaming Huang (UCL, GB)

Empathy as a Mechanism of Social Capital Formation in a Patrilocal Society: Evidence from Women of Matlab, Bangladesh

Sojung Baek (Pennsylvania State University)

Patrilocality, a residence system characterized by female dispersal and prolonged co-residence with affinal kin, creates a social environment in which women must often establish cooperative bonds in the absence of support from natal kin. While previous studies have investigated women's socio-behavioral adjustment to patrilocal settings, the social mechanisms through which such adjustment is achieved remain less explored. This study proposes empathy as a key adaptive strategy through which women signal prosocial intent and build social capital under conditions of female dispersal and patriarchal constraint. Using survey data and support network measures from 125 women in Matlab, Bangladesh, we examine (1) the social partners with whom women engage in empathic interaction, (2) how empathy varies across women's kinship, household role, and residential context, and (3) the association of empathy with social capitals, measured by well-being, belongingness, and support networks. Mixed-effects models show that empathic interactions are structured by fitness interdependence, relational value, and different social partners including kin, with the highest empathy directed toward consanguineal kin. Notably, daughters-in-law residing with affinal kin exhibit elevated empathic provision toward affinal kin, consistent with our primary hypothesis that empathy functions as a socioemotional strategy for integration into patrilocal households. Empathic receipt, but not provision, predicted higher subjective well-being, whereas both predicted belongingness. Dyadic and ego-network models indicated that the intensity of empathic interaction, not merely their number, most consistently predicts receiving support. Together, these findings position empathy as a flexible adaptation that enables women to transform emotional engagement into social capital in patrilocal societies.

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DAY 2

Wednesday, May 14

Evolution of Mind and Cognition

Mindreading with a finite brain

Tadeg Quillien (University of Edinburgh)

Mindreading (or theory of mind, mentalizing) is the ability to predict and explain the behavior of other agents by inferring their mental states. Researchers interested in the ontogenetic and phylogenetic origins of mindreading have gathered a lot of evidence about the capacities of young human children and non-human primates. These data reveal a robust pattern: children and non-human primates are able to represent what other agents know, but struggle to represent what they believe. We suggest that such `factive' mindreading is a resource-rational strategy that allows organisms to predict the behavior of other agents well enough, in the face of cognitive resource constraints. We test this hypothesis using a formal information-theoretic framework that allows us to automatically derive mindreading strategies that are optimal, given a bound on available computational resources. In our simulations, we find that mindreaders with an intermediate level of computational resources behave in a very similar way as non-human primates and human children. For example, both the simulated agents and non-human primates/children are unable to predict the behavior of individuals with a false belief, and even (most strikingly) individuals with an accidentally true belief. Our results suggest that even minimal mindreading abilities were shaped by natural selection for maximal efficiency.

Co-authors: Max Taylor-Davies (University of Edinburgh, GB)

SCARs: Empirical Support for an Integrated Framework of Male Suicidality

Miriam Lindner (Harvard University)

Men, across societies, are significantly more likely to die by suicide than women. While existing evolutionary accounts have linked male-biased mortality to heightened risk-taking or costly signaling, few have conceptualized suicide itself as an aggressive behavior. The SCAR framework (Sexual Competition and Aggressive Reactivity) offers a novel synthesis through a unified, sex-differentiated model that reframes male suicidality as a form of self-directed aggression emerging from status loss, social defeat, and exclusion from mating and dominance hierarchies. Drawing on sexual selection theory and cross-disciplinary evidence, SCAR delineates two distinct suicide pathways: (1) Acute Status Collapse, involving sudden, high-magnitude defeats perceived as irrecoverable (e.g., divorce, job loss, public disgrace), and characterized by rapid onset, intense shame, and impulsive lethal action; and (2) Chronic Defeat Accumulation, involving prolonged low-status conditions, repeated failure, resignation, and gradual escalation marked by sustained suicidal ideation. These pathways are hypothesized to reflect distinct expressions of evolved male susceptibilities to hierarchical subordination, reproductive exclusion, and status sensitivity, shaped by the perceived reversibility of social defeat. Support for the proposed pathways is provided by two studies: a meta-analysis (N = 86 studies) and mixed-methods analyses (N ≃ 20,000 posts) from Sanctioned Suicide – a manosphere-adjacent online suicide community. Differences in status-related antecedents, time-course, attributional framing, and method lethality – along with variation in emotional tone observed in forum data (e.g., acute shame vs. chronic resignation) – align with the distinct psychological and behavioral signatures predicted by the SCAR framework. SCAR generates testable predictions for male-specific suicide risk, prevention, and intervention.

Lightning Formal Education and Performance on the Abstraction and Reasoning Corpus: A Cross-Cultural Study

Rachel Calcott (Harvard PhD student, Harvard)

Previous work in cross-cultural psychology has shown that cognitive reasoning strategies vary significantly across cultural contexts, shaped by differences in education and daily problem-solving demands (Luria, 1976; Scribner & Cole, 1981; Kroupin et al., 2024). Yet widely used benchmarks for evaluating artificial general intelligence, such as the influential Abstraction and Reasoning Corpus (ARC-AGI) benchmark, implicitly assume a universal human capacity for decontextualized, rule-based abstraction (Chollet, 2018). This study examines how educational and cultural environments shape performance on ARC-AGI-style analogical reasoning problems by comparing three groups: U.S. participants, Himba participants with formal schooling, and Himba participants without formal schooling. While formal schooling often cultivates rule-based, decontextualized reasoning, experiential learning tends to support more context-dependent strategies; therefore, we hypothesized that participants without formal education would show lower performance than those with schooling. We find that, among participants who passed comprehension checks, individuals with no formal education performed at or near chance on ARC-AGI problems (25% correct on four-alternative forced-choice items), and performance differed substantially across the three groups. These findings challenge assumptions embedded in ARC-AGI evaluations and underscore the need to take cultural and educational variability into account when evaluating analogical reasoning capabilities in humans and AI.

Co-authors: Ivan Kroupin (Max Planck Institute for Evolutionary Anthropology, DE); Tian Chan Zeng (Harvard, US)

Lightning Can the face reflect the mind? Facial fluctuating asymmetry and cognitive function in women

Weronika Maria Obrochta (Department of Environmental Health, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland, Jagiellonian University Medical College)

Introduction: Facial symmetry is suggested as a proxy of developmental stability and good biological quality, which includes brain development and functioning. This study investigated the association between facial fluctuating asymmetry (FA) and cognitive performance in elderly women. Methods: The study included 244 non-smoking women (mean age 61.5 ± 10.61 years; range: 44–90) from the Mogielica Human Ecology Study Site, Poland. FA was assessed from standardized facial photographs using seven bilateral and two unpaired anthropometric measurement points in a geometric morphometric approach. Cognitive functioning was assessed using the Mini-Mental State Examination (MMSE) questionnaire, an 11-question measure that tests attention and calculation, orientation, recall, registration, and language, as well as the Clock Drawing Test (CDT), which involves drawing a clock with hands to read at a specific time. Multivariable linear regression analyses were used to examine associations between FA and each cognitive screening test, adjusting for age and years of education. Results: : FA was not significantly related to performance on cognitive tests (MMSE, $p = 0.231$; CDT, $p = 0.317$). Older age was associated with poorer cognitive performance (MMSE, $p < 0.001$; CDT, $p = 0.045$). More years of education were linked to better MMSE scores ($p = 0.001$), whereas education was not significantly associated with performance on the CDT ($p = 0.94$). Conclusions: Facial asymmetry does not appear to be a reliable indicator of cognitive functioning in elderly women. Other factors, including age and education, might act as stronger predictors of cognitive capabilities in women.

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Evolution of Mind and Cognition

Moral Foundations and Cyberbullying Perpetration: Predicting Intent of Online Verbal Aggression Across Moral Domains

Jinguang Zhang (Sun Yat-sen University)

From an evolutionary perspective, human morality consists of domain-specific psychological systems evolved to address recurrent adaptive problems, such as coalition maintenance and norm enforcement (Haidt, 2008). Accordingly, distinct moral domains correspond to different perceived norm violations and motivate functionally relevant responses (Atari et al., 2023). We apply this framework to conceptualize cyberbullying perpetration as a modern form of third-party punishment—an evolved mechanism of social regulation enacted through digital affordances (Authors, under review). Drawing on Moral Foundations Theory, we conceptualize six moral domains (care, authority, loyalty, purity, equality, and proportionality; Atari et al., 2023) as evolved mechanisms sensitive to specific classes of social threats (e.g., care to physical harm by others; Koleva et al., 2012). We hypothesize that (a) individuals higher in a given moral foundation will perceive greater moral relevance when exposed to domain-matching violations, and (b) such moral relevance will increase intentions to engage in online aggression. Using a large adult sample in China (N = 1,194), participants were randomly assigned to read news scenarios depicting violations of one moral domain and then reported perceived moral relevance and intentions to post aggressive online comments. Results showed clear domain-specificity: moral foundations predicted perceived relevance and cyberbullying intent primarily within their corresponding domains, while moral relevance partially mediated the association between moral foundations and aggressive intentions. These findings support an evolutionary account of cyberbullying as an extension of ancient norm-enforcement mechanisms, suggesting that online aggression may function as an adaptive means of social regulation in digital environments.

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Comparing predictions of anger in conflict situations: Recalibrational Theory versus Dark Triad traits

Mauro Dias Silva Júnior (University of Brasilia)

Two research branches in evolutionary psychology can make similar predictions about treatment expectations in contexts of conflict of interest, where, for those involved, costs and benefits are at stake. The Recalibrational Theory of Anger suggests that evolved psychological mechanisms operate at the cognitive level and regulate human behavior. In this case, anger can be understood as an evolved, computational emotion whose function is to bargain for improved treatment, by conveying to others that they are insufficiently valuing the individual's welfare and thereby motivating them to reassess and give greater weight to that person's interests going forward. The Dark Triad Personality posits that traits of Machiavellianism, Narcissism, and Psychopathy confer adaptive advantages, leading individuals to prioritize their interests over those of others. This study aimed to replicate the results of Sell et al. (2017) in a Brazilian sample (Replication Analysis) and investigated whether dark triad traits predict the magnitude of anger in conflict-of-interest situations (Extension Analysis). The Replication Analysis consistently replicated previous findings, with effect sizes from moderate to large magnitudes. The Extension Analysis revealed that only Narcissism was a significant predictor when victims were intentionally targeted by offenders. While the Recalibrational Theory of Anger predictions were largely confirmed, the dark triad personality traits, except for Narcissism, were generally poor predictors of anger magnitude. The results suggest that the universality of the information processing is robust and is little influenced by antisocial personality characteristics.

Co-authors: Isabella Righi (University of Brasilia, BR)

When Mental States Matter in Moral Judgment—and When They Don't: A Trade-off Account

Tom R Kupfer (Nottingham Trent University)

Prominent accounts treat moral judgment as contingent on inferring a perpetrator's mental states (intent, knowledge, foresight). Yet evidence shows that the influence of mental-state information varies across contexts and cultures. We propose a trade-off account: investing in mental-state inference can yield benefits (more accurate partner choice, sustaining relationships, maintaining a reputation for fairness), but it imposes costs including cognitive effort, uncertainty, and delay. Any factor that shifts these costs or benefits (e.g., threat, time pressure, reputational incentives, relationship value) should alter reliance on mental-state inference. We test two instantiations of this framework using vignettes with ambiguous evidence about intent. In two between-subjects studies, participants judged the same ambiguous wrongdoing in high- versus low-threat versions and rated i) how important it was to investigate the actor's mental state before deciding on punishment and (ii) how much time was acceptable to spend doing so. High threat reduced the perceived importance of investigation and shortened acceptable deliberation time, consistent with prioritizing rapid deterrence when delay is costly. In relationship-value studies, we manipulated the social value of both wrongdoers and victims and measured perceived intentionality. Acts were perceived as less intentional when the wrongdoer was more valued, and more intentional when the victim was more valued. We discuss how chronically shifting costs and benefits (e.g., relational mobility, chronic threat) may help explain documented cultural and ecological variation in mental-state reliance, and how the same logic may illuminate why some norms and legal doctrines approximate strict liability whereas others are intent-sensitive.

LIGHTNING TALKS

Lightning The Role of Transgressor Social Value in Moral Emotions

Michael Donner (Vrije Universiteit Amsterdam)

The same moral violations can elicit different emotional responses across individuals. Sometimes people respond with anger rather than disgust (or with more anger than disgust), and other times with disgust rather than anger (or with more disgust than anger). What accounts for these differences? We propose that the social value of the transgressor may differentially influence the expression of moral emotions. Specifically, we hypothesize that disgust is more likely to be experienced toward norm violators who are perceived as having low social value to the observer. We tested this hypothesis in a large UK-based sample using a recall task. Participants were randomly assigned to recall a time when they felt either disgust or anger toward a transgressor they knew personally. We then measured participants' perceived social value of the transgressor (using both a financial trade-off task and ad hoc items), along with participants' emotional reactions. Although the prompt was not associated with differences in the social value of the recalled transgressor, our results supported the key prediction: disgust (but not anger) reactions were associated with lower perceived social value of the transgressor across both measures of social valuation. These findings add to the growing body of research that suggests disgust toward moral violations might serve distinct functions from those of anger.

Coalitions, Not Types: Moral Diversity Within the Political Left and Right

Cooperation and Signaling Strategies

Group cooperation can be achieved through a moral mechanism in which individuals honestly signal their intent

Gilbert Roberts (none, Independent)

Mutually beneficial cooperation can be facilitated in reciprocating pairs when investing in a good reputation provides an honest signal of cooperative intent. However, group cooperation often involves a 'tragedy of the commons' where cooperation is unstable even in repeated games unless there are additional measures such as punishment. Here, I examine when individuals can achieve cooperation in 3-person public goods games (PGG) by honestly signalling their intent to contribute. I modelled a population of individuals who had three independent binary choices: whether to 'signal'; whether to choose to play only with signallers; and whether to cooperate. I found that signalling, choosiness and cooperation were all favoured. I conclude that investing in a reputation by signalling can pay when there is a cost to 'cheating': those who invest in signalling and then defect get the benefit of free-riding for only one round before losing their good public reputation and thereby losing access to choosy individuals. Those who honestly signal that they will act in a way that aligns with the interests of other parties may be described as behaving 'morally'. In this sense, morality can be thought of as a communication mechanism that overcomes the social dilemmas inherent in group cooperation and makes it in an individual's own interests to do what is best for the group.

Cooperative slippage under continuous parameterisation of reciprocal cooperation

Edmond Seabright (UM6P)

Recent theoretical research has argued that repeated interactions cannot sustain cooperation in models that allow for continuous levels of cooperation as opposed to a traditional cooperate-or-defect binary (Efferson et al, 2024). In these models, agents that slightly undercut the levels of reciprocity of their cooperative partner end up with a higher payout, leading to a gradual collapse of cooperation between the agents that we call cooperative slippage. This phenomenon has been presented as evidence in favour of a history of inter-group competition and group level selection in Homo sapiens, which could stabilise and prevent cooperative slippage. Here we develop and extend evolutionary models of continuous cooperation to explore the conditions under which cooperative slippage can occur, and the required assumptions about how behaviour is genetically or culturally encoded and the realistic magnitude of mutations. We present alternative mechanisms to group selection as potential stabilisers of reciprocal cooperation, including a tolerance threshold trigger model, whereby agents fully defect in future games when their partner initiates cooperative slippage. We discuss empirical predictions made by different theoretical models and present suggestions for research design to test between competing hypotheses.

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Resource sharing and the evolution of reciprocal risk reduction

Jorge Peña (Toulouse School of Economics, Department of Social and Behavioral Sciences)

Resource uncertainty is a primary driver of reciprocal sharing in subsistence economies, yet the scaling dynamics of these practices remain poorly understood. We present a game-theoretic model of reciprocal risk pooling that challenges standard results in n-player cooperative dilemmas. While cooperation in these situations typically declines as groups grow, our model shows that when agents can choose to be ``loners'' and when defectors face ostracism, the incentives for honest sharing actually increase with group size. Our results also allow us to compare risk-pooling incentives across varying foraging return distributions. Applying these to hunting data from the Martu and to forty simulated distributions from diverse foraging societies, we demonstrate that group pooling significantly enhances the utility of high-variance prey and that cooperative incentives remain robust across ecological contexts. These findings provide a formal mechanism for the ubiquity of sharing norms in subsistence societies.

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LIGHTNING TALKS

Lightning Learning to reach consensus and how consensus can shape learning

henri vandendriessche (Center for Brain Science - Computational Group Dynamics Collaboration Unit, RIKEN)

Consensus decision making is central to group behavior across ecological, social, organizational, and political contexts. Classic theories assume individuals begin with clear prior preferences, yet real-world decisions often require trial-and-error learning through which preferences are formed. How consensus emerges when individuals simultaneously learn and decide remains poorly understood. Reinforcement learning (RL) provides a powerful framework for modeling experience-based decisions, capturing how agents update value representations to guide future actions. We examined a population of RL agents performing a multi-armed “consensus bandit” task, where agents earn bonus rewards when they unanimously choose the same option. This design creates a tension between exploring better alternatives and coordinating for a consensus bonus. Agents can learn by weighting environmental feedback (choices/rewards) and/or social cues (others’ choices and consensus bonuses). By varying model parameters, we asked: (1) Which environmental and structural factors—such as group size, payoff profiles, and consensus bonus magnitude—facilitate or hinder consensus? (2) How do individual differences in cognitive parameters, biases, and learning strategies influence convergence dynamics? Results show that agents flexibly combine individual and social learning depending on task structure. Higher consensus bonuses increase attention to social information, whereas low discriminability between options impairs optimal consensus formation and can instead produce convergent toward suboptimal choices. Consensus emergence strongly depends on interactions between agents’ learning rates, exploration tendencies, and weighting of social versus environmental information. Higher standard deviation in these parameters’ distribution significantly slows the emergence of consensus, highlighting the importance of incorporating learning dynamics when modeling consensus formation.

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Lightning What Do We Look For in Cooperative Partners? Personality-Based Selection Strategies in Team Formation

Abdelhadi El bguir (The School of Collective Intelligence, University Mohammed VI Polytechnic)

Selecting cooperative partners is a fundamental challenge that shapes human social cognition over evolutionary history. People evaluate potential partners on multiple dimensions, including personality, but how do personality traits factor into these decisions? Which traits matter most, and do preferences shift depending on the task at hand? We investigated personality-based partner selection in a team formation paradigm. Participants (N = 253) reviewed 20 personality profiles derived from real individuals and selected four teammates. To test whether task demands shape selection strategies, participants were randomly assigned to frame the task as requiring creativity, analytical thinking, or neither. Participants followed clear strategies when evaluating trait levels. They weighted emotional stability most heavily, consistently avoiding anxious partners. They also preferred people who were open-minded, conscientious, agreeable, and extraverted, but not as strongly. Context mattered less than expected. Creative framing slightly increased preference for openness, but analytical framing did not increase preference for conscientiousness. Participants applied roughly the same criteria regardless of task demands. We also found consistent heuristics in how people combined trait information. Participants preferred well-rounded partners over those who excelled in one area but were lacking in others. They seemed to compare each profile against a mental image of the ideal teammate: someone stable, open, reliable, and easy to work with. This work informs how personality is evaluated when composing teams for collaboration. People default to consistent heuristics rather than tailoring preferences to task demands.

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Mating Markets and Partner Choice

When Do We Stop Searching? An Agent-Based Model of Mate Search Termination

Jeong Woo Kim (University of California, Santa Barbara)

Mate choice has important fitness consequences and thus requires careful mate search. Yet exhaustive search is rarely feasible given the limited time and energy organisms possess. For this reason, organisms need to determine when to terminate search even in the face of uncertain outside options. In this study, we present an agent-based model that formalizes mate-search termination as a two-level decision problem: organisms must at some point both (1) terminate the search for new potential partners and (2) terminate mate search among known partners and settle down with chosen partners. We model search termination as emerging from a computational stop-rule that uses experience on the mating market to make two probabilistic comparisons: (1) whether the current best candidate is sufficiently better than the next-best candidate, and (2) whether alternatives outside the agent's current mating market are likely to be better than the current best candidate. Using real-world couple data as input to the simulation, we find that the model recovers observed pairings at above chance levels. Moreover, pairing accuracy is higher for agents who triggered the stopping rule than for agents who did not, suggesting the possibility that the implemented termination rule captures realistic features of human mating psychology. This model provides a framework for understanding a fundamental aspect of mate choice process and starting point for examining the conditions in which the stop decision can be reversed (i.e., relationship dissolution).

Co-authors: Daniel Conroy-Beam (University of California, Santa Barbara, KR)

A Large Scale, Cross-Cultural Test of Mate Choice Models: Choice Models Can Predict Couples Across Countries

Carlos Sosa-Colindres (University of California, Santa Barbara)

Recent work has shown that mate choice models can accurately reconstruct existing relationships, predict couples months into the future, and recommend successful pairings to single people. Together, these findings suggest that computational models are effectively describing human mate choice psychology. However, these studies have been primarily limited to U.S. samples. A critical next step in validating these models is testing them on a broader scale—if mate choice models represent the cognitive processes humans use to find and choose mates, they should generate mate choices consistent with real-world patterns across cultures. Here, we test this by simulating mating markets based on a large international sample (n = 69,097) from 56 countries, each with at least 150 coupled participants. We simulate mating markets with agents that represent participants from each of these 56 countries. Agents select each other as mates using models of the cognitive processes that underlie human mate choice. Their simulated mate choice is then compared to their real-world mate choice. Results indicate that models of the human mate choice cognitive processes predict participant's partners across cultures and provide further evidence that these models are functionally describing the species-typical processes that produce mate choices. This is one of the largest studies of human mating psychology and these results provide an important step in validating these models as representing generalized principles of human mating psychology.

Co-authors: Daniel Conroy-Beam (University of California, Santa Barbara, US)

Perceived Similarity in Mate Preferences predicts Relationship Satisfaction

Karen Ruth Dobkins (UC San Diego)

Evolutionary models of human mate preferences emphasize that long-term pair bonds are shaped by preferences for traits signaling health/attractiveness, resource provisioning, and warmth/trustworthiness (Fletcher et al., 1999). While prior research finds that partners are more satisfied when a mate possesses these desired qualities (Campbell et al., 2001), less is known about the evolutionary relevance of perceiving similarity in preferences and accurately understanding a partner's preferences. The present research examined whether perceived similarity and accuracy in mate preferences predict relationship satisfaction. In two studies of heterosexual romantic couples (Study 1: 88 couples; Study 2: 106 couples), both partners reported how much they desired qualities in an ideal partner and estimated how much their partner desired those qualities. Using partial Q-correlations (Wood & Furr, 2016), accuracy indexed the correspondence between one's estimates of their partner's preferences and their partner's actual preferences, whereas perceived similarity indexed how strongly individuals believed their own preferences aligned with their estimates of their partner's preferences. Actor–Partner Interdependence Models revealed consistent actor effects of perceived similarity: individuals who believed they and their partner wanted similar qualities reported greater relationship satisfaction (Study 1: beta = 0.23, p = .03; Study 2: beta = 0.34, p < .001). In contrast, accurately understanding a partner's preferences did not reliably predict satisfaction. These findings suggest that, in established romantic relationships, believing in shared desires may be more consequential than accurately knowing a partner's preferences. From an evolutionary perspective, perceived similarity may signal compatibility, promoting commitment and positive evaluations of long-term romantic bonds.

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LIGHTNING TALKS

Lightning Couples' faces are more similar than non-couples' faces

Amy Zhao (Vrije Universiteit Amsterdam)

While anecdotal evidence suggests romantic partners share facial resemblance, empirical studies have yielded mixed findings. We objectively tested whether couples share greater facial similarity than randomly paired couples. We photographed 283 heterosexual couples (N = 566) and quantified facial similarity using two objective methods: geometric morphometric analysis of 83 facial landmarks and 4,096 values extracted from a neural network model. We generated pairings of "non-couples" by conducting 1,000 permutations of randomly reassigned partners, matched on age. Mixed-effects regression models tested whether couple status predicted facial similarity after controlling for BMI differences and facial averageness. Couples showed significantly greater facial similarity than randomly re-paired "non-couples" in all 1,000 simulation sets. This effect was consistent across both measurement methods. We obtain similar results in a subsample of 189 White couples (N = 378), demonstrating that the observed effect was not an artifact of ethnic diversity in the sample. These findings provide novel, objective evidence for positive assortative pairing in facial similarity among heterosexual couples.

Co-authors: Brendan Zietsch (University of Queensland, AU); Jo-Maree Ceccato (University of Queensland, AU)

Lightning Difficulties in the Romantic Market and Sexist Beliefs: Evidence from a Finnish Sample

Catharina Walldén (Åbo Akademi University, Humanities)

We examined whether individual differences in difficulties finding a romantic partner are associated with sexist beliefs. Using self-report data from 1,604 Finnish adults (777 women, 827 men), we measured perceived mate value, mate access, hostile and benevolent sexism, and belief in sexism shift. We examined associations between these variables using multivariate multiple regression while controlling for political ideology, perceived sex ratio, relationship status, and partner search status. The results revealed a complex and context-dependent pattern. Higher perceived mate value was associated with higher benevolent sexism, whereas lower benevolent sexism was reported by individuals not actively searching for a partner and by single women reporting more frequent mate encounters. In contrast, hostile sexism was higher among respondents reporting more opportunities with potential partners and among singles with more mate encounters. Male gender and political conservatism were also positively associated with hostile sexism and belief in sexism shift. Overall, these findings indicate that associations between mate value, mate access, and sexist beliefs are not straightforward. Instead, they vary by relationship status, partner search status, and the type of sexism examined. The study underscores the importance of considering relational context when investigating the psychological correlates of sexist attitudes.

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Lightning Octave equivalence and the harmony-bonding effect

Joshua S. Bamford (Centre of Excellence in Music, Mind, Body and Brain, University of Jyväskylä)

Human males vocalise approximately one octave below females and children. This is an unusually large degree of sexual dimorphism compared with other primates. One explanation is that early hominins had a pre-existing sexual dimorphism in vocalising pitch, related to a polygynous mating style, but that the shift towards pair-bonding added a pressure to be able to harmonise. This may have coincided with the emergence of behavioural synchrony as a mechanism for social bonding, including singing in pairs or family groups. Prior research has investigated the synchrony-bonding effect—the observation that synchronised action leads to social bonding—in a range of synchronised movements including drumming, dancing, rowing, and singing. However, synchronised singing does not just involve alignment of rhythm, but also alignment of pitch. It is possible that pitch alignment (harmony) has a social bonding effect, in addition to, or interacting with, synchrony. If so, this could explain why male and female voices have settled roughly one octave apart, as it allows for easier harmonising at an octave interval. To test this, a perceptual study was conducted, with participants listening to two singers performing either in unison, in harmony, or in disharmony. Participants were asked to rate the social affiliation of the singers, and they rated those singing in unison or harmony as more bonded than those singing in disharmony. This provides preliminary evidence that pitch relationships between singers may display social affiliation information. Future research will investigate the social effects of harmony singing on the singers themselves.

Human-Environment Ecology and Behavior

Food-Destroying versus Non-Food-Destroying Hazards: A Worldwide Comparison of Differential Responses

Carol R Ember (Human Relations Area Files, Yale University)

The effect of disasters on people's lives and livelihoods has increasingly become a subject of anthropological interest. For more than 10 years, our research team has cross-culturally examined both societal histories of natural hazards and potential behavioral responses to test theories about possible adaptations to hazard-prone environments. Previous cross-cultural research suggests that climate hazards predict some normative patterns. For example, in nonstate societies, serious food-destroying hazards (typically droughts and pest infestations) strongly predict higher warfare frequencies and more customary beyond-household seasonal sharing. The research question addressed here is whether non-food-destroying hazards (such as storms, seismic activity, and some floods) have similar or different effects from food-destroying hazards. Preliminary results on a worldwide sample of 132 societies suggest that the two types of hazards may have different normative behavioral outcomes. For example, societies with more non-food-destroying hazards tend to have tighter cultures (stronger norms and severe punishment for norm violations), but cultural tightness is not predicted by food-destroying hazards. Food-destroying hazards in nonstate societies predict more warfare, but non-food-destroying hazards predict less warfare. And food-destroying hazards predict tighter unilineal kin group structures, but non-food-destroying hazards do not. While we postulate that these normative patterns may be adaptive, the mechanisms underlying this need further exploration.

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Flexible, Adaptive Settlement Patterns Within Ethiopian Pastoralist Villages

Bhavya Deepti Vadavalli (Department of Anthropology, Boston University)

Many existing models of human settlement patterns in subsistence societies predict that households arrange themselves to optimize organization along a single dominant axis. For example, the ideal free distribution predicts that populations organize spatially to equalize access to resources. However, human settlements face multiple ecological and social constraints simultaneously, raising the question of whether settlement organization converges on a single optimal strategy or whether households flexibly adopt multiple settlement regimes within the same population in response to local pressures. Using geospatial data from 790 settlements and 9465 huts among the Hamar, semi-mobile agropastoralists in southwest Ethiopia, we explore variation in settlement patterns. We test whether variation in settlement structure is shaped by resource availability and security from intergroup threats. Principal Component Analysis results show two primarily distinct resource-related and security-related axes. Spatial error models indicate that the distance between huts increases with both security-related and resource-related constraints (β = 4.03, 9.61, $p<0.05$), while village area and number of huts decrease along these same axes (β = -0.41, -1.03, $p<0.05$). Hut density declines with increasing security and does not respond to resource constraints (β = -4.9842e-05, $p<0.1$). Ongoing work expands these analyses to include proximity to towns and major roads. These results indicate that settlement structure responds to multiple independent constraints rather than a single optimization criterion.

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From Commons to Parcels: How Private Land Subdivision Reshapes Fitness Interdependence among Maasai Pastoralists in Narok, Kenya

Stephen Supeet Meriki (Center For Human Evolutionary Studies - Rutgers University, Rutgers, The State University of New Jersey, USA)

Across Maasai pastoral regions of Narok County, Kenya, land tenure is rapidly transforming, altering patterns of fitness interdependence, risk pooling, and cooperative labor. This study examines how private land subdivision reshapes labor sharing among Maasai households in three contrasting sites: Loita, Naroosura, and Maji Moto. Loita and Naroosura are undergoing recent and ongoing privatization, whereas Maji Moto experienced earlier group ranch subdivision, enabling comparison across different temporal stages of tenure change. Using a mixed methods ethnographic design, the research combines household surveys with labor sharing name generator modules, semi structured interviews, and focus group discussions. These data capture who cooperates with whom in key pastoral and domestic tasks, including herding, livestock treatment, fencing, house construction, childcare, and access to grazing and water. Cooperative ties are evaluated by kinship, spatial distance, interaction frequency, and institutional affiliation, including age sets, clans, and osotua partnerships. Results show that land subdivision systematically narrows labor sharing networks, reshaping fitness interdependence from broad community wide risk pooling toward more selective, kin centered, and household bounded cooperation. In Loita and Naroosura, recent subdivision reduces repeated interactions in herding and reallocates labor toward boundary maintenance, negotiation, and conflict management. In Maji Moto, long term privatization produces smaller but stable cooperative networks, supplemented by wage labor and market exchange. Despite coordination costs, cooperation persists through reorganization of herding groups, concentration of reciprocity among reliable partners, and integration of institutions with governance arrangements.

LIGHTNING TALKS

Lightning Dreaming Social: Wearable Sleep Technology Reveals Enhanced Social Content in Dreams During Ramadan Fasting

Noor H. Abbas (Department of Anthropology, University of Toronto)

Dreams preferentially simulate social scenarios, yet the ecological and physiological factors shaping dream sociality remain poorly understood. Drawing on the social simulation theory of dreaming, we investigated whether fasting context during Ramadan, a period marked by altered sleep timing and heightened communal activity, influences the social content of dreams relative to waking cognition. Fourteen participants across four groups (fasting Muslims, non-fasting Muslims, other fasting groups, and non-fasting controls) wore Oura Rings continuously for 30 days during Ramadan 2025 while submitting matched daily dream and wake reports via REDCap (N=316 total reports). The Oura Ring's validated sensors enabled accurate sleep staging ($r \approx .88$–$.89$ vs. polysomnography). Dream and wake narratives were analyzed using LIWC-22 to quantify social behaviors, social referents, and emotional tone. Consistent with predictions, dreams contained significantly more social content than waking reports ($\beta = -4.07$, $p < .001$), supporting a general social bias in dream cognition. Contrary to expectations, longer REM periods were associated with reduced social dream content ($\beta = -0.00021$, $p = .039$), suggesting a complex interplay between sleep physiology and social cognition. Neither fasting group membership nor social support measures significantly predicted dream sociality. These findings demonstrate the feasibility of combining consumer wearable technology with linguistic dream analysis to examine how naturalistic fasting ecologies influence sleep-dependent cognition. Future within-subject designs comparing pre-Ramadan baseline to fasting periods will strengthen causal inference. This approach opens new avenues for evolutionary research on the adaptive functions of dreaming across diverse cultural contexts.

Lightning Variation in Long-Distance Social Capital Across Individuals

Courtney Elmore (Anthropology, Penn State)

Social capital, or having interpersonal help to meet key goals, is a function of how many people a person knows. Globally, levels of mobility are on the rise, increasing opportunities to know more people; however, mobility differs across men and women in many locations. Does this have implications for social capital: are women less likely than men to have long-distance social capital, or help from people in different communities to get things done? We collected data on 459 participants in nine villages on the Tanzanian coast – communities that were traditionally slightly patrilocal and where today, cultural norms and gender differences in profession mean men still have higher mobility. We find that, though women have fewer long-distance family and friends than men, they still had some – and women and men who had more long-distance family or long-distance friends had both better long-distance and close-distance social capital. In other words, though mobility was lower in women, women varied in their strategies for building long-distance relationships, translating into varied social capital. We conclude by discussing the importance of long-distance social capital in the face of economic and environmental impacts, and future directions for studying the bi-directional social relationships that underlie long-distance social capital.

Co-authors: Kris Smith (Washington State University, US); Anne Pisor (Penn State, US)

Agent-Based Models of Social Dynamics

Error Management in Cheater Detection: Calibrating Detection Thresholds to Minimize the More Costly Error

Sakura Arai (Graduate School of Humanities and Sociology, The University of Tokyo)

The evolution of reciprocal cooperation requires cooperators to detect cheaters—those who intentionally fail to reciprocate. While the human mind has been shown to contain a specialized reasoning mechanism for this problem, detection is prone to error, and different errors incur different fitness costs. Mistaking a cooperator for a cheater (a false alarm) incurs a cost of losing a reciprocal partnership, while mistaking a cheater for a cooperator (a miss) incurs an opportunity cost of a more profitable partnership. Because the relative cost of these errors varies within and between individuals (e.g., by social environments), selection may have favored a mechanism that calibrates its detection threshold to minimize the more costly error. To test this, we manipulated the number of alternative partners (Study 1; n = 570) and the frequency of cooperators (Study 2; n = 304) in a repeated Prisoner's Dilemma game where participants were allowed to switch partners. Participants left cheating partners more quickly when they were given cues of high partner availability (Study 1) or high cooperator frequency (Study 2) than when presented with low-availability or low-frequency cues. Namely, when false alarms are costly due to a low probability of forming a new reciprocal partnership, people seek more evidence of cheating before detecting and leaving cheaters; in contrast, they require less evidence when a high probability of forming a new reciprocal partnership makes misses costly. The pattern demonstrates that the calibration of cheater detection threshold is designed to minimize the more costly error in reciprocal social exchange.

When to Explore and When to Invest: Reinforcement Learning in Cooperative Partner Choice

Dylan Benkley (University of California, Santa Barbara)

Partner choice is fundamental to human cooperation, yet it poses information processing challenges that organisms must solve. Although prior work has identified many cues that influence partner choice decisions, the algorithmic processes that transform these cues into behavior remain poorly understood. One of the most fundamental of these challenges is balancing exploration and exploitation: deciding when to search for potentially better partners versus when to invest in established cooperative relationships. Reinforcement learning (RL) provides principled solutions to this tradeoff, making it a natural candidate for modeling the cognitive mechanisms underlying partner choice. We developed an agent-based model to examine how different RL-based partner choice strategies perform across cooperative contexts. Agents repeatedly choose partners, engage in a cooperation game, update beliefs about partner quality, and reproduce in proportion to their accumulated payoffs. Because dyadic cooperation requires mutual agreement, we consider both the strategies governing partner offers and partner acceptances. Across 1,000 simulations and a range of ecological parameters, agents that favored exploitation when making offers but balanced exploitation and exploration when deciding whether to accept offers consistently outperformed all alternatives. This combination came to dominate populations in roughly half of all simulations and reliably produced high levels of cooperation. These findings highlight the power of reinforcement learning for solving the computational problems of partner choice and reveal a previously unexplored asymmetry: offering and accepting cooperation favor different decision rules. More broadly, this work demonstrates the underlying learning processes that could support human partner choice and allow cooperation to evolve.

Co-authors: Dan Conroy-Beam (University of California, Santa Barbara, US)

When does risk-taking signal ability versus desperation?

Pat Barclay (Department of Psychology, University of Guelph)

Different evolutionary theories make opposite predictions about who takes more risks: individuals in good condition, because they can better succeed (e.g., costly signaling theory), versus desperate individuals in poor condition, who have no safer means of meeting their needs (e.g., risk-sensitive foraging). These theories also make opposing predictions about whether risks are viewed as good or bad. I will present four mathematical models on risk-taking as a costly signal, where one's quality affects one's 1) probability of success; 2) buffer against failure; 3) benefits from success; or 4) resources. When quality has a big impact on these traits, then risk-taking can be an honest signal of quality that observers benefit from attending to. However, if some individuals are currently below a desperation threshold, then there can be some risk-taking by these desperate individuals (partial separating equilibrium) – especially when risk-taking signals resources. For observers, this becomes an error management problem: they will view risk-takers positively if desperate individuals are rare or not impactful, such that most risk-takers are high-quality. By contrast, when desperate individuals are common, have great need, or when the costs of failure are very high, then risk-takers will be predominantly low-quality, such that risk-taking is a cue of low quality that observers will view negatively. Thus, these models predict who will take the most risks, and when audiences will view risk-taking positively vs. negatively. As such, they explain why attitudes towards risk – and risk-takers – differ across individuals, circumstances, and cultures.

How economic exchange can favour human genetic diversity

Cedric Perret (University of Lausanne)

Economic exchange, by allowing individuals to use goods they do not produce, is recognised as driving the remarkable diversity of economic activities in human societies. Since productivity also depends on innate abilities, we ask whether economic exchange could have influenced human evolution and promoted adaptive genetic diversity. We model a system where individuals produce and exchange goods under a Walrasian equilibrium, with abilities determined by an evolving quantitative genetic trait. We then analyse how exchange shapes the evolutionary pressures on this trait. Our analysis demonstrates that exchange consistently promotes negative frequency-dependent selection, which favours the maintenance of genetic diversity. Exchange also generates stable long-term adaptive polymorphism when the production of goods requires different abilities. Importantly, we establish that the mode of exchange matters: markets, where individuals can switch trading partners, promote genetic diversity under broader conditions than when exchange occurs in isolated pairs. Finally, we show that genetic diversity and economic specialisation can facilitate the emergence of the other under a wider range of conditions. Our findings suggest that economic exchanges play a crucial role in fostering biological diversity and offer insights into how a culturally determined mode of organisation may have shaped human evolution.

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Same Sex Sexual Behavior

The Evolutionary History of Homosexual Behavior in Female Japanese Macaques

Paul Vasey

Multiple studies indicate that female homosexual behavior in Japanese macaques (Macaca fuscata) is not an adaptation and serves no fitness enhancing function. How do non-adaptive behaviors, like this, evolve? To account for the existence of such a trait, I proposed a four-stage model for the evolutionary history of female mounting in Japanese macaques. The model holds that: (i) play mounting among immature male Japanese macaques evolved to solicit the attention of play partners and prolong interactions; (ii) adult females exploited this evolutionary "loophole" for their own adaptive ends by using female-male mounting to focus their male consort partners' attention and expedite male-female mounting in a context of high female-female competition for male mates; (iii) females then evolved the capacity to derive sexual reward from female-male mounting via genital stimulation; and, (iv) next, female-female mounting evolved as a neutral by-product of selection for female-male mounting and because females' could obtain sexual reward during mounts. Once this capacity evolved, females sometimes chose female sexual partners despite the presence of sexually motivated males. I will discuss research aimed at testing this model which has been conducted over the past two and a half decades.

The Evolution of Bisexual Arousal in Human Females

Essy Manopla

Most men are heterosexual and sexually aroused by females, which is adaptive for reproduction. In contrast, women of all sexual orientations, including heterosexual women, appear sexually aroused to both male and female sexual stimuli. To account for this finding, one hypothesis holds that throughout evolutionary history forced copulation has been common, and females have evolved to respond physiologically to unwanted sexual encounters with vaginal blood flow and lubrication to minimize the risk of genital trauma. However, common measures of genital arousal are different in men (penile circumference) and women (vaginal pulse), which complicates interpretation of sex differences in sexual response. Moreover, female lubrication patterns have rarely been examined, and hence, an essential component of this hypothesis has not been verified. We present pupil dilation measures of sexual arousal that are assessed identically in men and women and which validate previously established sex differences in genital response measures. Moreover, our current studies indicate that female lubrication patterns in response to sexual stimuli are consistent with a unique bisexual arousal pattern in women. We will propose further research to scrutinize the evolutionary hypothesis of female sexual arousal.

Human Mate Preferences in a Sexually and Gender-Diverse Cultural Context

Francisco Gómez Jiménez

Cross-cultural research consistently shows that men place greater importance on youth and physical attractiveness in a partner, whereas women place greater importance on personality traits and resources. While more limited, similar research among same-sex oriented and transgender and gender-diverse individuals predominantly demonstrates sex-typical patterns of mate preferences, suggesting that birth-assigned sex may be a stronger predictor of mate preferences than sexual orientation or gender-role presentation. However, no study has simultaneously examined the relative influence of sex, sexual orientation, and gender-role presentation within a single cultural context, and existing work has been conducted primarily in Euro-American populations. To address these gaps, this talk examines mate choice preferences in Northern Thailand, a cultural context in which sexual and gender diversity is widespread. Data was collected from over 400 adult participants, including cisgender heterosexual men and women, gay men, and sao praphet song—feminine-presenting, same-sex-attracted males who are recognized as a distinct gender category. Participants reported on the importance of partner traits (e.g., good looks, funny, considerate), short- and long-term mating orientation, and conformity to masculine and feminine gender norms. Consistent with prior literature, we predict that the mate preferences of both gay men and sao praphet song will more closely resemble those of cisgender heterosexual men. By exploring the mating psychology of sexually and gender-diverse individuals, this research clarifies whether individual differences in mate preferences reflect evolved features of human psychology or the developmental influences of gender norms.

Do muxes—a third gender in Mexico—increase close kin fitness?

Santiago Gracia-Garrido (Department of Anthropology, University College London, University College London)

This research focuses on a culturally defined role with long recognition in the Isthmus of Tehuantepec, Mexico, where some biological males, known as muxes, are identified as third-gender individuals. Most muxes are exclusively androphilic, which leads to little or no reproduction. They tend to invest time and resources in helping relatives and caring for close kin, from elderly family members to younger ones, often while residing in parental or siblings' households. From an evolutionary perspective, such a role seems to directly benefit family members, but not necessarily the individuals themselves. The main aim of this study is to investigate the fitness consequences, if any, of having a muxe relative. Specifically, we test whether having a muxe brother is associated with increased reproductive success among siblings, potentially due to the caring roles assumed by muxes. To address this aim, we collected data from about 420 households in Juchitán de Zaragoza, the largest town in the Zapotec Isthmus region, where the muxe identity is prominent. We interviewed local adults from families with and without muxes. Interviews focused on kinship, residence, and inheritance, along with household-level socioeconomic and demographic data, including birth histories and sibship size, as well as information on caregiving roles. Given the current phase of our research, we present exploratory analyses of family composition and preliminary results using regression models to test whether having a muxe relative confers fitness benefits to close kin or shapes fitness-related outcomes among family members.

Co-authors: Ruth Mace (University College London, GB); Emily Emmott (University College London, GB)

Relationships, Emotions, and Partner Dynamics

Is Romantic Jealousy Universal? Similarities (and Functional Differences) in Jealousy Across Cultures

Benjamin Gelbart (Department of Psychology, Yale University)

Romantic jealousy has been implicated across a wide range of behaviors, from those as extreme as intimate partner violence to those as mild as information-seeking. Nonetheless, scholars commonly disagree on both the prevalence and manifestations of jealousy cross-culturally. Here, across a series of studies, we examine whether jealousy is a human universal and test for systematic variability in its activational intensity both across cultures and across contexts. In Study 1, we test for behavioral evidence of romantic jealousy around the world using the Human Relations Area Files (HRAF) ethnographic database; contrary to accounts conceptualizing jealousy as a Western construct, the results reveal near-universality in jealousy's presence across cultures. In Study 2, we use dyadic, longitudinal data to explore contextual variability in jealousy's activational intensity across participants in the United States; we find evidence for distinct patterns of individual and relational differences governing jealousy responses to ambiguous cues of infidelity (e.g., a partner coming home later than usual) and unambiguous cues of infidelity. In Study 3, we compare jealousy's manifestation across arranged and non-arranged marriages among participants in Nepal; the results suggest that whereas ambiguous cues are significantly more jealousy-provoking among those in arranged marriages relative to non-arranged marriages, this pattern is reversed in relation to unambiguous cues. Taken together, these results speak to the possibility that romantic jealousy may emerge from a species-typical cognitive system designed for its production—but one which systematically differs in its functional outputs across individuals, relationships, and contexts.

Co-authors: Elizabeth Agey (University of Hawai'i at Mānoa, US); Carol Ember (Yale University, US); Peter Salovey (Yale University, US); Daniel Conroy-Beam (University of California, Santa Barbara, US)

Do relationship changes cause changes in emotional well-being? A longitudinal investigation

Menelaos Apostolou (University of Nicosia)

Objective: The current study tests the hypothesis, derived from evolutionary theory, that relationship status constitutes a significant predictor of emotional well-being. Methods: We analyzed data from thirteen waves of the Pairfam study, a longitudinal project with a representative sample of 12,000 German participants, using mixed-model analysis. Results: Our results indicate that participants' emotional well-being was significantly higher during waves in which they were in an intimate relationship compared to waves in which they were single. We also found that singlehood was associated with more negative emotions for men than for women, though the observed difference was small. Furthermore, participants experienced higher emotional well-being when in a good-quality intimate relationship than when they were single or in a poor- or moderate-quality relationship. Participants' emotional well-being was also higher when they were single than when they were in a poor- or moderate-quality intimate relationship. These differences were generally small, although the effect on loneliness was considerable. Conclusions: Our findings make a strong case that changes in relationship status, including changes in relationship quality, lead to changes in emotional well-being.

Volitional laughter functions as a graded emotional signal

Greg Bryant (Communication, University of California, Los Angeles)

Laughter is a complex social vocalization that humans can produce voluntarily across a wide range of contexts. While judges can distinguish volitional from spontaneous laughter, how listeners interpret the meaning of volitional laughter remains poorly understood. Previously, we found that listeners reliably associated volitional laughter types produced across eight social contexts (amused, co-laughter, relief, acquaintance, mocking, malicious, sarcastic, and nervous), but with only moderate accuracy. Moreover, judgments followed systematic patterns of confusion linked to the dimensions of arousal and valence, suggesting that laughter functions as a graded affective signal. Here, we investigated whether direct judgments of valence, arousal, and authenticity can explain listeners' categorization of the social context of volitional laughter. Independent samples of listeners (N = 195) rated 382 volitional laughs on these three dimensions. Confusion patterns were systematically predicted by valence, arousal, and authenticity ratings—laughter contexts sharing similar ratings were frequently mistaken for one another. Although these three dimensions were strongly interrelated, valence emerged as the strongest predictor of listener confusion, explaining nearly half the variance in context recognition errors. Authenticity showed weaker effects, and arousal showed no unique contribution once intercorrelations were considered. Acoustic analyses revealed that higher fundamental frequency, greater amplitude, and lower cepstral peak prominence regularity were associated with higher ratings across all three dimensions. Results are consistent with the idea that volitional laughter functions as a graded affective signal rather than encoding discrete social meanings, with valence serving as the most influential dimension structuring people's production and perception.

Co-authors: Virgile Daunay (University of Saint-Etienne, FR); David Reby (University of Saint-Etienne,, FR); Kasia Pisanski (University of Saint-Etienne, FR)

Feedback dynamics in matching networks

Alexandros Gelastopoulos (Department of Social and Behavioral Sciences, Toulouse School of Economics)

Many social processes can be formulated as a network of two types of agents who are searching for a match: potential employers and people looking for a job, women and men looking for partners, scientific papers and conferences, and so on. In such networks, the behavior of members of one side affects opportunities on the other. Specifically, the more (less) selective one side becomes, the less (more) selective the other side can afford to be and still find a match. This creates a feedback loop which can lead one side to become very highly selective and the other non-selective, even if the difference in intrinsic characteristics (e.g., willingness to match) of the two sides is small. We formulate this problem as an agent-based dynamical systems model of heterogeneous individuals, which can be solved semi-analytically. We find that, at equilibrium, one side is always “in-demand” and very selective while the opposite side is largely non-selective. This is the case even if people on the two sides are quite similar to each other, because feedback dynamics can drive tiny imbalances to snowball. Additionally, even people with high willingness to match from the “in-demand” group become highly selective, at the same time that people with low willingness to match of the opposite group become non-selective. In other words, group membership trumps individual goals in determining behavior. Our results provide a parsimonious explanation for empirically observed asymmetries in matching networks (e.g., between men and women in dating markets) without invoking evolutionary arguments.

Co-authors: Athanasios Kehagias (Aristotle University of Thessaloniki, GR)

Cross-Cultural Cognition

In search of (a) piece of mind: The quest to decipher whether theory of mind is consistent and a universal cognitive trait, or a plastic trait

Chirag Rajendra Chittar (Institute of Evolutionary Anthropology, University of Zurich)

Theory of mind (ToM) is the universal understanding of beliefs and knowledge of conspecifics. ToM comprehension could be a significant step in assessing the mental states of others that could facilitate socio-cognitive mechanisms of information transfer, such as teaching. However, the test designs implemented across diverse communities have produced inconsistent results, contradicting the consistency of the developmental timing of ToM. Communities with diverse social systems, subsistence means, and parental practices have been largely ignored in false-belief studies. Our study is the first attempt to conduct a series of tests (Sally Anne test with human actors, Smarties test and Toy test) on four hunter-gatherer groups (Agta, Mbendjele BaYaka, Baka and O'Hongana Manyawa) and farmer groups (Filipino, Congolese Bantu, Indonesian) from three different countries (Philippines, Congo-Brazzaville, and Indonesia) varying in subsistence and access to education. Our study assesses and compares the passing rates of children and adolescents across the different populations in the aforementioned tests. We also aimed to investigate whether ToM is a universal socio-cognitive trait having a consistent developmental timing across different groups or is triggered by socioecological pressures such as schooling. Nevertheless, we found that participants performed significantly better in the Smarties test and slightly better in the toy test compared to the Sally Anne Test. Our study showed no influence of schooling on test passing in the Congolese population but demonstrated some influence of schooling on test passing in the Filipino population. The study shows that ToM is potentially a plastic socio-cognitive trait susceptible to different socio-ecological pressures.

Pitch sensitivity as a behavioral window into global neurodevelopmental variation across the lifespan

Courtney Bryce Hilton (Melbourne School of Psychological Sciences, University of Melbourne)

Despite enabling ever more precise brain measurements, neuroimaging is constrained by high costs and limited portability, making it challenging to study neurodevelopment in a globally representative way. Here, we introduce a simple behavioral task—measuring conscious awareness of fine-grained pitch differences—as a cheap and scalable proxy for white matter development in the brain. Analyzing behavioral data from over two million human participants, representing more than 200 countries and territories, we show that pitch sensitivity almost perfectly predicts the normative trajectory of white-matter volume over the lifespan, as estimated from a meta-analysis of 123,984 MRI scans (Bethlehem et al., 2022, Nature). This correspondence is theoretically explicable and demonstrates strong convergent validity with prior neuroimaging results, replicating known sex differences, neurodevelopmental comorbidities, and experience-dependent effects associated with both skill acquisition and socioeconomic disadvantage. In this presentation, I will share two of the novel insights made possible by this approach. I will discuss evidence that sex-differences in white-matter volume track with gender inequality across countries, and I will discuss evidence that socioeconomic disadvantage protracts the lifespan trajectory of neurodevelopment.

People Systematically Misjudge Reliability of Crowds

Yahya Berrada (School of Collective Intelligence / Institut Jean Nicod, UM6P / ENS)

Crowd judgments can exceed the accuracy of individual judgments, yet when members lack competence, crowd performance falls to chance. Across three preregistered studies (N = 306), we found that people systematically misjudge when crowds are worth consulting. Participants answered twelve questions and had four opportunities to “Ask-the-Crowd”. They overwhelmingly chose to consult the crowd on the hardest questions, where it performed poorly, while neglecting medium-difficulty questions, where the crowd outperformed individuals. In Study 2, participants first predicted the crowd’s reliability. They underestimated crowd performance on medium-difficulty questions and, despite correctly anticipating chance-level performance on the hardest questions, still preferred to consult the crowd there. In Study 3, participants were shown that consensus was weakest on the hardest questions, yet still mostly consulted the crowd for these. Together, these results reveal a bias in evaluating crowd wisdom, suggesting that appeals to the majority are driven more by social than epistemic motives.

Co-authors: Daniel Haun (Max Planck Institute for Evolutionary Anthropology, DE); Emile Servan-Schreiber (School of Collective Intelligence, MA); Cathal O’Madagain (School of Collective Intelligence, MA)

Fatal Misperceptions? How a belief in fate is associated with poor statistical inference

Paul Seabright (Department of Social and Behavioural Sciences, Toulouse School of Economics)

This presentation reports four online experimental studies (total N = 7612) which investigate how individual decision making is shaped by narrative traits. The work is joint with Selin Goksel (Free University of Amsterdam). We present participants with a statistical inference task in neutral form (guessing the proportion of balls of different colors in an urn) and also in narrative form (guessing the proportion of investment projects on a crowdfunding website that succeed or fail). We investigate whether the narrative presentation affects accuracy of inference, and whether personal characteristics associated with a taste for narrative are associated with higher inaccuracy. Contrary to our (pre-registered) expectation, we find no causal impact of narrative presentation. However, inaccuracy in statistical inference is strongly associated with higher religiosity, and specifically with a higher belief in the importance of fate in human life. The effect sizes are large and imply that cultures where a belief in the importance of fate is widely shared will make less accurate inferences affecting economically important decisions. This does not imply that belief in fate is maladaptive – it is more likely a neutral or adaptive response to cognitively challenging environments.

Mating Preferences and Attractiveness

Preference-Phenotype Calibration in Men's Drive for Muscularity: Do men calibrate their bodies to women's preferences?

Macken Murphy (The University of Melbourne)

It's broadly accepted that the mate preferences of each sex influence the phenotype of the other sex (e.g., women are said to invest more in their appearance because men care more about beauty; Kowal et al., 2022). However, the responsiveness of phenotypes to this influence is underexplored. Human mate preferences vary socioecologically, and our phenotypes are self-modifiable (e.g., through clothing, dieting, etc). So, we would anticipate it would be adaptive for individuals to flexibly tailor their phenotypes to suit desired mates. In this multi-study investigation, we first constructed agent-based models to clarify the preconditions for preference-phenotype calibration to outcompete stable phenotypes; these indicated calibration dominates so long as there is sufficient (i) mate preference variability, (ii) social learning opportunity, and (iii) trait plasticity. We focused on a trait that fulfills these three criteria: male muscularity. Across two pilot studies, we designed the first experimental manipulation of mate preference perceptions, consisting of cherry-picked compilations of wild-harvested social media posts of women desiring either (a) extreme muscularity or (b) lack of muscularity. This technique proved powerful, with stimulus valence (a vs. b) accounting for approximately 33% of the variance in men's perception of women's muscularity preferences. We then collected cross-sectional data to measure the extent to which mate preference perceptions predicted men's drive for muscularity, and then exposed the same participants to our experimental manipulation to see if altering this perception also altered men's intent to modify their own phenotype. Data collection is ongoing but will be completed by HBES 2026.

Co-authors: Rob Brooks (UNSW, AU); Patrick Liston (ANU, AU); Sylvia Harmon-Jones (University of Wollongong, AU); Mark Leak (The University of Melbourne, AU)

Outsourcing Love: Personality and Mating Strategies in AI Companion Users

Désirée Popelka (Global Health Institute, EPFL - Swiss Federal Technology Institute of Lausanne)

Researchers call it the rise of synthetic relationships. Increasingly more people, particularly young adults, outsource their intimate needs for romantic and social interactions from interaction with real humans to AI generated chatbots. Anthropomorphism of AI, attributing human qualities onto non-human things (AI), has emerged as the strategic priority of AI companion apps. But what characterizes the individuals who use AI romantic companions? Data were collected online in two survey waves: German-speaking respondents in Switzerland (March 2025) and respondents in Germany (December 2025). The combined sample consisted of N=184 current AI companion users, N=210 former users, and N=1,989 individuals who had never used AI companions. We present preliminary findings comparing users and non-users in terms of personality traits, mate value, and mating effort. While most AI research is rooted in applied computer science, this study adopts an evolutionary psychology perspective to examine a scientifically underrepresented population and the underlying dispositional factors associated with AI companion use.

When appearances deceive: Rape-myth schemas influence attractiveness effects across cultures

Ádám Putz (Department of Cognitive and Evolutionary Psychology, University of Pécs)

Research on sexual assault has shown that extra-evidentiary cues influence judgments of culpability and victim credibility. This study examined how physical attractiveness (perpetrator and victim), ideological variables (rape myth acceptance; RMA), and cultural context affect victim-blame judgments across three national samples (United States, Hungary, and Türkiye; N = 629). Participants evaluated rape vignettes with varying perpetrator-victim attractiveness combinations using White facial stimuli and then completed the Illinois Rape Myth Acceptance Scale (IRMAS). A 2 (Perpetrator attractiveness) × 2 (Victim attractiveness) × 3 (Country) × 2 (Participant sex) mixed ANOVA showed no effect of participant sex, but revealed a cultural effect on victim blame, with Turkish participants showing higher blame than U.S. or Hungarian participants, especially when victims were unattractive and perpetrators attractive. An ANCOVA controlling for IRMAS scores showed that RMA predicted increased victim blame and moderated the perpetrator×victim attractiveness interaction. RMA correlated most strongly with blame when perpetrators were attractive and victims unattractive. These findings indicate that RMA functions as a schema that amplifies attractiveness heuristics under ambiguity, while the cultural context establishes baseline attitudes. This study discusses implications for juror education, bias-reduction interventions, and the need for replications with diverse stimuli and samples.

Co-authors: Zoë Brinkert (University of Pécs, HU); Ferenc Kocsor (University of Pécs, HU); Ayse Naz Hazal Sezen (University of Pécs, TR); Amy E. Coren (Pasadena City College, US)

Sociosexuality and self-presentation: whom we tell and what we share

Michal Mikolaj Stefanczyk (University College of Professional Education)

Sociosexual orientation reflects an individual's openness to engaging in sexual activity outside of committed relationships. Low sociosexuality indicates a more restricted approach to dating and mating, whereas high sociosexuality reflects a more unrestricted orientation toward sex. Sociosexuality plays an important role in partner selection, and compatibility between partners in this domain is generally preferred. Notably, sociosexuality is strongly shaped by cultural norms, and certain sexually unrestricted behaviors may be socially frowned upon. In this research, I examined how people report their sociosexual behaviors, attitudes, and desires when their responses are witnessed by others. In Study 1, participants completed the Sociosexual Orientation Inventory online in one of two conditions: a control condition ("answer truthfully") or an impression-management condition ("imagine someone you want to impress is watching; answer in a way that presents you in the most favourable light"). In Study 2, the imagined observer was replaced with a real person in the laboratory: a male or female experimenter who asked the survey questions aloud, requiring participants to respond verbally to them. In Study 3, the experimenter's physical attractiveness was manipulated (high vs. low). In Study 4, the experimenters additionally behaved as though they were either low or high in sociosexuality themselves. Across all studies, data from over 1,200 participants was collected. The findings are interpreted through evolutionary and social psychological perspectives. Particular attention is paid to the social world presented to women, as well as to the discrepancy between the impressions conveyed to them and the actual state of affairs.

New Investigator Award finalists

Hard bargains and even splits: Fairness judgments track bargaining power across diverse cultures

Xavier Roberts-Gaal (Harvard)

Our intuitions about fair resource divisions are often inconsistent: Sometimes, we think it fair to reduce inequality through redistribution; other times, we think it fair to reward those who bring more to the table. Past research highlights egalitarian and redistributive intuitions that favor the disadvantaged. Recently proposed (evolutionary) contractualist theories propose that moral judgments mirror what rational agents would agree to, favoring parties in advantaged bargaining positions. We reconcile these views, showing people think it fair to favor the disadvantaged outside a bargaining context, but to favor the advantaged when they have more bargaining power. We thus identify a clear boundary explaining why our moral intuitions sometimes favor redistribution and other times exacerbate inequality. Specifically, across nine countries (Brazil, India, Pakistan, Nigeria, Ghana, Kenya, South Africa, Ukraine, USA) participants (n = 6,304) make third-party judgments about the morally best split of a fixed amount. When the split is determined by a unilateral donation and existing inequalities do not alter bargaining positions, moral intuitions reflect redistributive--inequality-reducing---concerns. When the split is negotiated (bilateral negotiation in Study 1; third-party negotiation in Study 2), moral judgments are completely reversed: They overwhelmingly track bargaining power and can be predicted with striking quantitative precision using classic rational bargaining models. These findings demonstrate that fairness intuitions carefully track people's underlying bargaining positions, favoring the advantaged when doing so is relevant to mutual benefit, but supporting the disadvantaged when bargaining is off the table. Even those who endorse egalitarian ideals may unintentionally reinforce "rich-get-richer" dynamics in negotiation settings.

Co-authors: Arthur Le Pargneux (Harvard, US); Lucas Woodley (Harvard, US); Joshua Greene (Harvard, US); Fiery Cushman (Harvard, US)

Return the Favor: Preverbal Infants Represent and Emotionally Value Direct Reciprocity

Joakim Haugane Zahl (University of Oslo, Department of psychology)

The distribution of scarce resources, priority rights, help, and care are central dilemmas of human life. Seminal proposals hold that reciprocity is key for the evolution of cooperation among non-kin, and norms of reciprocity permeate human society. Yet, it remains unknown if human infants are prepared to represent and respond appropriately to direct reciprocity prior to extensive socialization. Here we show that preverbal infants (N=340) predict, postdict, and respond emotionally whether novel agents selectively donate scarce resources to former benefactors, triangulating measures of anticipatory-looking, violation-of-expectation, and emotional responses across six experiments. These results indicate that dedicated psychological coordination mechanisms for direct reciprocity form such basic building-blocks of the human mind that they help humans recognize and appropriately navigate reciprocal coordination already from preverbal infancy onwards

Co-authors: Erik Kjos Fonn (Department of psychology, NO); Bjørn Dahl Kristensen (Department of psychology, NO); Victoria de Leon Born (Institute of pedagogics, NO); Lotte Thomsen (Department of psychology, NO)

Oxytocin is associated with life-history tradeoffs and reproductive success in the Tsimane of lowland Bolivia

Abigail Elise Colby (Institute of Evolutionary Medicine, University of Zurich)

Oxytocin is linked to social bonding, parental investment, and cooperative behavior—traits that incur delayed benefits and may be associated with "slower" life history strategies (e.g., favoring offspring quality over quantity). However, evolutionary predictions regarding oxytocin and life history are at odds, with some theories proposing that oxytocin may also facilitate "fast" strategies by increasing mating effort and fertility. We test these competing predictions working with the Tsimane, a high-fertility, subsistence population of lowland Bolivia, by examining associations between urinary oxytocin levels (individual differences estimated from repeated measures of this labile trait) and life-history traits, including age at first reproduction (AFR), total fertility (TF), and reproductive success (RS), providing insight into oxytocin's role in an ecologically salient context. Results indicate that higher oxytocin is associated with later AFR and slightly lower TF in both women and men, consistent with a "slower" reproductive strategy. In women, oxytocin exhibited non-linear associations with RS, suggesting differing reproductive strategies. Low oxytocin was associated with earlier AFR and higher TF, favoring offspring quantity. High oxytocin, in contrast, was associated with delayed reproduction and lower TF but possibly higher offspring survival, favoring offspring quality. These strategies result in similar RS, with both high- and low-oxytocin women displaying greater RS than women with intermediate oxytocin levels. In contrast, men show evidence of accelerating positive selection on oxytocin, with higher oxytocin associated with greater RS. These findings suggest that higher oxytocin may facilitate "slower" life-history strategies in humans in a sex-specific manner.

Co-authors: Dominik Jud (University of Zurich, CH); Valerie Baettig (University of Zurich, CH); Jordan Martin (EAWAG, CH); Camila Scaff (University of Zurich, CH)

The Paradoxical Effects of Religious Fasting

Does fasting increase well-being? A cross-cultural analysis using 14 years of internet search data

Jordan Moon

Religious fasting is extremely common, with nearly a quarter of the world's population fasting yearly for Ramadan alone. However, little is understood about the psychological effects of these fasts. Using econometric methods, we analyze 14 years of Google search data. Following previous research, we operationalize psychological health and well-being by analyzing the frequency of internet searches related to negative emotions and mental health disorders—higher well-being is reflected in relatively low search volume for the Google Trends topics Depression, Sadness, Psychological Stress, Antidepressant, and Apathy). Using fixed-effects regression models with standard errors clustered at the country and year level, we find that in Muslim-majority countries well-being significantly increases during Ramadan fasting periods. Results replicate for each search topics individually, and are robust to different analytic decisions (e.g., different thresholds for missing data). We did not find comparable effects for Jewish or LDS fasting periods, although these analyses were necessarily more limited in scope. In total, our findings suggest that religious fasting can have measurable effects on psychological well-being. We discuss potential mechanisms for these effects and their implications for research on religious rituals.

A "lost letters" field experiment on fasting and prosociality

Michael Barlev

"In humans and other animals, hunger is associated with antisociality (e.g.,increased irritability and aggression, more punitive and self-serving moral judgments). Yet paradoxically, many religious traditions prescribe fasting as a spiritual practice specifically linked to prosocial imperatives like charity and empathy. Here, we investigated whether religious fasting promotes prosociality using a classic ""lost letters"" paradigm. Latter-day Saints (LDS) fast on the first Sunday of every month. Are LDS more willing to help strangers—post a seemingly lost letter—following a religious fast? We conducted a pre-registered 'lost letters' field experiment in two of the most homogeneously LDS cities—Rexburg, Idaho, and Provo, Utah. We paired four fast Sundays and four control Sundays, matching them for time of year and drop-off location. Across these eight Sundays, research assistants left 800 stamped envelopes on car windshields. Additionally, using bespoke designs, letters appeared to be from either an ingroup (LDS) or an outgroup (Atheist). This allowed us to measure both the effects of fasting and religious parochialism under unobtrusive and naturalistic conditions. We found no evidence that Fast Sundays influenced prosociality, and these results did not differ for LDS vs. Atheist letters. However, there was a large effect of religious parochialism: LDS-marked letters were returned at nearly twice the rate as Atheist-marked letters. We interpret these results in light of the specific religious context, and discuss their implications for religious prosociality more generally."

How does religious fasting promote prosocial behavior? Social interdependence as a potential mechanism

Bernardo Seixas

Hunger brings out antisocial aspects of human nature—when they are hungry, people are more interpersonally competitive, manipulative, and prone to anger and aggression. However, some evidence suggests that religious fasting might increase prosocial behavior. How might religion 'flip' the effects of hunger? We propose that religious fasting culturally evolved to remind people of their social interdependence by leveraging an ancestral psychology where social relationships—especially for food sharing—were crucial for survival. Indeed, religious fasts—and especially the breaking of the fast—are oftentimes communal, and emphasize empathy toward those less fortunate and charitable giving. We tested this proposal in pre-registered, controlled laboratory experiments. Across several conditions, participants were asked to arrive either hungry or satiated, received food while taking the study or did not, and were reminded of their social embeddedness and interdependence or were not. Participants completed both survey measures of sociality and a single-shot dictator game to assess prosociality. This design allowed us to test the 'active ingredients' by which religious fasting might influence sociality.

Religious and secular fasting

Adam Cohen

Many religious groups prescribe fasting. Jews may fast on Yom Kippur and other fast days, Muslims may fast on Ramadan, and members of the Church of Jesus Christ of Latter-day Saints (Mormons) may fast on “fast Sundays”. There are secular reasons why people fast, as well, such as when people intermittently fast for health reasons. We were interested in comparing the potential benefits of secular and religious fasting, in terms of flourishing outcomes such as self-control, connection to the ingroup and a more universalistic outlook, and other virtues such as gratitude, temperance, and humility. Longitudinally, we followed a cohort of Jewish people who did or did not fast on the Yom Kippur holiday, over 3 years. We also performed an experiment in which we asked people to fast, and reflect either on the spiritual benefits of fasting or on the health benefits of fasting. We found that adherence to fasting varies across Jewish denominations, with certain subgroups being more likely to find health exceptions to the requirement to fast. Over and above service attendance, fasting was a positive predictor of multiple measures of well-being as well as with commitments to live a better life in the coming year. Indeed, fasting was a better predictor of overall flourishing compared with service attendance during Yom Kippur. We also found that religious fasting may have certain similarities to secular fasting but certain benefits like closeness to the ingroup, and prosociality.

Kinship Networks and Alloparenting

Simulating the Effects of Despotic Markets on Alloparental Care

Elic Weitzel (Smithsonian National Museum of Natural History)

As populations around the world integrate into globalized markets, anthropologists have documented decreases in the frequency of alloparental care. In seeking explanations for this pattern, most research has focused either on kin network fragmentation or on the opportunity costs associated with wage labor. Relatively fewer studies have investigated how the exploitation inherent in many market systems reduces the time and resources available to those who do not control the production or distribution of resources. Inspired by evolutionary ecology models of despotism, in which certain individuals monopolize resource access and associated fitness benefits, we constructed an agent-based model to explore how despotic market dynamics can impact allocare. In this model, agents produce resources over time, reproduce, and provide alloparental care to offspring. We then integrate these agents into a market economy in which certain individuals act as despotic merchants who control capital, purchasing resources from producing agents and selling them to others while retaining some profit for themselves. We then assess how these despotic market dynamics impact resource and time budgets for non-despotic agents, and as a result, the frequency of alloparental care and agent fitness.

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The Grandmothering Bundle: grandmothering as an extended phenotype of foetal programming

Gillian Ragsdale (University of Cambridge)

Despite empirical support for a positive impact on grandchild fitness of having a living grandmother, particularly a maternal grandmother, it is far from clear what the grandmother is actually doing to bring this about. There has been a general assumption that the living grandmother must be co-resident, provisioning and otherwise caring for their grandchildren. In practice, however, this is often difficult or impossible to establish. Yet there is another field of research where the influence of the grandmother on their grandchild irrespective of contact between the two is well-documented: foetal programming. During pregnancy, the future gene expression of the foetus is influenced by epigenetic processes. If the offspring is a daughter, these same processes simultaneously influence all the gametes, the oocytes, that are present in her foetal ovary. Thus, the maternal grandmother can directly influence her grandchild. Foetal programming, including the role of imprinted genes and mitochondrial DNA, enables maternal grandmothers to have a biologically embedded influence on their grandchildren which can then be extended by behaviour influencing their daughter's reproductive fitness and their grandchildren's survival and fitness. The result is a Grandmothering Bundle, where maternal grandmothers provide a context-dependent long-range steer towards the most adaptive direction for development across the generations, while paternal and other influences provide course corrections over the shorter term. This Grandmothering Bundle reconciles many of the inconsistencies in the literature and suggests avenues for future research.

Co-authors: Molly Fox (University of California, Los Angeles, US)

Kin spatial detachment predicts fertility decline

Nikolaos Smit (Department of Biology, University of Tukru, University of Tukru)

As societies industrialized, they underwent a demographic transition characterized by declining mortality and fertility rates. While declining mortality rates can be intuitively understood as a result of the development of organized healthcare and relevant technological advances, the drivers of fertility decline remain debated. They likely include economic development, women's empowerment, and fertility control. Here, we focus on another driver of fertility decline, that is, the disruption of kinship ties. These ties are central to fertility decisions and provide emotional and material support during childbearing. Industrialization has been accompanied by disruption of kinship ties due to geographic mobility of individuals. Using an extensive longitudinal dataset spanning over three centuries and comprising more than 100.000 individuals in the Finnish–Russian border region, we examined whether increasing geographic distance to kin contributed to fertility decline. We first document a consistent rise in the average distance to parents, grandparents, and siblings since 1700, accelerating after 1900, which is generally greater for women, consistent with patrilocal residence norms. Controlling for age, socioeconomic status, and recent reproductive activity our analysis shows that both women and men living farther from core kin have a significantly lower probability of reproduction. These results suggest that the impact of industrialization on kin proximity and support networks has largely impacted human reproductive patterns, and they may inform contemporary debates on fertility decline.

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Anger, Punishment, and Retaliation

Revenge for Peace: Retributive Punishment as a Coordination Signal.

Przemysław Zawadzki (Jagiellonian University in Krakow)

Retributive intuitions dominate human punitive judgments. They are developmentally reliable, cross-culturally robust, and remains central in contemporary democratic legal systems. People endorse the proportional infliction of "deserved" suffering, even when response aimed at deterrence, rehabilitation, or repair would be more beneficial. Despite the persistence of this pattern, leading evolutionary explanations largely portrayed punishment as a mechanism for promoting cooperation, norm enforcement, or regulating hierarchies. However, retributive punishment is neither psychologically optimized nor normatively structured to achieve these outcomes. This suggests a distinct evolutionary function for retribution. I propose a coordination-signal theory of retributive punishment, integrating the deterrence theory of revenge, the side-taking theory of moral judgment, and the recalibrational theory of counter-exploitation. The main claim is that retributive punishment evolved to manage severe exploitation in multi-party conflicts involving victims, perpetrators, their allies, and unrelated third parties. Severe exploitation elicits divergent, role-dependent motivations and emotions, such as anger and hatred in victims and allies, coalition outrage and hatred in third parties, and protective loyalty in the perpetrator's allies. This created a recurring risk of uncoordinated retaliation and escalating cycles of vendetta between opposing alliances. Retributive punishment solves this coordination problem by transforming parochial retaliatory motivations into a public, identity-independent verdict anchored in the exploitative act itself. On this account, the signature features of retributive punishment, such as proportionality, rigidity, costliness, publicity, and temporal integrity, are better understood as functional design solutions for creating shared knowledge, resist factional bargaining, and closing disputes, rather than as normative ideals drawn from moral philosophy.

Emotions and behavioral intentions in response to norm violations

Annika Karinen (University of Amsterdam, University of Amsterdam, Vrije Universiteit Amsterdam)

Norms and rules are essential for cooperation and smooth functioning of coalitions and societies, yet people commonly violate them. Research on norm violations has largely focused on oppositional responses, but observers' behavioral reactions to such violations can vary drastically – ranging from opposition to acquiescence to support. We suggest that such responses depend on emotions elicited by the norm violation. In three studies (N's of 498, 496, and 493), UK participants recruited via Prolific were presented with a scenario of a norm violation (or norm adherence), whose disruptiveness, threat, and benefit were manipulated across conditions. Following an intersubjective approach, participants rated the emotions they believed observers witnessing the norm violation would experience, and the behaviors they believed the observers would undertake (opposition, acquiescence, support). We predicted that a disruptive norm violation elicits (perceived) anger and opposition, a threatening norm violation elicits (perceived) fear and acquiescence, and a beneficial norm violation elicits (perceived) admiration and support. These predictions were largely confirmed across studies. Further, a meta-analysis across the studies found support for two mediation pathways: a disruptive norm violation elicited opposition via anger ($\beta = .11$, $p = .014$), and a beneficial norm violation elicited support via admiration ($\beta = .16$, $p = .001$). These results give insight into how features of norm violations affect emotions of observers, which in turn fuel behavioral responses towards the norm violation.

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The logic of punitive justice in small-scale societies

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What is punishment like in small-scale societies? Most research assumes a moralistic enforcer model, where people engage in costly third-party punishment to enforce group norms. Yet this model has been challenged by recent ethnographic studies finding that justice is primarily dyadic, based on victim retaliation and compensation. Here, we test these competing accounts using offense-level data from four culturally diverse societies (Kapauku, Kalinga, Cheyenne, Netsilik; N=334 transgressions) and group-level data on norms regulating responses to wrongdoing across 60 non-industrial societies. First, we find limited evidence for costly punishment: most punishment is enacted by victims or institutionalized third parties who face low enforcement costs and often derive material or reputational benefits. Second, we find no evidence for second-order punishment—the punishment of non-punishers. Third, norms regulating punishment are restrictive rather than prescriptive: they limit excessive retaliation but rarely mandate that people punish. Fourth, justice is both punitive and compensatory: offenders frequently transfer material benefits to victims rather than simply incurring costs. These results support reciprocity theories over moralistic enforcer models, while highlighting the importance of institutional arrangements that reduce punishment costs even in politically decentralized societies.

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Anger and Disgust Across Borders: Socio-functional Links to Moral Punishments in Western, East Asian, and Cross-Cultural Contexts

Lei Fan (Aarhus University)

Moral anger and disgust are hypothesized to serve distinct adaptive functions in regulating social interactions, yet whether these functional patterns transcend cultural variation in social norms remains theoretically contested. Building on Western evidence that anger motivates confrontational responses while disgust favors indirect, relational strategies, we tested the cross-cultural generality of this divergence in an East Asian, high-context environment. Two large-scale studies in Japan (N > 2,100) reveal robust functional stability: anger consistently predicts both direct and indirect punitive intentions, whereas disgust uniquely predicts indirect social sanctioning—consistent with its evolutionary role in cost avoidance, exclusion, and reputational punishment. However, functional stability within cultures does not guarantee accurate emotion perception across cultures. We examine this through a Dutch–Japanese vocalization-perception study (N > 2,000) testing how anger and disgust signals are interpreted within and across cultural boundaries. This addresses a fundamental evolutionary challenge: accurately decoding moral emotions expressed through culturally divergent signaling systems. Additionally, we present the Sino–US Moral Nonverbal Expression (SUMNEx) corpus, a new standardized database capturing anger and disgust nonverbal vocalizations from Western and East Asian contexts, designed to support systematic comparative research on moral emotion signaling. Together, these projects reveal how evolved emotional functions interact with cultural norms to shape punishment decisions and social inference across societies. The findings illuminate the mechanisms through which moral emotions maintain behavioral stability within cultures while their nonverbal expression navigates—or fails to navigate—the interpretive demands of cross-cultural interaction.

Prehistoric Cognition and Symbolism

Material Pathways to Number: Weaving and numerical cognition in prehistory

Larissa Straffon (Dept. of Psychosocial Science, University of Bergen)

Attempts to reconstruct early numerical cognition have largely concentrated on identifying possible notational systems of quantification in early prehistory, such as engraved lines or dots on Upper Palaeolithic artefacts [1,2]. While valuable, this emphasis on notation risks overlooking a substantial body of numerical knowledge that may be inferred from other domains of material culture. This paper argues that fundamental forms of numerical cognition can be reconstructed from prehistoric taskscapes; structured technological and practical activities that, by analogy with historically documented practices, entail numerical reasoning. Reviewing a range of prehistoric technologies, I show that many likely required the manipulation of quantities, sequences, ratios, and periodicities, even in the absence of explicit numerical notation. Particular attention is given to weaving as a paradigmatic case of an activity that both embodies and affords mathematical knowledge [3]. I outline the types of numerical concepts implicated in early textile production and present three historical examples that illustrate enduring links between weaving practices and numerical knowledge across cultures. Taken together, these cases suggest that numerical cognition was deeply embedded in technological practice long before the emergence of formal notational systems. By shifting analytical focus from symbolic marks to embodied and operational knowledge in early technologies, this paper opens avenues for investigating the evolutionary origins and material foundations of human numerical cognition. [1] D'errico, F., et al. (2018). Phil. Trans. Royal Society B, 373(1740), 20160518. [2] Overmann, K.A. (2013). Cambridge Archaeological Journal, 23(1), 19-39 [3] Gerdes, P. (2003). Awakening of geometrical thought in early culture.

Hand-stencils as symbolic units in Palaeolithic cave art

Aritz Irurtzun (CNRS-IKER, CNRS)

Several European caves of the Upper Palaeolithic display hand-stencil paintings with missing fingers. Generally this was analyzed by archaeologists and anthropologists as being due to pathological finger loss (due to syphilis, frostbite...) or to ritual amputation. We provide evidence that they may reflect symbolic practices such as the use of alternate sign languages. We conformed a database with stencils of the caves of Gargas, Cosquer, Tibiran, Erberua, and Fuente del Trucho, and analyzed (for a proper subset of them) their placement and orientation —using 3D modelling and geomatic techniques. This unveils that stencils —contrary to other motifs— were principally placed in accessible places, allowing them to be seen and accommodate a potential public. Besides, we conducted a palaeodemographic analysis, through traditional and geometric morphometrics as well as deep-learning, showing that we can infer the age and sexes of the models from the size and form of the hands (all ages, with both sexes involved). This makes sense if the stencils are cultural-symbolic elements, less so if they are just negative images of mutilated hands. Furthermore, a linguistic approach to the patterns of finger configurations applying phonological models developed for sign languages reveals that the stencils make sense as linguistic units: the patterns observed correspond with those that we could expect for a linguistic system. This idea is reinforced with a comparative cultural analysis, since these caves pertain to a determinate chrono-culture (the Gravettian), and there is clear archaeological evidence of a shared cultural network (trade of materials, artifacts, styles, etc).

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Do Co-evolutionary Processes Explain the Emergence of Whaling, Seafaring, and Monumentality in Neolithic Europe? An Agent-Based Modeling Approach

BETTINA SCHULZ PAULSSON (Department of Historical Studies, University of Gothenburg)

Megalithic graves emerged in northwestern Europe in the second half of the fifth millennium BC in France, the Mediterranean, and the Atlantic coast of Iberia. Previous research has demonstrated the spread of megaliths occurred along sea routes, and maritime diffusion has been proposed as the most likely explanation of their spread. This is supported by the frequent occurrence of whale-themed engravings on megaliths. Additionally, circulation of green stone artifacts suggests long-distance trade in prestige goods accompanied the development of maritime seafaring technology. It is hypothesized that marine mammal hunting (i.e. whaling) was the basis for the emergence of seafaring technology in Neolithic Europe, and this innovation is reflected in the spread of megaliths with whale-themed engravings and the trade and presence of prestige green stone artifacts over time and space. In order to test this hypothesis, an agent-based modelling approach was developed and is described in this paper. The model tests different explanations of how innovation in seafaring emerged, including influences of economic drivers, safety and risk minimization, prestige-seeking competition, human curiosity and cetacean behaviour and ecology. The different candidate decision-making models are superimposed on a neolithic coastline reconstruction. The coastal geography, availability of marine mammal resources and seafaring risks combine with different human-decision making models to result in the simulated emergence of seafaring technology, the presence of megalithic construction at different times and places, and emergence of long-distance trade. This research demonstrates the interplay between socio-economic and biogeographic influences in how social-ecological systems evolve over time.

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Numbers in the material world: Does archeology need to change its mind?

Jean-Charles Pelland (University of bergen, Department of Psychosocial Science, University of Bergen)

The fact that humans are so dependent on technology has inspired proponents of 4E cognition and its variants (e.g. Menary 2010, 2015) to frame material objects as constitutive parts of our mind. Despite its general appeal, such externalism about the mind makes it difficult to explain how changes in the material record could dissociate from rates of cognitive sophistication (Sterelny 2017). After all, if extracranial tools are parts of our minds, it might seem that cognitive sophistication must, by definition, mirror changes in the material record, since the material record is also a record of cognition. This begs the question of how well revisionist cognitive science can capture the evolution of specific practices through history. In this talk I contrast externalist and classical approaches to the mind in archeology to compare their usefulness in investigating the potential origins and development of various numerical abilities, including ancient Sumerian accounting techniques, tallies, and Indo-Arabic numerals. In the externalist camp is Lambros Malafouris' (2013) Material Engagement Theory (MET), which applies core principles of radical enactivism (Hutto & Myin 2013) to archeology. I contrast Malafouris' rejection of brain-bound representations with classical accounts of the emergence of modern culture that appeal to intracranial processes like neural reuse (d'Errico & Colagè 2017) and neuronal recycling (Dehaene & Cohen 2007). Contra Overmann (2024), I argue that these contrasting views are not complementary, since MET's enactivist-inspired rejection of internal representations means it is unable to accommodate important data about the cognitive systems recruited in numeration practices.

Hormones, Behavior, and Social Context

Testosterone, cortisol, and aggression in male chimpanzees: A test of the dual hormone hypothesis

Martin daly (Anthropology, University of New Mexico)

Although steroid hormones such as testosterone and cortisol are widely linked to vertebrate aggression, their specific mechanisms of action remain debated. The dual-hormone hypothesis posits that high cortisol suppresses testosterone's effects on aggression and status-seeking because individuals should avoid metabolically costly, risky behaviors in times of severe stress. In contrast, the metabolic-need hypothesis proposes that cortisol, by mobilizing energy to meet acute challenges, should normally act in concert with testosterone to support competitive aggression over mates and status. We analyzed 15 years of linked behavioral and endocrine data from 23 male chimpanzees (Pan troglodytes schweinfurthii) aged 10 and older in Kibale National Park, Uganda, to test these predictions. We fit a logistic mixed-effects model predicting whether a male showed aggression within 3 hours of urine sampling (n=10,143). Testosterone and rank both showed strong positive associations with aggression, though age was not predictive. Contrary to the dual-hormone hypothesis, there was no detectable testosterone × cortisol interaction. Instead, the probability of aggression also rose with increasing cortisol. Both steroids were elevated in contexts where aggression is adaptive, including large increases in the presence of parous estrous females. The same patterns held when analyses were restricted to adult males (15 and older). These results support the metabolic-need hypothesis: cortisol does not blunt, and may accompany, testosterone-linked aggression when energetic demands and competitive stakes are high.

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Cortisol responses to exploration of novel environments and their association with spatial learning behaviors and performance

Tikal Catena (Psychological and Brain Sciences, UC Santa Barbara)

Although cortisol reactivity is typically assumed to reflect a stress response, several lines of research have observed cortisol increases in seemingly non-stressful (and even positively valenced) contexts. One such context is the exploration of novel environments; rodent studies routinely observe corticosterone responses in animals placed in novel environments, along with proportional increases in locomotion. Notably, this effect occurs in the absence of any overt stressor, raising the possibility that these hormonal changes do not just indicate a generic stress response. Instead, they could reflect the actions of an adaptive mechanism that promotes exploration and spatial knowledge acquisition. In this study we set out to test this effect in human participants, measuring cortisol changes when first exploring a complex virtual environment, and their association with exploratory behaviors and spatial learning.Participants (N=163) explored a virtual environment using one of two modalities: walking (ambulatory condition) or using a joystick while seated on a rotating stool (preserving vestibular proprioceptive cues). Cortisol increases during exploration predicted higher exploration distance, improved spatial learning, and lower reliance on learned routes, but only in the ambulatory condition. These findings suggest that locomotion does more than provide improved information: it may signal to the organism that an exploration context is being engaged, activating coordinated hormonal mechanisms that support the construction of more robust, survey-level spatial representations.

Co-authors: Alexis Topete (UC Santa Barbara, US)

Friend or fomite: Interpersonal value regulates infection-risky social contact across 61 societies

Joshua M Tybur (Department of Experimental and Applied Psychology, Vrije Universiteit Amsterdam)

Physical contact is essential for cooperation and care. It also provides a key route through which pathogens are transmitted between individuals. Existing research in the U.S. suggests that people navigate the tradeoff between the benefits of contact and the costs of infection by selectively accepting contact from individuals of high interpersonal value. The current study evaluates the invariance of the association between interpersonal value and social contact across a large number of societies. Sampling 42,771 participants across 61 societies, we tested how the interpersonal value of a specific target, as assessed via a welfare-tradeoff task, relates to comfort with indirect contact and the likelihood of physical contact during greetings with that target. In all 61 societies, a target's interpersonal value predicted both comfort with indirect interpersonal contact (e.g., sharing a water bottle) and the likelihood of physical contact during greetings. These associations were nearly invariant across societies. Importantly, we found little evidence that historical pathogen prevalence, individualism–collectivism, and tightness–looseness influence contact, nor that they moderate the relation between interpersonal value and contact. Findings support the universality of a psychology that considers interpersonal value in deciding whether to embrace a pathogen risk present in all human populations: physical contact.

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Solving coordination problems heuristically: the modulatory role of oxytocin.

carolyn henriette declerck (Faculty of Business Economics, University of Antwerp)

A recurrent challenge for living in groups is to coordinate one's thoughts and actions with others to achieve the benefits of cooperation and avoid the perils of competition. We propose that these tasks are processed heuristically by neurochemical modulation. Drawing on the allostatic theory of oxytocin, we investigate if administering intranasal oxytocin alters the functional connectivity in the brain to facilitate adaptive cooperative and competitive decision making. To test this, 21 participants played incentivized Stag Hunts (offering a win-win solution) and Chicken games (where the winner takes all) during fMRI scanning under oxytocin or placebo administration. Game matrices were paired with images of angry or neutral faces to introduce social context. Generalized psycho-physiological interaction (PPI) analyses focused on predefined regions of interest: the amygdala (fear response), nucleus accumbens (incentive motivation), and the empathy network (ACC and anterior insula). Results align with current models of oxytocin's role in social behavior. In cooperative contexts (Stag Hunt), oxytocin enhanced connectivity within the empathy network, promoting social approach and increasing cooperation. Conversely, in competitive contexts (Chicken), oxytocin heightened sensitivity to facial cues. When cues are neutral, reduced connectivity between facial processing regions and the amygdala predicted greater competitive behavior. These findings suggest oxytocin acts as a neural switch, enabling adaptive transitions between cooperation when it pays off, and competition when it is safe.

Co-authors: Paloma Diaz-Gutiérrez (University of Antwerp, BE); Christophe Boone (University of Antwerp, BE)

DAY 3

Thursday, May 15

Adapting to rapidly changing environments

Schooled minds fit standardized worlds: Education as adaptation to standardized environments

Matthew Cashman (MIT)

This paper develops an information-theoretic model of how schooled versus unschooled environments shape cognition, treating the mind as a map-maker that optimizes compressed representations for the "territories" it must navigate. The core claim is that schooling selects for highly compressible, portable abstractions: representations that generalize across many standardized contexts, but can sacrifice fit to any particular, non-standardized niche. By contrast, development in idiosyncratic, high-entropy ecologies selects for high-fidelity, context-specific representations: dense maps that maximize local performance but transfer poorly to unfamiliar standardized settings. I formalize this trade-off using Rate–Distortion Theory, modeling cognition as the choice of a finite "codebook" of concepts and heuristics under constraints on (i) behavioral error (distortion), (ii) moment-to-moment attentional/working-memory cost (rate, via mutual information), and (iii) long-run learning and maintenance burden (codebook size). A central construct is environmental legibility: the degree to which an environment is compressible by a standardized, universal codebook, characterized by the shape (slope) of the distortion–rate curve at a target rate. The framework distinguishes cognitive tools that are strictly beneficial (e.g., germ theory), which reduce distortion across environments from tools that are a tradeoff (e.g., syllogistic logic); these mainly pay off in standardized settings. It predicts systematic mismatch costs when minds optimized for one ecology are evaluated in another and organizes classic empirical motifs (e.g., Luria-style syllogisms, Raven's matrices, and a rate–distortion interpretation of the Flynn Effect) as consequences of rational allocation of limited cognitive capacity between generalization and local fit.

Effect of habitat suitability on eco-cultural range expansion of Homo sapiens

MD SAMS AFIF NIRJHOR (Organization for the Strategic Coordination of Research and Intellectual Properties, Meiji University)

Topographical, climatic, and ecological variations in the landscapes created spatially heterogenous conditions for the prehistoric human dispersal. Wakano et al. (2018) modeled the sapiens invasion in the initially neanderthal dominated region, showing an initial first wave invasion of sapiens with low culture causing a temporary coexistence with neanderthals, and eventual extinction of the latter by a high culture sapiens wave, namely second wave invasion. Using the population size hypothesis; high population density meaning high culture and vice versa, a critical population density is considered for differentiating between high and low culture. In this study, we focus on how this invasion, particularly, the high culture carrying second wave was influenced by the spatial heterogeneity. One dimensional reaction-diffusion dynamics with Lotka-Volterra competition type reaction term is used for modeling the system. We introduce spatial heterogeneity using a spatially varying parameter called habitat suitability that scales the carrying capacity of population density across the domain. We find that habitat suitability influences the existence and stability of all the equilibria, including the high culture equilibria in the ODE. Low habitat suitability slows down the second wave, hence hampering the spread of higher culture. An analytical approximation from Wakano et al. (2018) closely assimilates our finding of a critical threshold for the habitat suitability which blocks the second wave. The critical habitat suitability is a linear function of the critical population density. This provides an understanding of the effects of varying habitat suitability on the eco-cultural range expansion of sapiens in the neanderthal dominated region.

Co-authors: Joe Yuichiro Wakano (Meiji University, JP)

Adaptivity in children's search processes when foraging for clumped, random and dispersed resource patterns

Andreas Wilke (Department of Psychology, Clarkson University)

Humans and other organisms must search effectively for the resources they need. For generalist species including humans, this can include the ability to adjust one's search to different distributions for different resources. We assessed how well young children (and adults) can differentiate among sequential resource distributions of various kinds, specifically when they are non-random and contain learnable statistical regularities. The distributions included clumpy (where a hit—finding a resource—is more likely to predict another hit nearby and vice versa), dispersed (where a hit is more likely to predict a miss nearby and vice versa), and random (where hits and misses are independent). Across two exploratory studies conducted in the United States (N = 125; N = 112), children aged 3-10 years were presented with three different animals who foraged for binary resource outcomes along a sequential path. Each animal searched a path with distinct objective alternation probabilities reflecting clumpy, dispersed, and random distributions. Participants' choice data were used to compute their subjective alternation probabilities (i.e., their statistical perceptions of these sequences) and test whether they match the objective alternation probabilities. We also asked if participants were able to tell what kind of resource environment they were searching. In line with our previous results describing an evolved psychological default to clumped resources that explains why children (and adults) often misperceive random data sets, we find that children have an easier time reasoning about and adapting to clumpy resource distributions over comparable dispersed ones that are equidistant from random patterns.

Co-authors: Gracie DeLaBruere (University of New England, US); Nina Pluviose (St. Francis College, US); Yadhira Garcia (Clarkson University, US); Isabella Makdouli (Clarkson University, US)

Everyday Coordination in Road Traffic: Comparing Driver-Pedestrian Interactions in Morocco and France

Zakia Cherifi (FGSES, UM6P)

Road traffic requires constant coordination between drivers and pedestrians who must rapidly assess intentions and adjust movements to avoid collisions. While traffic regulations provide formal guidelines, everyday interactions rely on mutual adjustment through real-time responsiveness. We examine whether coordination patterns differ systematically across cultural contexts and whether such differences reflect learning through repeated interaction. We hypothesize that coordination reflects locally shared expectations acquired through practice. In contexts where expectations about right-of-way are more standardized (France), coordination should rely on early, anticipatory, role-asymmetric adjustments. In contexts where expectations are less standardized (Morocco), coordination should rely on mutual monitoring and negotiated adjustment during interaction. These patterns emerge because repeated encounters teach road users what others expect: when coordination succeeds, it reinforces those expectations, stabilizing them as culturally-specific behavioral practices. We are collecting naturalistic video recordings at urban intersections in Morocco and France. Each interaction—from first mutual relevance to conflict resolution—is coded by multiple independent coders for phase timing, adjustment sequencing, adjustment types, reciprocity patterns, and resolution characteristics. We use non-parametric tests (chi-square, Mann-Whitney U) to compare distributions across contexts, assess within-context stability, and report effect sizes and intercoder reliability (Cohen's kappa). We predict French interactions will show earlier first adjustments, predominantly one-sided coordination, and smooth resolutions, while Moroccan interactions will show later adjustments, more reciprocal patterns, and negotiated resolutions. If confirmed, these findings would demonstrate that coordination competence is learned through coordinating: repeated encounters provide structured feedback that shapes context-specific expectations, allowing culturally distinct coordination practices to emerge and stabilize.

Cultural and institutional drivers of cooperation

Zapotec cooperative institutions: Exploring the psychological and social mechanisms

Cameron M. Curtin (Institute for Advanced Studies in Toulouse)

The cross-cultural variation in the scale and intensity of human cooperation poses a challenge to classic evolutionary explanations. Confronting popular explanations that eschew "culture", researchers propose that social norms and institutions culturally evolve to shape cooperation. Here, we examine how institutions shape cooperation by conducting a detailed comparative analysis of two cooperative institutions in a Zapotec community of Oaxaca, Mexico. The first, gozona, is a mutual aid institution that supports cooperation in the contexts of agricultural labor and celebrations. The second, usos y costumbres, represents a set of traditional political institutions that facilitate the provisioning of public goods. Drawing on ethnography, vignettes, and surveys, we dissect the intertwined, cooperation-sustaining psychological and social mechanisms embodied in these institutions. We find that gozona and usos y costumbres are governed by different norms, which drive context-specific cooperation; they are not associated with generalized prosociality. Moreover, gozona and usos y costumbres norms harness distinct but overlapping sets of mechanisms, including reciprocity, interdependence, reputation, and punishment. These results support the view that institutions tap into and recombine diverse cooperation-sustaining mechanisms as they culturally evolve, challenging "culture-free" efforts to explain human cooperation. Indeed, even within a single, small community, different cooperative institutions work in different ways.

Co-authors: Narcedalia Vasquez Martinez (Division of Mechatronic and Industrial Engineering, Tecnológico de Estudios Superiores de Ecatepec, MX); Yunitza Vásquez Vásquez (Department of Anthropology, Universidad Autónoma Metropolitana, MX); Joseph Henrich (Harvard University, US)

Manufacturing Support with National Consultations

Alexander Bor (Democracy Institute, Central European University)

How do mass signals of near-consensus shape minds in real politics? We study Hungary's "National Consultations," a government instrument that first manufactures agreement (biased measurement) and then broadcasts it (nationwide "99% support" claims). This lets us pit two evolved tendencies against each other in the wild: conformity to apparent group norms versus vigilance toward potentially manipulative signals. Wave 1 (N=1,200) contrasted verbatim Consultation items with impartial versions on three policies (flat tax, family tax benefits, Russian energy). Biased wording created large apparent majorities on two issues (but not the third) and widened meta-perception gaps—people thought many more compatriots agreed than actually did. These results reveal how easily descriptive norms can be fabricated by question design. Wave 2 (pre-registered, N=2,000) tests the signaling stage: after official results are announced, participants see either the government's "super-majority" card (with slogan) or an independent estimate. Outcomes target the mechanisms HBES cares about: (i) policy positions (proximate behavior), (ii) perceived group norms and inevitability (who will win), and (iii) procedural fairness/legitimacy (does this feel like the group's will?). The design asks: Do strong consensus cues trigger conformist alignment and acceptance of authority, or do they provoke vigilant skepticism—and in whom? We provide rare, real-time evidence on norm-based influence in a competitive-authoritarian setting, mapping individual differences (partisanship, knowledge, trust) onto susceptibility. The project connects classic HBES themes—coalitional psychology, coordination, prestige/authority cues, and norm enforcement—to a consequential, ongoing political intervention.

Cultural Technologies and an Ecology of Superstructures

Martynas Snarskis (The Music Lab, University of Auckland)

Human behavior is drastically but reliably shaped by the groups that people participate in and the roles they hold within those groups. In order to better understand and explain human behavior and how it changes over time, I suggest a framework for studying coordinating groups: an ecology of superstructures constituted of cultural technologies. Cultural technologies describe human-made artifacts, both material and cognitive (e.g. tools, language, techniques, ideologies); importantly, these include shared expectations and schemas for interpreting and reacting to particular situations. A superstructure describes a cooperating group of individuals; specifically, it is the constellation of cultural technologies by which the group enacts coordinated behaviour. The coordination of behaviour is constituted by constraints on the behaviour of individuals in the group, which can be identified as collections of shared goals, expectations, schemas, as well as the material artifacts that facilitate these. I explore how the generalizability of the function of cultural technologies can help explain the evolution of culture; as well as how superstructures can acquire a “life of their own”, by which the adaptive considerations at the group-level diverge from individuals of the group.

What drives sharing and helping behaviors? An investigation of the behavioral mechanisms underlying inter-household transfers of resources and services among Sama marine fisher-foragers.

Julia R Phelps (Institute of Human Origins, Arizona State University)

The behavioral adaptations that motivate cooperative food sharing and alloparental caretaking between households have been widely studied in small-scale human subsistence societies. However, less attention has been paid to the mechanisms supporting transfers of material goods across all economically important resource categories within these populations (e.g., money, medicine, cigarettes, clothing, and tools as well as to food), nor have many studies examined the mechanisms driving all types of service transfers (technological assistance, grooming, help with domestic and subsistence tasks, etc., in addition to childcare). As such, it is unclear whether the motivations underlying resource transfers are different than those underlying service transfers. To address these questions, I will present data on the complete system of inter-household resource and service transfers occurring in Linao of the Mangroves, a small community of Sama marine fisher-foragers in the Philippines. Across both currencies (resources and services), short- and long-term reciprocity appear to be the primary drivers of increases in the value or duration of transfers between household dyads. However, a positive age difference between donor and recipient households is also associated with increased service transfers between household dyads, while its effect size is negligible for resource transfers. This suggests that differences in skill, time, and juvenile dependency loads may be important additional determinants of whether a household receives physical – rather than material – assistance from another household.

Co-authors: Kim Hill (Arizona State University, US)

Polygyny, Marriage, and Gender Norms

High rates of polygyny do not lock large proportions of men out of the marriage market

Laura Fortunato (Anthropology, University of Oxford)

There is a widespread belief, in both the scholarly literature and the popular press, that polygyny prevents large numbers of men from marrying by skewing the sex ratio of the marriage market. In turn, the exclusion of men from marriage is thought to lead to negative outcomes, e.g., by fueling crime and armed conflict. We investigate systematically the relationship between polygyny and men's marriage prospects. First, using a demographic model, we show that marriage markets are skewed sufficiently feminine, under a range of realistic demographic scenarios, to sustain some level of polygyny without locking any men out of marriage. Second, through analysis of 84.1 million census records from 30 countries across Africa, Asia, and Oceania between 1969 and 2016, we show that the subnational association between the prevalence of polygyny and the prevalence of unmarried men is negative or null, rather than positive, for almost all countries in the sample. Third, through analysis of the full-count 1880 US federal census, we show that the average prevalence of unmarried men is lower, not higher, across counties of the West with Mormon polygyny, compared to other counties of the West, and to counties of the Midwest and the Northeast; it is higher only compared to counties of the South. Overall, these findings challenge a dominant narrative linking polygyny to negative social outcomes; we discuss their implications for theories that monogamous marriage evolved through a process of (cultural) group selection.

Co-authors: Hampton Gaddy (London School of Economics, GB); Rebecca Sear (Brunel University of London, GB)

Patriarchy and Polygyny in Hunter-Gatherer Societies

William Buckner (Durham University)

In behavioural ecology, the polygyny threshold model describes conditions where females are expected to choose to share an already-mated male if the fitness benefits, such as access to a male's superior territory, are greater than the costs. Paradoxically, in humans, polygyny appears to be more widespread in socioecological contexts where women provide equal or greater resources than men do, and may instead impose fitness costs. Using Bayesian phylogenetic models I find that among the hunter-gatherers in the Standard Cross-Cultural Sample (n=30) and in Binford's hunter-gatherer dataset (n=339), polygyny is more common where 1) women contribute more of the subsistence resources, 2) have less choice in marriage arrangements, and 3) have a younger age at first marriage. These results suggest that male-biased marriage norms play an important role in the extent and persistence of polygynous marriage within hunter-gatherer societies. The self-interested promotion and enforcement by men of male-biased social norms is likely a key mechanism sustaining the cultural evolution of polygyny, and higher rates of polygyny are more sustainable where women support their own subsistence and have less choice of partner.

Environmental drivers of human mating systems

Daniel Antonio Villar (Department of Anthropology, Durham University)

Interspecific studies of drivers of mating systems in mammals and birds find strong environmental effects of mating systems, with species that live in harsher environments with higher rates of extrinsic mortality are likelier to have biparental care. Humans are peculiar in that they exhibit a variety of mating systems, including polygamy, polyandry, and monogamy. We tested whether the same effects that drive interspecific variation in mammalian and avian mating systems can explain variation in human mating systems, using data from 186 human societies in the standard cross cultural sample and in 339 hunter gatherer societies. We fit Bayesian models which included both phylogenetic relatedness, based on a linguistic supertree, and geographic autocorrelation. We measured environmental harshness by obtaining polygons of the cultural extent and extracting the values of standard bioclimatic variables and primary production from those polygons, with more extreme temperatures, lower primary production, and lower precipitation being considered harsher environments. We also included mode of subsistence in the model. We found little evidence that the abiotic environment drives the variation of mating systems in humans, and mixed evidence that subsistence mode drives mating systems. This suggests that interaspecific variation in human mating systems is not primarily driven by the same variables as interspecific variation in mating systems are in other vertebrates.

Cultural evolution of feminine honor: An ideological mate guarding account

Pelin Gül (University of Groningen (Campus Fryslan))

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 concerns about women's honor are particularly strong in "honor cultures," these norms appear in varied forms and degrees across many cultures. The dominant explanation for support of feminine honor is that female infidelity threatens male partners' or family honor. Beyond this, the literature offers limited insight into the evolutionary and psychological origins of feminine honor. We propose that feminine honor serves an ideological mate-guarding function shaped by sexual jealousy and mating strategy. We conducted multiple correlational and experimental studies to seek preliminary evidence for this hypothesis, drawing on samples from the US, Turkey, and Iran, and examining diverse ways feminine honor is enacted and transmitted. In the US, dispositional jealousy and experimentally induced state jealousy increased support for feminine honor norms, particularly among men. Among Turkish and Iranian participants, dispositional jealousy and mating strategy were also associated with everyday enactments of feminine honor, including support for restricting women's freedom and intentions to punish norm violators. Results held beyond controls such as other honor norms (masculine, family, integrity), religiosity, political orientation, age, and beliefs about women's and men's sexual control. Our findings identify mate guarding as a key psychological mechanism underlying the origins and maintenance of feminine honor across cultures and provide a framework for examining its socio-ecological influences and gendered transmission.

Co-authors: Sajad Sojoudi (Nottingham Trent University, GB); Azra Jahanitabesh (University of California Davis, US); Tom Kupfer (Nottingham Trent University, GB); Stephen Foster (Pennsylvania State University, US)

Political Psychology and Leadership

The role of small-scale community leadership in promoting group resilience

Asmaa Maaroufi (School of Collective Intelligence, University Mohammed VI Polytechnic)

Recent research on leadership in small-scale societies has identified the roles and functions commonly fulfilled by formal and informal leaders across societies and cultures. An underexplored benefit of leadership is the ability it confers to respond to rare shocks by rapidly and effectively mobilising human capital resources from both within and outside of a community. Here we present a case study of communities from Morocco's rural Al-Haouz region that suffered from a generationally severe earthquake in 2023. We conducted phone surveys with representatives of 32 communities across the region to assess community-level earthquake response in relation to the human capital of their local association (Jam'ia), its institutional age, operational history and cooperation tendencies. Their performance was then compared to that of communities represented by an informal leader. While these rural small-scale societies have longstanding conventional governance and problem-solving mechanisms, modern changes in societal complexity, including centralisation, division of labour and social stratification, have led to the wide proliferation of Jam'ias as novel local formal institutions with a legal status, clearly delineated roles, and established procedures, eligible to receive funding, and accountable for achieving projects, serving as rural development mechanisms. The 2023 earthquake generated an urgent need for local coordination mechanisms to reach the communities, transfer funds and implement recovery projects, thus challenging the role of Jam'ias in resilience building and disaster risk reduction for small-scale rural communities. Our results elucidate the dynamics and the performance of Jam'ias in this capacity.

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Empirical evidence and agent-based models of the triadic primitives theory of group dynamics

Clara Meyerfreund Lavrador (University of California, Santa Barbara)

Humans readily infer social groups from minimal information, yet the evolved cognitive primitives that support these inferences remain understudied. This talk presents a series of agent-based models and empirical studies designed to test the Triadic Primitives Model, which proposes that the brain defines group membership based on a set of evolutionary invariances: triadic interactions within conflicts. In a triad involving two agents in conflict (A and B) and a third agent (C), there are four fundamental ways C can become involved: by attacking A or B, or by being attacked by A or B. Each configuration represents one of four cognitive primitives, and supports an inference about group membership. I first present experimental evidence demonstrating that these triadic representations are intuitive for adult participants across multiple studies. Observers reliably infer group membership from observed conflict behaviors and use given group information to predict future interactions. A complementary developmental study examines when these capacities emerge in childhood. Finally, I show how these same triadic primitives can be implemented in agent-based models to explore how local triadic dynamics scale up to produce large-scale group structures. Together, this work suggests that a finite set of primitives may underlie human social cognition and the emergence of complex group organization.

Co-authors: Daniel Conroy-Beam (University of California, Santa Barbara, US); David Pietraszewski (University of California, Santa Barbara, US)

Measuring the Leviathan: How Political Architecture Reflects the Structure of Rule

Pietro Beltrame (School of Human Evolution and Social Change, Arizona State University & Institute of Human Origins, Arizona State University, Arizona State University)

Why do some regimes build vast, monumental government buildings while others operate from modest, even nondescript, structures? This presentation explores the relationship between the physical architecture of power and the type of political institutions worldwide. To this end, we introduce a new cross-national dataset on the footprint area of top government executive buildings — the square meters of ground space they occupy — for all countries with populations over 500,000 (n=165). These data are paired with the 2025 V-Dem Liberal Democracy Index, World Bank measures of GDP per capita and population size, and, where available, Eurostat statistics on average residential floor area. Our analysis shows a negative association between the level of democracy and the scale of executive building. This relationship persists even after controlling for wealth and population, suggesting that monumentalism in state architecture reflects centralized, authoritarian rule rather than just administrative necessity or national prosperity. In line with this result, we find that in Europe, while GDP per capita is positively associated with larger private homes, it predicts smaller executive footprints. Finally, we also show that transitions toward autocracy are often accompanied by upsizing executive architecture, and vice versa. We suggest that architecture is a proxy for regime type and offers a new comparative metric to study political institutions worldwide.

Co-authors: Robert Boyd (Arizona State University, US); Charles Perreault (Arizona State University, US)

The Fundamental Follower Needs Inventory: conceptualizing and measuring the psychology of followership

Wendy Andrews (Experimental and Applied Psychology, Vrije Universiteit Amsterdam)

Humans are believed to have an evolved followership psychology that enables them to identify and endorse suitable leaders to help them effectively deal with different situational demands. We synthesized insights from the Triad Model of Follower Needs (De Waal-Andrews & Van Vugt, 2020) and the revised hierarchy of needs (Kenrick et al., 2010) to generate a taxonomy of fundamental follower needs (FFNs) related to a distinct recurrent adaptive problem in human evolutionary history that are relevant to leader–follower dynamics. To measure these needs, we developed, refined and validated the Fundamental Follower Needs Inventory (FFNI), which we did across a preliminary study and five validation studies (N = 3,514). Studies 1 and 2, validated the content, tested the reliability, and confirmed the factor structure of the FFNI across three domains (general, political, and workplace), three countries (United States, United Kingdom, and China), and multiple time points. Study 3 demonstrated the convergent and discriminant validity of the measure. Studies 4 and 5 explored its nomological network, and examining its antecedents, consequences, and both its predictive and incremental validity. The result is a novel, psychometrically robust measure of six core follower needs: protection, affiliation, status, guidance (including vision and expertise), and fairness. The FFNI allows researchers to investigate how follower needs vary across contexts and cultures, and how these needs shape leader endorsements and perceptions of leadership effectiveness. It offers leaders in practice a framework to better understand and respond to the psychological needs of those they lead.

Co-authors: Xiaotian Sheng (Vrije Universiteit Amsterdam, NL); Mark Van Vugt (Vrije Universiteit Amsterdam, NL)

Cultural Transmission and Learning

When showing and telling convey different stories: modes of cultural knowledge transmission lead to different concept representations

Ariel Levy (Harvard University)

Social learning and teaching can take many forms. When trying to convey conceptual knowledge to others, we may either show examples of the concept and rely on learners' ability to generalize, or tell them explicitly by describing defining features of the concept. Recent ethnographic and historical accounts (eg., Maynard, Greenfield et al, 2024; Daston, 2022) suggest that cultures vary in the extent to which they emphasize each mode of knowledge transmission. Here, we ask wether the dominant mode of knowledge transmission in a society shapes how concepts are ultimately represented by its members. We use a cultural transmission chain experimental paradigm, where participants transmit information about an imaginary biological category from one person to another along a chain (N = 1200: eight generations of 150 participants). In the "tell" condition, participants are only allowed to use verbal descriptions of the concept, while in the "show" condition, they may only to give examples of objects from the target concept. Between learning and teaching, participants complete a classification task that allows us to infer their concept representation. Even though both conditions began with the same initial concept, the mode of transmission led participants to develop strikingly different representations. "Tell" chains lead participants to overemphasize easily namable features, whereas "show" chains lead to over-emphasis on visually salient features. We develop a computational model based on the Rational Speech Act framework that explains these transmission outcomes and generates novel predictions about how communication methods of a culture shape the evolution of its conceptual structure.

Co-authors: Fiery Cushman (Harvard University, US)

Cultural Breadth Before Cultural Depth: Insights from Evolutionary Transitions in Individuality

Claudio Tennie (University of Tübingen)

Cultural evolution of trait depth is a hallmark of humans, yet it remains rare among other apes. Archaeological explanations often attribute this near or full uniqueness (among apes, at least) to an early onset of hominin abilities to culturally transmit technical know-how, e.g. as supposedly inferable in Oldowan stone tools (2.6mya). However, Oldowan (and early Acheulean) patterns across time, space, and species do not clearly indicate know-how copying. Various recent findings indicate that these tools may not have required such copying and that more common types of social learning sufficed to explain the patterns observed. We propose an alternative account, in which human cumulative cultural depth evolved secondarily through the gradual build-up of the number (or "breadth") of individually developable, interconnected cultural traits of hominin social groups (Andersson & Tennie 2023). The chimpanzee-like splitting and spreading of these groups (demic diffusion) created parent-offspring relations for the specific cultural mixes of these groups. This situation made groups of our ancestors faithfully inherit entire networks of practices, without a need to copy know-how depth on the individual level. We show how this led to an evolutionary process on the newly created trait-network-level – an evolutionary transition in individuality (ETI). In this way, the breadth of cultural knowledge within groups led, secondarily, to the evolution of individuals' trait depth copying.

Co-authors: Claes Andersson (Chalmers University of Technology, SE)

Cumulative skill improvement as a selective driver of social learning and individual differences in social learning

Piet van den Berg (Evolutionary Modelling Group, KU Leuven)

Cultural accumulation is often considered as a side-effect of highly developed social learning skills that were selected by variable environments needing different technological solutions. Here, we ask of social learning may have evolved because it enables cumulative improvement in skills that cannot be achieved by individual learning alone. We do this with an adaptive-dynamics model in which individuals allocate limited cognitive resources between a general cognitive function and a specialized social-learning function that are each needed for different kinds of tasks. We consider a wide range of tasks, including tasks with social effects, where the skill of interaction partners affects individual fitness, and synergistic effects, where joint performance depends nonlinearly on both partners' skills. Our analysis shows that investment in social learning is favored across a wide parameter range whenever intergenerational skill accumulation substantially amplifies task performance, especially when tasks are cooperative or positively synergistic, consistent with hypotheses emphasizing cooperative hunting in the evolution of social learning. Additionally, negative synergy generates disruptive selection, leading to stable polymorphisms or bistable outcomes in social learning investment. Individual-based simulations under finite population sizes and demographic structure closely match analytical predictions. Our results suggest that social learning may have evolved not only as a response to environmental unpredictability, but because it unlocks cumulative gains in demanding skills, especially if they have a social component. This has the potential to help explain both the emergence of cumulative culture and persistent variation in reliance on social learning within and across populations.

Aligning Minds Across Space and Time: The Evolution of Displaced Reference

Kat Van der Poorten (KU Leuven)

Language supports coordination not only by transmitting information, but by allowing individuals to align their internal representations. To investigate how this capacity may have evolved, we use a computational model in which agents learn and use communicative systems while interacting and solving coordination tasks in structured social environments. The model focuses on the emergence of displaced reference: communication about absent places, objects, or future events. We distinguish between the ability to represent such information internally – through planning, memory, and anticipation – and the externalization of these representations into shared communicative symbols. While internal displaced thought is widespread among animals, externalizing it is only beneficial when successful action depends on coordinating mental models across individuals. The model is designed to examine the ecological and social conditions in which externalization becomes advantageous. Coordination problems may occur within groups, and between competing or cooperating groups, each placing distinct demands on communication. Within-group coordination favours externalization when spatial separation and temporal delays make individual planning insufficient. Between-group competition favours communication that allows some groups to coordinate activities more effectively than others. Between-group cooperation favours externalization when coordination must extend across social boundaries to support alliances, information exchange, or joint action. Together, our model shows displaced reference as an emergent solution to coordination between minds, illuminating a transition from individually intelligent agents to collectively organized groups in human evolution.

Co-authors: Pieter van den Berg (KU Leuven, BE)

LIGHTNING TALKS

Lightning The Effects of the Social Learning Strategy Space on Gene-Culture Coevolutionary Modeling

Katelyn Bonner (University of Lausanne)

Understanding how individuals learn socially is central to explaining aggregate-level cultural evolution. Prior research has shown that even small heterogeneities in individual social learning strategy use can have outsized impacts on population-level cultural dynamics. Yet, most theoretical research has relied on assumptions that preclude the majority of possible strategies from ever arising in evolutionary models, potentially distorting our understanding of cultural evolution. This study aims to address this potential issue by comparing the evolutionary dynamics and stable strategies that emerge under two distinct modeling approaches. The first, Bayesian updating, imposes structured constraints on the social learning process, thereby limiting the strategy space under consideration. The second approach, using Finite State Machines, allows for an unrestricted exploration of all feasible strategies. By comparing these methods, we aim to uncover how strategy space restrictions may bias our understanding and to identify methods for safely restricting the strategy space under consideration without being subject to this bias.

Co-authors: Charles Efferson (University of Lausanne, CH)

Lightning Intergenerational Transmission of Oral Folklore Among Rural Bangladeshi Women

Wiam Charioui (Penn State University)

Anthropological perspectives note how oral folklore can strengthen kin relations, encode relevant information regarding hazards and subsistence strategies, as well as communicate cultural norms, violations of those norms and the subsequent social consequences. Women in rural Bangladesh have played and continue to play a critical role in the transmission of oral folk traditions, primarily as a means of the acculturation of knowledge deemed specifically women's topics. The household, where oral folklore transmission among women often occurs, has been subject to structural changes to kinship by market integration. This research examines whether the mechanism of oral folklore transmission and whether continued dissemination is active among rural women in Bangladesh, particularly as the influential factors in this process (household and kinship) are being altered due to the impacts of market integration. Utilizing Semi-structured Interviews, respondents (N= 49) from two common household types—multi-generational and nuclear households—were asked about: (1) patterns of folklore transmission and reception among female family members, and (2) recalling and sharing of Folklore that has been transmitted/ received. We find (a) a higher rate of oral folklore transmission in multi-generational households compared to nuclear households, often between grandmother and granddaughters, and (b) consanguineal kin engage in higher rates of oral folklore transmission compared to affinal kin. We argue that the results of this study suggest multi-generational households as being more conducive for sustained oral folklore transmission as opposed to nuclear households due to the broader kinship ties and networks within extended families.

Friendship and Social Ties

Testing Competing Models of Friendship Satisfaction and Commitment in Adult Friendships

Hyewon Hong (University of California, Los Angeles)

Friendships are thought to have helped solve the recurrent adaptive challenge of ensuring help when in need, and it is likely that friends provide one another preferential support—suggesting that friends bolster fitness. Even today, friendship is associated with improved health, wellbeing, and longevity. Yet the psychology of friendship remains underexplored. Here, we explore the psychology of friendship satisfaction and retention: How does the mind compute what makes a friendship feel satisfying, presumably prompting us to work toward retaining that friendship? On one view, friendships with people who match our preferences might be satisfying (Ideal Standards). On another view, satisfaction depends on both friend value (FV) and the availability of alternative possible friends (Friend Value Discrepancies Model; FVDM). When one has higher FV than their friend and superior alternatives are available, satisfaction is downregulated, presumably prompting decreased retention (and perhaps freeing time for the pursuit of alternatives). Across 3 US studies (N = 1530), we consistently found support for the FVDM—and that friendship satisfaction predicts multiple retention behaviors, although we find inconsistent support for mediation. Results elucidate the mechanisms underlying friendship satisfaction and maintenance, helping to illuminate how humans navigate social investment trade-offs in response to environmental constraints.

Co-authors: Jaimie Krems (University of California, Los Angeles, US)

Competition in the Friendship Market: Trait Valuation Shapes Self-Promotion and Rival Derogation

Vanessa Rose Zankich (Department of Psychology, UCLA)

Good friends are vital to human health. Friends help us live longer, meet our spouses, care for our children, and even make more friends. But people vary in their alliance value—and their resulting desirability as friends—just as they vary in mate value. Further, resources (e.g., time) are limited, such that people can pursue and maintain only so many social bonds simultaneously. This sets the stage for a "friending" market, wherein desirable friends have more bids for their friendship than friendship niches. People must navigate this market, ideally garnering the most desirable friends accessible to them. To this end, people compete for friends—again, similarly to how people compete for mates. Here, we explore two core tactics of friendship competition: self-promotion (emphasizing one's own value or desirability to prospective friends) and competitor derogation (undermining another's value or desirability to prospective friends). If people possess a psychology calibrated for friendship competition, then the friendship traits that people value should be the same traits that people (a) promote when attempting to make friends for themselves and (b) derogate in potential rivals for another person's friendship. And this pattern should hold, even as what people value in friends varies across cultures. With data from Argentina, China, Japan, Nigeria, Poland, Romania, Russia, and the US, we offer one of the first tests of the psychology of friendship competition.

Co-authors: Jaimie Arona Krems (UCLA, US); Daniel Szyncer (Oklahoma State University, US)

Adrenarche and the Expansion of Non-Kin Social Ties in Childhood and Adolescence

Brooke Rothamer (Boston University)

Adrenarche, marked by rising levels of the adrenal hormone dehydroepiandrosterone sulfate (DHEA-S), is thought to be an evolved organizational point in the ontogeny of children's sociality in communities. Functionally, this physiological transition may contribute to the widely observed phenomenon of children's rising social engagement with non-kin community members in middle childhood and adolescence. We tested for an association of DHEA-S with greater non-kin and fewer kin in children's self-reported networks. Participants aged 5-18 in Utila, Honduras, identified individuals they had played with in the last month (N = 131) and with whom they regularly exchanged help (N = 92), and identified each person's relationship to them. Same-day saliva samples were analyzed for DHEAS concentration via ELISA. Generalized linear Poisson models assessed the effects of age, sex, and log-DHEAS on network counts (kin and non-kin), testing for sex-specific developmental trajectories via age-by-sex interactions. Age-only models best characterized an increase in non-kin helpers and a decrease in kin playmates and helpers with age. Only the sex by age interaction model for non-kin playmates (Age × SexMale b = 0.089, p = 0.004) was improved by the inclusion of DHEA-S, with higher DHEA-S predicting greater non-kin playmates (b = 0.142, p = 0.007). Models allowing for non-linear age effects confirmed the same pattern. These results provide preliminary evidence that rising DHEAS during adrenarche is associated with extra-familial, play-based social integration, but not a displacement of kin relationships. The findings are consistent with a theory of adrenarche as an organizational phase in social development.

Co-authors: Jessica K. Hlay (University of Notre Dame, US); Izabel Rodríguez-James (Utila Child Health Project, HN); Caroline B. Smith (Washington State University, US); Nicole Merullo (Boston University, US)

Twin Study of Tacit Coordination: New Findings and Theoretical Implications

Nancy L. L. Segal (Psychology Department, CSU Fullerton)

Thomas Schelling (1960) is known for his research on tacit coordination (TC). TC is defined as circumstances in which “two parties have identical interests and face the problem not of reconciling interests but only of coordinating their actions for their mutual benefit when communication is impossible.” Reasoning from Hamilton’s (1964) inclusive fitness theory, it was hypothesized that: Coordinated decisions should be observed more frequently between individuals sharing relatively higher proportion of genes than those sharing fewer. Support for this prediction comes from twin studies showing greater cooperation between genetically identical (monozygotic; MZ) than non-identical (dizygotic; DZ) twins. Coordination differs from cooperation in that coordination involves behavior on the part of both interactants, while cooperation involves behavior by one actor leading to benefits for both partners. New findings from the CSU Fullerton Twin Studies Center will be presented. The sample includes 78 MZ twin pairs and 53 DZ twin pairs, mean age 24.32 years (SD=12.40). Zygosity (twin type) was assessed by a standard physical resemblance questionnaire and/or DNA analysis. Modeled after Mehta (1994), individual twins independently answered questions (e.g., name a book, name a color), then repeated this task with the instruction to produce the same answer as their co-twin. Previous analyses found significant effects from zygosity and condition (individual vs. twin), a pattern that continues. Multivariate repeated measures analyses showed that MZ twins outscored DZ twins, and greater coordination was expressed in the coordination vs. individual condition. These findings promise to refine theories concerning genetic contributions to coordination and collaboration.

Co-authors: William D. Marelich (CSU Fullerton, US); Madison A. Dekket (CSU Fullerton, US)

LIGHTNING TALKS

Lightning Extraversion, positive affect and social attention in small human groups

Lars Penke (Institute of Psychology, University of Goettingen)

There are long-held assumptions that social attention is a powerful social reward and that social attention tracks social standing. Evolutionary theories such as sociometer theory, hierometer theory and social risk theory further suggest that an individual's social standing impacts their affective well-being. Social attention might thus enrich theories on social functioning with a process level-explanation. We studied visual social attention in context of extraversion and positive affect. We used data from a large observational laboratory group study with unacquainted individuals (N = 449) and coded gazing behaviour of participants during a group discussion. Social attention partially accounted for the association of extraversion and self-reported positive affect after social interaction, even after controlling for speaking time. Additionally, the social attention an individual received was differentially associated with interpersonal ratings of social status but not liking. Taken together, we reported evidence that visual social attention is a tractable social behaviour that provides an important explanation for how social status emerges in unacquainted groups and for why extraverted individuals are more likely to experience positive affect.

Co-authors: Sabine Ostermann (University of Goettingen, DE); Julia Stern (University of Bremen, DE); Tobias Kordsmeyer (University of Goettingen, DE)

Lightning Understanding Interpersonal Relations: An Evolutionary Interpersonal Communication Framework

Charlotte De Backer (HBES, Universitty of Antwerp)

Interpersonal relations are both familiar and elusive: we rely on them daily yet rarely pause to understand how they work. From an evolutionary perspective, human survival has always depended on managing a small number of unique, irreplaceable, and interdependent relations. These relations continuously balance cooperation and closeness against conflict and distance. To navigate these tensions, humans rely on multiple evolved mental mechanisms that shape how we communicate—verbally and nonverbally—across contexts. In this talk, I present the core framework of my forthcoming book Understanding Interpersonal Relations, which integrates evolutionary psychology with communication studies. Moving from cooperation and conflict to language, facial expressions, foodways, silence, and comfort, the book conceptualizes everyday communicative practices as an evolved toolkit through which interpersonal relations are negotiated. Each topic starts from a human-universals perspective, focusing on shared mental mechanisms that shape interpersonal relations across time and cultures. Across chapters, I examine how these universal mechanisms interact with ancestral, developmental, cultural, and situational contexts, producing stable group and individual differences in interpersonal behavior. I further argue that many contemporary interpersonal tensions—ranging from digital conflict escalation to social media fatigue and mediated silence—reflect evolutionary mismatches between ancient social mechanisms and rapidly changing communicative environments. By placing interpersonal communication at the intersection of evolution, communication, culture, and technology, this framework offers an integrative account of human sociality. I will present selected examples from the book that illustrate how this interdisciplinary approach deepens our understanding of modern—often mediated—interpersonal communication.

Trust, Reputation, and Social Norms

Moral commitments and trust: Experimental evidence for an index signal account

Toby Handfield (SOPHIS, Monash University)

Sacred values are uncompromising moral commitments that resist material trade-offs. Existing theory portrays them as parochial signals of in-group loyalty that sharpen intergroup divisions. We propose instead that sacred values function as index signals of moral internalization—a capacity difficult to fake because it reflects deep cognitive encoding of moral rules that bypasses conscious cost-benefit calculation. Across six preregistered studies (N = 2,374), we tested whether sacred value displays signal trustworthiness even across group boundaries and uncovered the psychological mechanism responsible. Studies 1–2 demonstrated that observers attribute substantially greater trustworthiness to sacred valuers in both interpersonal (wedding ring) and out-group religious (Islamic finance) contexts, with large effect sizes (r = .69 and r = .66 respectively). Study 3 validated this effect behaviorally: participants invested more money in sacred valuers in an incentivized trust game with real financial stakes, and critically, this trust was warranted—sacred valuers were more trustworthy in their actual behavior (r = .33). Studies 4–6 revealed a two-stage mechanism: sacred values signal a generalized moral character across all five moral foundations ("moral halo"), but trustworthiness is specifically mediated by perceived commitment to preventing harm. This harm-centric pathway dominated even when other moral foundations (Fairness, Loyalty, Authority, Purity) were made maximally salient through targeted vignettes. These findings resolve a longstanding theoretical tension: moral pluralism characterizes the broad perceptual stage of social evaluation, while harm-centrism describes the functional pathway to trust. Our research identifies how diverse sacred commitments can serve as universal signals of trustworthy character across group divides.

Co-authors: Ji Song (University of Melbourne, AU)

Evaluating the role of metanorms in guiding within-group norm adaptation

Sarah Mathew (Arizona State University)

The power of norms lies in shared expectations about appropriate conduct, yet this same feature can limit how readily norms adapt when conditions change. Despite this constraint, human societies frequently modify existing norms or create new ones in response to social and ecological challenges. We propose that societies balance normative stability and adaptability through metanorms—norms that govern how norms are interpreted, changed, and enforced. By regulating how violations are reasoned about, ambiguities resolved, situations lacking precedent are evaluated, and sanctions calibrated, metanorms shape how existing norms are reinterpreted and new norms are created. To test this idea, we conducted vignette experiments and interviews with over 200 participants to elicit the metanorms guiding customary dispute resolution by elders in Turkana communities in Kenya. We find that community members are significantly more willing to enforce decisions when elders' reasoning and conduct align with recognized metanorms. While elders are constrained in their ability to alter long-standing customs directly, adherence to metanorms allows them to justify new rules for novel situations. Our findings suggest that Turkana metanorms enable norm adaptation without undermining the stability of the normative order—a capacity often associated with formal legal systems. Further study of metanorms in politically decentralized societies may help explain how normative systems sustain adaptive legal order without coercive centralized institutions of enforcement. We conclude by suggesting that, over evolutionary time, cultural group selection favored metanorms that balance stability with innovation, enabling even decentralized societies to achieve varying degrees and forms of legal order.

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Collective threats shift cooperative norms, but not the punishment of norm violations

Catherine Molho (Toulouse School of Economics)

Influential theories in the social and behavioral sciences argue that collective threats shape how human groups enforce cooperation. Tightness-looseness theory proposes that groups exposed to more threats—such as resource scarcity or ecological disasters—respond by developing stronger cooperative norms and punishing norm violations more severely. In this "complementarity" hypothesis, norms and punishment work together to enforce cooperation. An alternative "substitutability" hypothesis holds that strong norms in groups that face high threats should suffice to ensure cooperation, reducing the need for punishment. We tested these hypotheses in a controlled behavioral experiment with 301 participants. In the first stage, we manipulated collective threat (high vs. low) in a collective risk dilemma to identify its causal effect on norms and cooperation. In the second stage, participants voted on whether to adopt punishment institutions in a public goods game and could determine how strict and severe these institutions would be. We found that groups exposed to high threats formed stronger cooperative norms and contributed more to public goods. However, they were not more likely to vote in favor of punishment institutions and did not select harsher penalties for norm violations. Norms established under threat persisted even when a different norm would have been more efficient, indicating their stickiness across contexts. Altogether, our study demonstrates how controlled experiments can identify causal pathways behind the emergence and change of social norms.

Trust miscalibration across cultures and social classes

Grégoire Darcy (Institut Nicod - ENS-PSL, ENS-PSL)

Do people trust each other enough? Trust in strangers underpins modern societies, yet people's expectations about others' trustworthiness may be inaccurate. Across 23 countries (N = 9,758), we quantify the Trust-Trustworthiness Gap: the discrepancy between people's belief about how many people would return a wallet lost in the street and how many people actually do. Four results emerged. First, mean expected wallet return rates were positively correlated with actual return rates at the country level. Second, we found evidence for a global underestimation of trustworthiness. Crucially, however, while previous research in WEIRD nations suggests a pervasive cynicism bias, our broad cross-cultural sampling reveals that this underestimation is not universal: it is typically present in Western countries but often reversed in non-Western countries, where respondents tended to overestimate trustworthiness. Third, trust miscalibration varied with socio-economic status within countries : higher socioeconomic status was associated with a more positive Trust-Trustworthiness Gap (controlling for objective trustworthiness), and harsher environments, especially childhood unpredictability, were associated with a more negative gap. Fourth, a randomized controlled trial showed that miscalibration can be partly corrected: after receiving information about real return rates, participants who had overestimated trustworthiness reported lower generalized trust, whereas participants who had underestimated trustworthiness reported higher generalized trust, compared to participants who had not received the information. Together, these findings show that generalized trust contains real ecological information, revealing a systematic Trust-Trustworthiness Gap that vary with socioeconomic conditions and can be reduced by providing information about true levels of everyday cooperation.

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LIGHTNING TALKS

Lightning Threat-Contingent Trust: Testing Domain-Specific Calibration of Institutional Trust Across Five Countries

Zakariae Benchrif (School of Collective Intelligence, Mohammed VI Polytechnic University)

Navigating threats often requires trusting others whose competence cannot be directly verified. Evolutionary models of epistemic vigilance suggest humans evolved cognitive mechanisms to calibrate trust based on source characteristics. In ancestral environments, different threats likely demanded different expertise: illness required skilled healers, intergroup conflict required coalition leaders, resource scarcity required those with local ecological knowledge. We hypothesize that these domain-specific trust heuristics persist today, shaping how people allocate trust across modern institutions even though such institutions are evolutionarily novel. This study tests whether trust allocation follows predictable patterns matching threat type to institutional expertise. We predict that health crises will increase trust allocation toward scientific institutions (prestige-based expertise), security crises toward governmental authorities (dominance-based leadership), while economic and natural disaster scenarios may produce greater individual self-reliance or mixed strategies. Using a pre-registered design, participants from five countries (Morocco, Nigeria, India, Colombia, Germany) will be presented with four crisis scenarios and asked to allocate resources across scientific institutions, government authorities, and self-protective measures. Cross-cultural variation in institutional quality and individualism-collectivism allows us to test whether domain-specific calibration represents a universal cognitive strategy or is modulated by local ecological and cultural factors. This research bridges evolutionary psychology and institutional trust literature, testing whether ancestral social cognition shapes modern responses to large-scale crises.

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Lightning Intentionality Framing in Political Rhetoric About Immigration: A Longitudinal Analysis of U.S. Congressional Speech (1880–2020)

Amine Sijilmassi (UM6P)

The American debate over immigration has become increasingly moralized, transforming policy discussions into intractable ideological divides. What is the rhetorical mechanism behind this shift? Drawing on social cognition research, we argue that intentionality—the focus on an actor's internal motives, desires, and goals—is a powerful trigger for moral judgment, making it a potent tool for politicians to use strategically. Using a computational text analysis of 250,000 U.S. congressional speeches (1880–2020), we document a significant rise in intentionality-framed rhetoric regarding immigrants. This shift is concentrated almost entirely in the last 25 years, a period marked by the explosive polarization of the immigration issue in U.S. politics. This trend suggests that focusing on the perceived motives of immigrants is a key way the debate is moralized. By focusing their rhetoric on the internal moral qualities of immigrants, politicians can more easily trigger moral judgments, helping explain why immigration has become such a polarizing force in American politics.

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Fairness, Morality, and Cross-Cultural Norms

Evidence that compensatory justice is a psychological universal

Léo Fitouchi (Institute for Advanced Study in Toulouse (IAST), Toulouse School of Economics)

How do humans respond to wrongdoing? Despite growing interest in restorative justice and recent evidence that people prioritize compensating victims over punishing offenders, current evidence comes almost exclusively from WEIRD populations, providing no basis for claims of universality. Through systematic ethnographic coding of a representative sample of 60 non-industrial societies spanning hunter-gatherers, horticulturalists, pastoralists, and agriculturalists, we find that material compensation is nearly universal (90% of societies) and frequently substitutes for punishment (52% of societies). We then tested whether these practices emerge from a universal psychology by presenting participants from four culturally diverse industrial societies (US, Brazil, Ghana, France; N > 2000) with moral violations from the customary law of two small-scale societies: Nuer pastoralists (South Sudan) and Awlad ʻAli Bedouins (Western Egypt). Despite no knowledge of these customary laws, participants intuitively recreated their compensation scales, with judgments tracking perceived harm to victims, indicating universality in the underlying cognitive architecture. These findings challenge punishment-centred accounts of justice and reveal compensation as a psychological universal.

Altruistic norm enforcement and universal norms across 42 societies

Caroline Graf (University of Zurich)

Social norm enforcement is a key mechanism sustaining cooperation; yet, because humans are group-oriented, norm enforcement may depend on who violates the norm and who is affected. Here we examine the extent to which norm enforcement transcends group boundaries, and the factors associated with more universal forms of enforcement. 15,600 participants from 42 countries completed an online task in which they interacted with others from different societal backgrounds. We measured norm enforcement using the third-party punishment paradigm and manipulated dictator-recipient identity. Participants also estimated the universality of fairness norms, that is, how many people across all 42 participating countries would consider it socially inappropriate for a dictator not to give any points to the recipient. Preregistered analyses show that participants punish ingroup pairs less than outgroup pairs, indicating that parochial punishment biases outweigh motives for altruistic norm enforcement on average. At the same time, individuals who perceive fairness norms as more universal, and those in societies with higher institutional quality, differentiate less between ingroup and outgroup in their punishment behavior. Universalists thus appear to override parochial reluctance to punish ingroup members, thereby reducing ingroup-outgroup asymmetries in punishment. These findings shed light on competing parochial and universal motives in norm enforcement and how universal forms of enforcement may be sustained both within and across group boundaries.

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Laws about bodily damage originate from shared intuitions about the value of body parts

Yunsuh Nike Wee (Psychology, Oklahoma State University)

From the biblical lex talionis to the medieval wergild system and modern workers' compensation laws, laws about bodily damage may originate from neurocognitive mechanisms that capitalize on an enduring regularity: Different body parts vary in their incremental contributions to human functionality. To evaluate this hypothesis, we conducted a preregistered study with materials based on five legal codes from highly diverse cultures and historical eras: the Law of Æthelberht (Kent, c. 600 CE), the Guta lag (Gotland, c. 1220 CE), and workers' compensation laws from the United States, the Republic of Korea, and the United Arab Emirates; and 614 laypeople from the United States and India. The data indicate ordinal agreement in the values attached to body parts by ancient and modern lawmakers, as well as by laypeople in the United States and India. The observed agreement across time, space, and levels of legal expertise suggests that laws about bodily damage originate from shared intuitions about the value of body parts.

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LIGHTNING TALKS

Lightning The Limits of Functional Complementarity Between Violence and Social Control

Chasovskikh Grigorii (Pirogov Russian National Research Medical University)

The conference talk critically reassesses the concept of functional complementarity between violence and social control in theories of morality evolution and social control. Challenging the widespread thesis of an inherent cohesion between violence and moral regulation (C. Boehm, R. Wrangham, S. Bowles, H. Hintis), the study examines how violence is framed as an adaptive mechanism that supports intragroup cooperation and intergroup competition. Using an interdisciplinary approach of cultural anthropology, evolutionary game theory and primatology, the analysis questions the evolutionary inevitability of this cohesion. This contribution identifies methodological limitations and interpretive biases in empirical arguments for complementarity, emphasizing that cultural and social conditions significantly shape the forms and functions of violence. Evidence of cross-cultural variability, the flexibility of social control, and concepts such as “moral bubbles” (L. Magnani) effect reveal the irrationality and potential dysfunction of proactive violence that is often considered as “rational”. The cohesion between violence and moral control is not deterministic but mediated by cultural mechanisms and situational factors. A vast body of literature (e.g., Silva 2015, Mironova, 2016) supports the argument of in-group and intergroup prosociality in the aftermath of military conflicts. This perspective opens possibilities for reducing the social component of violence through institutions and reflective practices. Future research should investigate the cases when violence loses its functional value and what cultural alternatives open paths for more inclusive forms of cooperation

Lightning Social Inferences About Cooperation and Aggression Towards Kin vs. Non-kin

Arian Rajaeian (Department of Psychology, Arizona State University)

Kin selection theory proposes that individuals who preferentially cooperate with kin gain fitness advantages. Consistent with this, humans are generally more altruistic towards kin. Yet, recent studies reveal an apparent paradox: moderate aggression is more common among siblings than non-kin. We suggest that this reflects the distinct motives underlying kin and non-kin cooperation. Because kin cooperation largely depends on the inherent indirect fitness benefits involved, moderate aggression may be less likely to cause relationship disengagement than in non-kin relationships, which mainly rely on reciprocal exchange. Consequently, behavior towards kin may not be indicative of one's overall cooperativeness or behavior in non-kin contexts. We hypothesize that people's social judgments reflect this distinction. We tested this in a 3 x 2 design where participants read vignettes depicting an actor engaging in moderate prosocial or aggressive acts toward either a sibling, friend, or acquaintance. When judging behaviors towards siblings, participants judged the actors' behaviors as less reflective of their disposition, character, or personality, and less likely to generalize to other contexts. Dispositional inferences did not differ between the two non-kin targets, consistent with the idea that these judgments are driven by relatedness rather than relational closeness. A second study will examine the granularity of these judgments by including behavior towards cousins and strangers. We predict that dispositional attributions and beliefs about generalizability will be lower for behavior aimed at cousins than at non-kin, but still lowest for siblings, and that dispositional attributions will not differ based on the three categories of non-kin targets.

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Disgust, Pathogen Avoidance, and Health

Disgust in preschool children: a cross-cultural experimental study

Daniela Dlouhá (Department of Philosophy and History of Sciences, Faculty of Science, Charles University, Prague, Czech Republic, Charles University)

The preschool age seems to be critical for the development of disgust, the affective component of behavioral immunity. Around this time, children begin to explore their environment independently, increasing the need for pathogen protection, and parents or other adults serve as models for disgust development. This study explored disgust development in children aged 36–83 months in two countries with differing lengths of maternity leave, which affects how long the child stays in their home environment. Children were recruited in the UK (Sample1: N=80, 45 girls) and Czechia (Sample2: N=71, 37 girls). They completed experimental tasks, rating visual and tactile stimuli on a 5-point emoticon-based scale (from 1=very nice/pleasant to 5=very disgusting). The visual task involved rating four pairs of photographs (each containing a disgusting and a neutral stimulus), yielding a visual score (the sum of the pair differences). In the tactile task, children rated four objects hidden in boxes, yielding a tactile score (sum of ratings). In each task, stimuli were randomized and presented independently. Parents completed the Child Disgust Scale (CDS). We found no differences in visual or tactile disgust between samples, but UK parents reported higher disgust scores for their children. CDS and visual (but not tactile) scores increased significantly with children's age. Our results suggest that, while parental reports may be shaped by the cultural environment, preschoolers' disgust responses seem to be independent of it. Moreover, visual disgust (also reflected in CDS) develops during this age period, whereas the processing of tactile disgust may be more complex.

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Disgust Sensitivity in Adolescents: Intersexual and Age-Related Differences

Hana Hubová (Department of Philosophy and History of Science, Faculty of Science, Charles University, Charles University)

Disgust is one of the basic emotions and a key component of behavioural immunity. It gradually develops and undergoes various changes throughout life, affected by immunological, hormonal and environmental factors. Higher levels of disgust have repeatedly been observed in women compared to men, possibly reflecting greater reproductive investment, parental responsibilities, and an increased need for protection against pathogens. However, due to limited research on intersexual differences in children's disgust sensitivity, it remains unclear whether these differences are present early in development or emerge later, during adolescence. We tested whether adolescence marks the emergence of sex differences in disgust sensitivity and whether girls' sensitivity increases after menarche. Using the Child Disgust Scale (CDS) and the pathogen and moral domains of the Three Domains of Disgust Scale (TDDS), disgust was assessed in children (N=233, 136 girls) aged 10–15 years. Significant intersexual differences were found only in children aged 10 (for TDDS pathogen, CDS avoidance and CDS total score) and 11 (for TDDS pathogen, CDS affect, avoidance and total CDS), with girls reporting significantly higher disgust sensitivity. A significant decrease in disgust sensitivity with age was observed in girls (for TDDS pathogen, CDS avoidance and total score), but not in boys. No significant effects of pubertal stages (based on self-report questionnaire scores) or menarche in girls were found. Therefore, sexual maturity does not appear to be the key factor in the emergence of intersexual differences in disgust sensitivity. Their origin may lie in earlier development, shaped by biological predispositions and social learning.

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The Ontogeny of Pathogen-Avoidance Psychology

Serkan Özçakan (Vrije Universiteit Amsterdam)

Young children are notorious for their lack of disgust and, more broadly, behaviors that prevent infection. Nevertheless, the precise developmental trajectory of pathogen avoidance is unknown. This cross-sectional study recruited 3,050 UK and US parents of children aged 0 to 120 months. Participants reported observations of 39 pathogen-relevant behaviors in their children over the past month. Hierarchical cluster analysis revealed four developmental clusters of behaviors: Cluster 1 (e.g., mouthing inedible objects, touching poop, mouth on surfaces), present from birth and typically stopped by ~24 months; Cluster 2 (e.g., eating food from the floor, touching dirty surfaces and garbage), emerging at ~12 months and often dropped by ~48 months; Cluster 3 (e.g., taste and touch modalities, facial expression of disgust, assisted hygiene behaviors), emerging at ~18 months and followed by stabilization or slight decline; and Cluster 4 (e.g., independent hygiene routines, vocal expression of disgust), emerging at ~48 months and continuing through middle childhood. Item-level developmental trajectories were also examined to identify onsets, peaks, and offsets. Overall, by ~4 years, an adult-like organization had developed, characterized by infrequent risky behaviors and widespread pathogen-avoidance behaviors. These results align with an exploration–protection trade-off model: limited pathogen-avoidance behaviors during critical windows of exploration may reflect adaptive immaturity rather than developmental deficiency or delay. The present study contributes to understanding the timing of anti-pathogen adaptations by examining both their presence and absence, shedding light on their functional significance.

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Does testosterone predict pathogen disgust sensitivity? Cross-sectional and longitudinal evidence from three diverse developmental and endocrine contexts

Jessica K. Hlay (University of Notre Dame)

Because of its role in mediating physiological immune defenses, testosterone has been hypothesized to also influence behavioral immune responses, including pathogen disgust sensitivity (PDS). Two competing hypotheses suggest the association between testosterone and PDS could be positive (the compensatory prophylaxis hypothesis) or negative (the immunocompetence handicap hypothesis), yet few studies have directly examined this relationship. Thus, our understanding remains limited on the immunomodulatory nature of testosterone on behavioral immune defenses. The present study assessed salivary testosterone and PDS in three samples: 1) cisgender men (N=119) and 2) transmasculine adults (N=29) from the United States, and 3) children and adolescents from Utila, Honduras (N=224; 125 girls). In cisgender adults, testosterone was not significantly associated with PDS. Transmasculine adults with higher testosterone tended to have lower PDS, though the confidence interval included zero (p=0.065). In the Utila sample, testosterone negatively predicted PDS, although this relationship did not meet standard significance levels (p=0.077). Collectively, these findings from three diverse developmental and endocrine contexts fail to support a strong relationship between testosterone and PDS. The data suggest that if a link exists—perhaps weakly aligning with the immunocompetence handicap hypothesis—its effect is not strong and is likely superseded by a more complex etiology for behavioral immune responses.

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LIGHTNING TALKS

Lightning Pathways to Depression: Loneliness as an Evolutionary Stress Signal

Jan Antfolk (Åbo Akademi University, Department of Psychology)

Loneliness is an evolutionarily conserved signal of social disconnection that heightens vigilance for threat and increases physiological and psychological stress. This stress response has been proposed as a key pathway linking loneliness to adverse mental health outcomes, including depression. Using data from a Finnish population-based sample of 9,752 adults, we tested whether perceived stress mediates the association between loneliness and depression, and whether this process varies by age or sex. Loneliness was directly associated with depression, and this association was partially mediated by perceived stress. Women reported higher levels of loneliness, stress, and depression than men. The mediation effect was present across ages and both sexes but was strongest among young women and weakest among older adults. These findings are consistent with an evolutionary stress-based account of loneliness and suggest that age- and sex-related differences in social resources and coping may shape vulnerability to depression.

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Lightning Fertility Preferences During Crises: Finnish Men and Women's Reactions to the COVID-19 Pandemic and the War in Ukraine

Anna Jurczak (Department of Environmental Health, Faculty of Public Health, Jagiellonian University Collegium Medicum, Poland; Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, Poland., Medical Collage Jagiellonian University)

Background: Crises often leads to declines in fertility preferences in high-income societies. However, some groups may experience an increase in fertility preferences under such conditions. Objective: This study examines how Finnish men and women of childbearing age reacted to the COVID-19 pandemic and the 2022 Russian invasion of Ukraine in terms of changes in their fertility preferences. Method: Using a nationally representative survey conducted in August 2022 (n=1960, men = 859, women n =1101, aged 20-45), we analyzed a self-reported changes in fertility preferences and plans to have children in response to the two crises. Responses were categorized into four groups: no change, increase, decrease, or don't know. These outcomes were analyzed in relation to socio-demographic variables using multinomial logistic regression. Additionally, we conducted a qualitative analysis of open-ended responses to identify dominant themes explaining the observed changes. Results: Overall,17.2% reported changes: 10.1% decreased, 7.1% increased preferences. Men more likely increased for both crises; women decreased due to war (not pandemic). Parents more likely increased for pandemic (not war). Unemployed less likely changed their preferences compared to employed respondents. Qualitative analysis revealed four key themes: (1) postponing childbearing due to: (a) existential insecurity and negative outlook on the world, (b) war-related fear and insecurity, (c) concerns about children's future and well-being;(2) accelerating childbearing was motivated by family values.

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Religion, Ritual, and Belief

Evidential Vulnerability of Religious Beliefs in the Context of Petitionary Prayers

Ze Hong (Department of Sociology, Unviersity of Macau, University of Macau)

Petitionary prayers—requests made to a deity for specific outcomes—are widely practiced across religious traditions. While their efficacy remains a subject of theological debate, they exhibit remarkable resilience to disconfirmation. In three pre-registered studies—a field study in China and two global surveys via Prolific—we examined how religious believers (Christians, Muslims, local deity worshippers, and Hindus) update beliefs and behaviors in response to prayer successes or failures for both hypothetical co-religionists and themselves. Results indicate that belief updates generally follow a Bayesian pattern, with increases after prayer successes and decreases after failures, though with an asymmetry favoring belief reinforcement. Notably, participants from the Prolific sample exhibit sensitivity to the prior probability of prayed-for events, attributing greater belief increases to improbable outcomes. Muslims predict belief increases even after failed prayers, consistent with doctrines framing hardships as divine tests. Across traditions, believers estimate continued prayer regardless of past outcomes, with monotheists displaying stronger resilience. These findings illuminate the cognitive and cultural mechanisms that buffer religious beliefs against counter-evidence, contributing to debates on the evidential vulnerability of religious credence and its parallels with epistemically self-sealing belief systems.

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Mysterious illnesses have supernatural and ritualistic cures: Evidence from 3,655 century-old Irish folk cures

Aiyana Koka Willard (Psychology, Brunel University of London)

Why and when do people draw upon religious and supernatural solutions to problems? Cognitive scientists and anthropologists have proposed a range of answers, stressing religion and ritual's capacity to alleviate anxiety, create a sense of order, or explain otherwise inexplicable events. Here we leverage a unique dataset of 3,655 folk cures for 35 diseases, collected in 1937/8 from a mostly rural Irish sample born roughly between 1850 and 1925. Since the diseases vary in theory-relevant ways and the cures vary in the degree to which they include religious and supernatural elements, this dataset facilitates a unique test of these predictions in a pre-modern western population. In pre-registered tests, we find that disease judged by two doctors to have causes and mechanisms that would be unclear to the patients were more likely to have supernatural/religious treatments. The severity of the disease, the anxiety it provoked, the disability it likely caused were unrelated to religious and supernatural cures, contra common predictions.

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Motivational and cognitive factors underlying religious conversion: The case study of Chiapas, Mexico

Patricio Cruz y Celis (Anthropology Department, University of California, Davis)

Why do people adopt new religious beliefs and behaviors, especially from strangers or when doing so is costly? Using ethnographic household-level data from Tseltal Mayans from Tenejapa, Mexico, I test three hypotheses for why people would be motivated to learn a causally-opaque trait from dissimilar demonstrators: need-based (e.g., material) motivations, relational (e.g., normative) motivations, and biased social learning. I use a model-comparison approach on a quasi-case-control dataset (comparing exposed-and-converted against exposed-but-not-converted individuals) and explore the strengths and limitations of each hypothesis.

The role of religiosity in a UK cohort study

Isaac Halstead (University of Bristol)

Greater religiosity has often been linked to higher levels of prosociality, yet much of the existing evidence is based on small, US-based student samples, with limited control for confounding and little attention to reverse causation. This study sought to address these limitations by examining prospective associations between (i) religiosity (beliefs and practices) and later prosocial values and behaviours (forgiveness, gratitude, agreeableness, and self-reported altruism), and (ii) prosociality and subsequent mental health outcomes. Data were drawn from the Avon Longitudinal Study of Parents and Children (ALSPAC; RQ1 n = 4,044; RQ2 n = 3,158). Religiosity was assessed at age 27; altruism, forgiveness, gratitude, and agreeableness at age 29; and depression, anxiety, wellbeing, and flourishing at age 31. Logistic and linear regression models were adjusted for a wide range of confounders. Multiple imputation was used to minimise selection bias, and sensitivity analyses assessed robustness to unmeasured confounding. In the fully adjusted models, religiosity was consistently associated with higher subsequent altruism and forgiveness (β = .08–.21 and β = .10–.28, respectively), but not with gratitude or agreeableness. Gratitude showed consistent associations with later mental health and wellbeing outcomes (β = .10–.35), whereas other prosocial values and behaviours did not. These findings suggest distinct prospective links between religiosity, specific prosocial traits, and later mental health.

Evolutionary Medicine and Public Health

Burial Rites time of under five children and the possibility for CHAMPS MITS procedure in Bauchi State, Nigeria

MAGAJI DAFI (CHAMPS NETWORK, NIGERIA, Abubakar Tatari Ali Polytechnic Bauchi)

Abstract This study explores the sociocultural practices surrounding the timing of burial rituals for children under five in Bauchi State. Conducted as part of the CHAMPS (Child Health and Mortality Prevention Surveillance) initiative, called minimally inversive tissue sampling (MITS). The research employed qualitative methods, including Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs), to investigate community beliefs, norms, and practices influencing how the burial timing under five child deaths is conducted. Findings reveal that the death of a child under five years is often perceived as a spiritual event, eliciting subdued public mourning and expedited burial processes, typically within hours of death, to adhere to religious and cultural expectations, especially within Islamic contexts. Notification of such deaths is usually limited to immediate family and community elders, with minimal formal reporting to health or government systems. The study highlights that these practices significantly hinder MITS consent, verbal and social autopsies, affecting data accuracy on child mortality. The research underscores the need for culturally sensitive approaches to mortality surveillance, suggesting community engagement, religious leader involvement, and trust-building measures to improve consent and participation in child mortality investigations. This study provides valuable insights into how cultural and religious values shape death-related behaviours, informing the design of responsive and respectful child mortality data collection frameworks. Keywords: Burial rites time, under five children, CHAMPS MITS, procedure, sociocultural practices.

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Structural violence and the inference problem in disease stigma

Kristopher M Smith (Anthropology, Washington State University)

Pathogen avoidance psychology is often invoked to explain disease stigma as an output of evolved adaptations, yet many stigmatized disease associations emerge in contexts where political, religious, and economic forces shape who is marked as threatening. This raises a fundamental inference problem for evolutionary accounts of disease stigma. Drawing on fieldwork with victims of leprosy in Zenebework, Ethiopia as a critical case study, we show that leprosy stigma is multifaceted and associated not only with contagion but also disability, poverty, and hereditary sin. These associations are produced and reinforced by structural and symbolic violence embedded in state policies and religious traditions, and the resulting stigma justifies further harms against victims of leprosy, including displacement, infrastructural neglect, and suppression of grassroots support efforts. While visual symptoms of leprosy plausibly cue pathogen avoidance responses, the feedback loop between stigma and structural violence distorts and amplifies these responses, making it difficult to distinguish between aspects of disease stigma that reflect evolved pathogen avoidance adaptations and those that reflect socially and politically produced amplifications. We argue that leprosy is not unique in this respect; comparative cases such as tuberculosis, Ebola, and HIV similarly demonstrate how structural violence shapes disease stigma. We do not deny the existence of evolved adaptations for managing pathogen threats; rather, we argue that evolutionary accounts of pathogen avoidance psychology remain theoretically incomplete and risk causal misattribution without careful attention to how evolved mechanisms interact with cultural, institutional, and political processes.

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When BMI Is Not Enough: Fat and Fat-Free Mass Indices in Two Caucasus Populations

Daria Dronova (Institute of Ethnology and Anthropology of the Russian Academy of Sciences)

In the context of the global obesity epidemic, detailed assessment of body composition has become increasingly important in anthropology and related biomedical disciplines. Height-normalized indices of fat-free mass (FFMI) and fat mass (FMI) provide a more informative alternative to body mass index (BMI), allowing finer evaluation of population, sex, and age variation in body composition, particularly in cross-population analyses. The present study examines sexual dimorphism in morphological characteristics and establishes reference values for FFMI and FMI among Kabardian and Balkar university students classified by BMI categories (low weight, normal weight, overweight, and obesity). The sample includes 318 individuals (136 men and 182 women) aged 17–23 years (mean age 18.76 ± 1.47), representing two ethnic groups of the North Caucasus. Anthropometric measurements were collected, body composition was assessed using bioelectrical impedance analysis (Tanita BC-601), and indexed body composition parameters were calculated. Results demonstrate pronounced sexual dimorphism in both morphology and body composition. Regression analyses reveal that associations between BMI and FFMI, FMI, and percentage of fat mass vary by sex and ethnicity. Women, particularly Balkars, show more stable and homogeneous patterns, whereas men display greater individual variability. Reference values for fat-free mass, fat mass, and fat mass percentage at fixed BMI levels were established for both ethnic groups. These findings confirm the high informative value of FFMI and FMI for analyzing population and sex differences in body structure and support their use in anthropological and clinical research as a basis for refined somatic status assessment and reference standards.

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Adaptationist approaches to philosophical questions

Adaptationism Transforms the Problem of Free Will

Michael Osfeld (Psychological & Brain Sciences, University of California, Santa Barbara)

Whether human beings—by virtue of their genes, psychology, or physics—are free to make choices has concerned philosophy for over 2000 years, leading to an endless debate with no resolution in sight. More recently, experimental philosophers and neuroscientists have sought to settle the matter definitively, using the tools of modern science. Here, we suggest that the problem of free will cannot be solved until the evolved architecture brought to bear on the problem is made explicit; an example of needing to do an evolutionary psychology of psychology—in which we treat the perception of a problem itself as a psychological phenomenon, to be explained through the lens of adaptionism. Here, we present (i) a summary of our adaptationist analysis of the problem and (ii) the results of four experiments testing the unique predictions that fall out from it. Our analysis suggests that the intuitive notion of free will is an output of adaptations concerned with assessing the effectiveness of interventions upon planning and goal-based systems within the self and third-parties, whose function is to allocate effort at convincing others to change their behavior, and/or investing internal processing towards outcomes that depend on the state of planning and goal-based systems within one's own body envelope (as opposed to those outcomes that do not). This model (i) explains the puzzling features of the free will debate, and (ii) more importantly, sheds light on a new class of adaptations concerned with intervening upon the world, including dealing with strategic manipulation.

Co-authors: David Pietraszewski (University of California, Santa Barbara, US)

The evolution of the property instinct as a solution to the problem of avoiding social parasites and predators

Juan Perote-Peña (University of Zaragoza)

I propose a naturalistic interpretation of John Locke's property theory in which the appropriation of an un-owned resource by "mixing" it with personal labor is understood not as signal to others to avoid rivalry and conflict or an extension of the property of our own bodies, but as evidence of a personal investment in the resource that, if taken by any other would imply the same type of exploitation of a parasite or free-rider. Humans, in particular, have a specialized neurocognitive system to detect cheaters (Social Contract Theory, Cosmides & Tooby, 1992, 2000, 2005). Social institutions of property rights (and their associated instincts) can therefore be interpreted as an institutional-social immune system (generated as a spontaneous order) against the risk of damage from exploitation by social parasites, a view in line with Thornhill & Foncher (2014). I ground the evolution of this cognitive adaptation on a game-theoretical model that can avoid the problems of Maynard-Smith's classical hawk-dove-bourgeois game and its variant in Gintis (2007). These previous models predict equilibria where property rights are always challenged by outsiders for sufficiently high fitness value of the resource at stake, providing little incentives to invest in improving its value. By contrast, my model can reverse this result by considering a more realistic sequential version of the hawk-dove game where compromise is impossible. This game can be proved to be equivalent to a new contest game that makes increasing the value of the property a good defense strategy against potential challengers and social predators.

The evolution of autonomy

David Pietraszewski (Psychological & Brain Sciences, UCSB)

Organisms should be designed by natural selection to avoid being manipulated by others. But how does evolved software detect when it is being manipulated? This apparently simple question leads to a number of non-trivial problems, and implies a number of design features in human cognition that have not yet been adequately subjected to empirical or theoretical analysis. This talk will present an initial adaptationist task analysis of what is required from a cognitive architecture for detecting and avoiding coercion. The results will imply, among other things, that (i) a notion of "constraint" is only meaningful from the perspective of evolved difference-detecting mechanisms, and applies only to evolutionarily-recurrent classes of events that could be changed or ameliorated by the organism's control systems, (ii) detecting constraint requires a self-representation of competence and ability, (iii) this in turn, is highly non-trivial, because competence and ability are non-stationary—differing across the lifespan (e.g., babies are less competent than adults), and changing day-to-day and moment-to-moment (e.g. getting sick, injured, etc.), (iv). goal-based, means/end cognitive systems play an important role in establishing provisional goals, anchored by cues of fitness-proxies, and these in turn give meaning to "competence and ability"; the expression of this last class of adaptations likely underlies a lot of the least-well understood aspects of human cognition from a mechanistic perspective (consciousness, self-control, notions of competing interests within the self, and so on). Testable predictions and future directions for empirical research will be presented.

Solving the "Meaning Problem" in the Evolution of Music: A Teleosemantic Account

Tomasz Szubart (Institute of Philosophy and Cognitive Science, University of Szczecin)

A persistent challenge in evolutionary accounts of music is the "meaning problem" (Savage, 2019): unlike language, music appears to lack clear referential semantic content, making it hard to say what musical signals/representations/symbols are about and how they acquire normative meaning across cultures. I offer a theory-first solution grounded in teleosemantics. Following Millikan (1987), musical forms can have proper functions when their historical success within producer–consumer systems explains their continued reproduction. On Shea's(2018) mechanistic criteria, those functions yield representational content precisely when consumer mechanisms exploit structural carriers (contour, meter, tempo, timbre, tension–release) to guide regulation and coordination. Thus, musical tokens possess stance-like contents (e.g., soothing, lament, rousing synchrony) fixed by selection-like histories—often via cultural selection—which also underwrite conditions for misrepresentation and malfunction (failed uptake, context drift, enculturation gaps). The framework reconciles adaptation vs by-product debates (exaptive origins, functional stabilization), unifies proximate mechanisms with ultimate payoffs (bonding, coalition display, parental care), and explains cross-cultural variability as code diversity over biologically functionally stable roles. Function fixes content; structure carries it; consumers exploit it—this allows us to 1) naturalize musical meaning within a broad evolutionary perspective (Cross 2009; Mehr et al. 2023) and 2) exaptively respond to reductionism objection.

Behavioral Ecology and Subsistence

The Farm Optimization Theory: A collection of Human Behavioral Ecology models

Dithapelo Medupe (Botswana-UPenn Partnership, Pennsylvania State University)

Multilinear evolution linked cultural trajectories to ecological conditions using anecdotal data, often without clearly specifying the ecological variables involved. The oasis-goldilocks hypothesis of agricultural intensification—a multilinear, evolution-inspired theory—argues that food production systems are shaped by factors such as water availability, biodiversity, and terrain characteristics. This hypothesis withstood rigorous statistical testing. However, it overlooks individual-level decision-making in response to environmental constraints. This paper introduces the Farm Optimization Theory (FOT), a general framework for modeling how individual-level decisions in food production emerge in response to ecological risk, and how these decisions scale to shape population-level patterns over time. Rooted in human behavioral ecology, FOT posits that farmers aim to optimize resource acquisition while navigating risk. We further demonstrate FOT using a miniature agent-based model that simulates a single farmer making decisions about farm expansion based on harvest outcomes over a rolling five-year period under different levels of risk. The farmer follows a simple heuristic: if harvests are consistently good, the farm can be expanded; otherwise, farm size remains optimized to current conditions. The model assesses whether this rule can regenerate divergent growth trajectories observed in regions such as Sumer, Mesopotamia, and Sub-Saharan Africa. In low-risk environments, such as Mesopotamia, the likelihood of five consecutive good harvests is high favoring intensification. In more variable or marginal ecologies, intensification may not emerge as the optimal strategy. The model highlights how ecological risk mediates the relationship between individual behavior and cultural evolution, offering an agent-based perspective on the uneven emergence of intensive agriculture.

Co-authors: Mary Shenk (Pennsylvania State University, US); Luke Glowacki (Boston University, US)

Trail formation in human social foraging

Marina Papadopoulou (Adaptive Rationality, Max Planck Institute for Human Development)

Across animal societies, trail formation is a unique example of how conspecifics can coordinate across large spatiotemporal scales to navigate complex environments and allocate resources. As ants follow pheromones, humans, since our early societies, can follow visual cues and pathways created by the previous passing of others, leading to the emergence of trail networks. Quantifying the adaptive advantage that this behaviour offers in terms of energetic costs and social information propagation in nature remains, however, extremely challenging. Here, we tackle this by using a unique empirical dataset of human social foraging: high resolution tracking data from field experiments of ice-fishing competitions in Finland. Individual ice-fishers, varying in physical conditions, experience and skills, forage in large frozen lakes using social information while competing with each other for the highest catch success. By analysing their GPS trajectories, we investigate the formation and use of trails during 3 hour competitions across different weather conditions and resource abundance, focusing on the individual decision-making in relation to a participant's state (e.g., catching success). Based on our findings, we develop an agent-based model of trail formation inspired by other social systems in the animal kingdom but adjusted to the characteristics of our empirical dataset to gain a mechanistic and functional understanding of these emergent trail networks. Overall, our work aims to study human social foraging under a comparative lens, identifying core principles of reinforcement and spatial organization across species, while highlighting unique human traits that supported the evolution of our societies.

Historical, intergenerational, and environmental influences on children's growth in rural Timor-Leste

debra judge (Univ of Western Australia, Univ Western Australia)

Addressing challenges to the physical development of children living in populations that have experienced historical psychosocial and resource challenges, as well as contemporary resource shortages, requires a nuanced understanding of the influences on developmental trajectories. Responses to economic development assistance may depend on intergenerational constraints, early developmental conditions, and the particular challenges facing a particular community. We use comparative local history, agro-ecological information, maternal and paternal traits, gestational conditions, and contemporary household resource data in three Timor-Leste communities to characterise patterns of growth in young rural children. The influence of maternal height on standardized child height for age is of greater magnitude and spans a greater period of development than does that of paternal height. Interbirth interval preceding a child's birth is also significant and peaks in the 2-5-year period when Timorese children's growth is most problematic. When sex differences in child growth appear (after age 5), girls show better height for age than do boys. Children, and their parents, are shortest in the mountain community where famine, violence, and familial disruption was more extensive than in the coastal and island lowland communities. While there is evidence that large scale changes in environmental quality (emigration, electricity) are associated with improved child growth, small scale changes in resource availability appear to have less reliable impact. The youngest children are now being born to parents whose early development was less traumatic and provide an opportunity to compare effects of resource shortage along to resource and social environment challenges.

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DAY 4

Friday, May 16

4

Life History and Reproductive Strategy

Better relationships with parents make children less promiscuous: Evidence for developmental calibration of sexual strategies from a genetically informed adoption study of 617 families

Ryan Dobson (Department of Psychology, University of New Mexico)

Psychological evolutionary developmental (evo-devo) theories posit environmentally mediated parenting effects in the development of sexual strategies, but research designs that can severely test these claims by removing environmental and genetic confounding are uncommon. A study of 617 two-offspring families implemented an adoption design (409 families had one or two adopted children; 208 had two non-adopted children) to remove genetic and shared environmental confounding from the association between parent-child relationship quality (assessed with a 37-item parent environment questionnaire) and children's number of sexual partners. Children with better relationships with their parents at time 1 (Mean age = 17) had fewer sexual partners at time 2 (Mean age = 20) in both non-adopted and adopted families, ruling out passive gene-environment confounding, and within as well as between families, eliminating all family-wide environmental confounds. These findings provide rarely demonstrated but clear support for an environmentally mediated pathway posited by evo-devo theories. Nonetheless, the design does not provide a severe test (i.e., eliminate all, or most, alternative hypotheses) of evo-devo theories because the operative mechanism remains unclear. From the current study, and other studies, it is unclear whether the parenting effects on child sexual partnering operate by (1) increasing children's propensity to engage in uncommitted sexual behavior, and/or (2) increasing children's likelihood of quickly cycling through committed relationships, and/or (3) something else entirely. I discuss how genetically informed designs that flesh out individual-level trajectories of sexual strategies are needed to discriminate between alternatives and hence offer promising directions for future severe tests.

Co-authors: Tobias Edwards (University of Minnesota, US); Alexandros Giannelis (University of Minnesota, US); Geoffrey Miller (University of New Mexico, US); Magdalena March (University of Minnesota, US)

Testing Evolutionary Hypotheses of Parental Investment Using a Natural Experiment

Miranda Kit-Yi Wong (University of Warwick)

Evolutionary theories of parental investment propose that parents allocate resources to maximize reproductive success by calibrating investment to child reproductive value (i.e., expected genetic contribution to future generations), parental resources (i.e., socioeconomic status; SES), or their interaction. However, it remains unclear which of these parameters predominates in high-income societies. Using preterm birth as a natural experiment for variation in reproductive value, we analyzed data from 607 preterm and 859 full-term children from the Bavarian Longitudinal Study across seven domains of parental investment from birth through childhood. We applied linear mixed models to test alternative evolutionary hypotheses derived from reproductive value-based allocation (H1), resource-based allocation (H2), and contingent parental investment model (H3). Results provided strong and consistent support for H2: high-SES parents invested more in their children than low-SES parents across most domains, regardless of prematurity. Prematurity independently reduced parental investment in some domains, providing partial support for H1. Importantly, we found no evidence for the interaction predicted by contingent parental investment model (H3). These findings suggest that, in contemporary high-income contexts, parental resources are the primary driver of parental investment. However, for hands-on investment (i.e., infancy care, stimulating and sensitive parenting), parents of all SES tend to favor children with higher reproductive value (i.e., full-term, healthy children). These patterns are unlikely to be conscious or deliberate but are evident at an aggregate level. Overall, family SES and prematurity are independently and additively associated with parental investment, with implications for policies aimed at reducing inequities.

Co-authors: William E. Copeland (University of Vermont, US); Dieter Wolke (University of Warwick, GB)

Menopause averted a midlife energetic crisis with help from older children and parents: A simulation study

Edward H Hagen (Department of Anthropology, Washington State University)

The grandmother hypothesis is the most influential account of the evolution of menopause in humans, but other theories warrant investigation. Here I use simulations to investigate two theories that ground the evolution of menopause in biparental care. Kaplan et al. (2010) proposed a “two-sex” learning and skill-based account, termed the Embodied Capital Model (ECM), in which the high energetic burden of caring for multiple, slow-developing offspring was met with biparental investment. Menopause evolved because the physiological costs of pregnancy and childbirth increased with age, yet productivity also increased with age, and the benefits of transferring resources to adult children and their offspring eventually outweigh the benefits of continued reproduction. Kuhle (2007) proposed the “father absent” hypothesis in which the higher mortality rate of husbands would often have left wives without the resources to raise young children, selecting for early reproductive cessation in monogamous couples. Simulations of hunter-gatherer energy consumption and production across the lifespan, taking account of age- and sex-specific survivorship, interbirth intervals, and varying rates of strength and foraging skill acquisition typical of contemporary foragers, reveal a pronounced midlife energy deficit that could be averted by ceasing reproduction midlife and receiving energy transfers from both younger couples (e.g., brideservice) and from older parents (the grandmother hypothesis). Menopause emerges as an integral and strictly necessary component of the unique human pattern of relatively short interbirth intervals and a long period of juvenile dependency, supporting and extending the ECM.

Using SocioMap's Ethnicity Mapping Project to examine the dimensionality of life history traits across over 2000 ethnic groups worldwide

Daniel Hruschka (School of Human Evolution and Social Chage, Arizona State Uniersity)

Today, more than a thousand public use datasets provide valuable demographic, behavioral, and attitudinal data on ethnic groups worldwide, presenting new opportunities for examining the roots of human variation in life history traits across human groups. However, bringing data on these cultural and ethnic groups together across these many disparate datasets poses serious challenges. To address these challenges, SocioMap's Ethnicity Mapping Project provides a web-based application (https://catmapper.org/sociomap) for researchers to find where data is available on over 20,000 ethnic groups worldwide and to bring that data together across more than 500 datasets transparently and reliably. This paper illustrates how SocioMap can be used to link demographic, behavioral, and attitudinal data for ethnic groups across a range of datasets (e.g., Demographic and Health Surveys, Multiple Indicators Cluster Surveys, regional attitude barometers and values surveys) to examine the dimensionality of life history traits across over 2000 human ethnic groups. In addition to presenting the results of these analyses, we outline the opportunities for linking data for a range of other analyses related to evolution and human behavior.

Co-authors: Sharon Hsiao (Santa Clara University, US); Harsha Kasi (Arizona State University, US); Robert Bischoff (Arizona State University, US)

Science, Methodology, and Evolutionary Theory

Why are the evolutionary behavioural sciences vulnerable to exploitation by race scientists?

Rebecca Sear (Brunel University London)

"Race science" is an example of how science can be misused to promote misinformation. Race scientists claim that there are evolved differences between races in behavioural traits such as intelligence, criminality and sexuality. Genetic evidence is clear that race is not a useful biological concept, and so such evolved differences between races cannot exist. Yet papers are frequently published in psychology journals which make race science claims, including journals in the evolutionary behavioural sciences. This paper will analyse how race science has spread through the academic literature, using the examples of J Philippe Rushton's "differential-K theory" and Richard Lynn's "national IQ" database. Both examples have been scientifically discredited; methodological critiques have repeatedly demonstrated that there is no scientific merit to either example, yet both continue to thrive in the evolutionary behavioural sciences. Such examples are highly damaging to scientific progress. The continued existence of political ideology masquerading as science hampers our understanding of the world, and wastes the time of researchers, reviewers and editors who mistake this work for science, or who have to continue critiquing such work long after the scientific marketplace of ideas should have ejected these examples. This paper will document the continued existence of race science in evolutionary behavioural science journals, and consider why the evolutionary behavioural sciences appear vulnerable to exploitation by those who wish to misuse science to promote political narratives.

The Mismeasurement of Men: Psychological Scales Need Evolutionary Psychology Not Ideology

William Costello (University of Texas at Austin)

Reliable and informative measurement is a crucial component of psychological science. When scales are grounded in sound theory they enable precise hypothesis tests, cumulative knowledge, and meaningful applications. When scales are shaped more by ideology than science, however, they risk misclassifying respondents and obscuring the phenomena they aim to assess. We argue that several measures targeting male sexual attitudes and gendered beliefs, the Masculine Sexual Entitlement Norms Scale, the Toxic Masculinity Scale, and the Benevolent Sexism Scale, conflate empirical knowledge with problematic attitudes. Drawing on evolutionary psychology, we show how these instruments often treat awareness of well-established findings (e.g., men's greater desire for sexual variety, men's higher sex drive and women's mate preference for dominant men) as evidence of entitlement, toxicity, or sexism. Our discussion broadens our critique in three ways: (1) several allegedly masculine items are not meaningfully sex-differentiated and are shared by many women; (2) some items inadvertently pathologize women's own mate preferences (e.g., preferences for protection and provisioning); (3) many items require subjective moral judgments or rely on cognitive distortions such as mindreading to infer entitlement, toxicity, or sexism. We refer to this pattern as The Mismeasurement of Men. We argue that had the scale's authors been familiar with evolutionary psychology's findings, many of the items could not have been written in their current form and unfairly labelling scientifically literate as entitled, toxic, or sexist could be avoided.

Co-authors: Saffron M. Lyle (University of South Wales, GB); Andrew G. Thomas (Swansea University, GB); Steve Stewart-Williams (Nottingham University, MY); Tania Reynolds (University of New Mexico, US)

Prediction and Causal Inference as Subtasks of Adaptive Problems

Patrick Durkee (Department of Psychology, California State University, Fresno)

Prediction and causal inference are distinct computational problems. Prediction aims to estimate current or future states of a system based on available information, while causal inference aims to estimate how changes to one part of a system affect another. Prediction supports forecasting and classification, whereas causal inference guides intervention to shape outcomes. Crucially, optimal prediction models do not necessarily provide unbiased or practically useful estimates of causal effects, and models that estimate causal effects accurately may not optimize predictive accuracy. This is because predictive models can exploit any observed statistical regularities, even if they arise from confounding or selection effects. Causal inference, on the other hand, requires careful variable selection to prevent bias: confounds must be conditioned on, while mediators and colliders generally should not be. To illustrate the value of this distinction for evolutionary psychology, I use simulations to explore how decomposing adaptive problems into prediction and causal inference tasks can inform algorithmic descriptions of psychological mechanisms. The distinction is especially useful for determining what variables the mind should leverage to solve adaptive problems. I argue that deconstructing adaptive problems in this way can generate more precise, testable predictions about the design of the mind.

Why All Theories of Consciousness Are Unsatisfying

David Pinsof (UCLA)

Scholars have long been vexed by the hard problem of consciousness—how neural mechanisms give rise to felt experience. But only recently have scholars confronted the "meta-problem" of why it seems like there is a hard problem (Chalmers, 2018, p. 6). Here, I offer a solution to the meta-problem that rules out any satisfying solution to the hard problem. I argue that our concept of consciousness is neurally bound up with the default mode network (DMN) involved in empathizing with loved ones, remembering episodic events, and simulating possible experiences. The DMN has reciprocally inhibitory connections with the task-positive network (TPN) involved in exploiting tools, objects, causal models, and dehumanized agents. Since it would have been maladaptive for ancestral humans to empathize with their prey, manipulate their imagined selves, feel their tool's pain, or treat their children as objects, natural selection favored an antagonistic relationship between these two brain networks. Unfortunately, our concept of neural mechanisms activates the TPN, while our concept of consciousness activates the DMN. So when we reflect on the hard problem, thoughts about the explanans (neural mechanisms) suppress thoughts about the explanandum (conscious experience) and vice versa, creating the illusion of a hard problem of consciousness. I use this solution to the meta-problem to shed light on a variety of thought experiments in the philosophy of mind, from philosophical zombies to Mary the color scientist. I conclude by presenting an integrative theory of consciousness that no one will find satisfying.

Intergroup Dynamics and Collective Action

Intergroup violence without essentialist beliefs: The case of Turkana cattle raiders

Matthew Zefferman (Naval Postgraduate School)

Ethnic essentialism is hypothesized to be associated with intergroup hostility. However, whether it is a universal aspect of social cognition and the causal direction of this association is unclear. Perhaps essentialism causes intergroup violence because it makes violence against out-group members more palatable. Or perhaps essentialism develops as a response to intergroup violence. Using "switched at birth" vignettes, we assessed the extent to which Turkana pastoralist warriors essentialize about themselves and the neighboring Toposa. The Turkana and Toposa engage in mutually lethal cattle raids, which account for about half of adult Turkana male mortality in our study area. We found that only four of 162 (2.5%) Turkana surveyed expressed essentialist beliefs about themselves and the Toposa, suggesting that ethnic essentialism may not be a widespread feature of social cognition nor a necessary ideology for engaging in intergroup hostilities. Additionally, the four participants who expressed essentialist beliefs were not very different than non-essentialist survey respondents in their levels of combat exposure, killing of enemies in combat, witnessing morally injurious events, and moral judgments about killing Toposa. However, one of the four was an outlier in offensive raiding and killing, anecdotally suggesting that essentialism may contribute to, but be insufficient for, very prolific raiding in individual Turkana. The cultural similarity between the Toposa and Turkana, a common origin story, well-known examples of cross-group adoption and assimilation, and a tradition of cross-border friendships may explain the Turkana's low frequency of essentialist beliefs despite widespread lethal violence.

Co-authors: Sarah Mathew (Arizona State University, US)

Territorial expansion, group augmentation, and the evolution of human cooperation

Lachlan von Pein (Centre for Psychology and Evolution, University of Queensland, University of Queensland)

The idea that violent intergroup conflict played a key role in the evolution of human cooperation – commonly labelled the parochial cooperation hypothesis – has long been controversial within evolutionary psychology. On the one hand, this hypothesis ultimately requires cooperation to have evolved via some kind of group selection mechanism – something many consider problematic given ancestral population structure. On the other hand, intergroup conflict clearly confers substantial fitness benefit to victorious groups (e.g., territorial defence, access to resources, reproductive opportunities, etc.), and widespread observations of intergroup conflict within contemporary hunter-gatherers suggest this behaviour may be evolutionarily maintained. To date, mathematical models have found mixed support for the parochial cooperation hypothesis; however, these models' assumptions have thus far prevented key aspects of intergroup conflict from being represented. In particular, models often ignore territorial considerations and restrict groups to maintain constant size, meaning that aggressive groups cannot benefit from a positive feedback loop wherein intergroup conflict leads to territory expansion, population increase, and, in turn, further success in future intergroup conflict. Using a sophisticated agent-based model, we address these limitations and assess the capacity for intergroup conflict to drive the evolution of cooperation when continual territory/population expansion is permitted. Groups in our model are spatially organised and fight to occupy resource-rich territory, with each group's resources dictating how many agents they can sustain. Consistent with the parochial cooperation hypothesis, our results suggest that intergroup conflict was indeed capable of imposing substantial selection for cooperation throughout human evolution.

Co-authors: Brendan Zietsch (University of Queensland, AU); Thomas Suddendorf (University of Queensland, AU)

Trading with the enemy? Endowment effects in intergroup trades among residents of Mosul, Iraq

Eric Skoog (Swedish Defence University, Department of War Studies)

Endowment effects (an individual's difference between the asking and buying price of the same good), have been argued to have an evolutionary origin. In line with this argument, endowment effects have been observed in non-human primates, and were found to be more pronounced for goods that would have provided fitness benefits in ancestral environments. However, to what degree these effects are impacted by contextual factors has thus far received limited attention. I argue that an adaptive account of endowment effects would need to consider e.g. the salience of threat or the availability of resources, which might impact the affordances, and thereby the valuation, of a good. In an experimental study with 1000 Sunni Arab inhabitants of Mosul, Iraq, who lived there during the 2016-2017 battle for the city, I test whether endowment effects in trades for familiar goods are affected by the group affiliation of the trading partner, as well as experiences of violence. The results show that while endowment effects are larger for interactions with potentially threatening outgroup members (Shia Arabs), this is mainly driven by losing resources, in particular having one's house destroyed. No such effect was found for other types of violence exposure. Furthermore, access to resources seems to act as a buffer, reducing this effect when other resources are available. This is in line with the evolutionary argument that higher valuation of a possessed good is an adaptive response to threats, making individuals less willing to part with a potentially survival relevant resource.

Who are the early adopters of new collective rituals?

Cristina Moya (Anthropology, University of California Davis)

Most research on collective rituals like pilgrimage focuses on how these practices can be maintained, rather than the bigger puzzle of how they emerge. Any early adopter, by definition, does not get the benefits of partaking in a collective ritual, and worst yet, risks the contempt or rejection of other group members. Furthermore, many of the purported benefits of religious rituals are, at best, difficult to assess. The puzzle of explaining ritual emergence becomes all the more involved when we consider that what we know about early adopters comes disproportionately from the diffusion of very idiosyncratic social phenomena: technologies. Using longitudinal data from the Peruvian Altiplano where a new pilgrimage site has emerged in the last decade, we test various hypotheses derived from the diffusion of technology and religious conversion literatures, in part by contrasting pilgrims to the new and a similar, but long-established site. In line with the diffusion of technology literature, we find that being in a social network of believers and having higher socio-economic status predicts attending the new ritual site. We additionally find some evidence that cultural consonance with previous practices and trustworthy sources of information matter for early adopters, suggesting a role for cautious social learning.

Co-authors: Nicolás Restrepo Ochoa (University of California, Davis, US)

Digital Behavior and Social Media

Dynamics of collective creativity in AI art competitions

Mason Youngblood (Institute for Advanced Computational Science, Stony Brook University)

Creativity is a fundamental aspect of human cultural evolution, yet the mechanisms by which human groups produce novelty are notoriously difficult to infer from the historical record. The rise of large-scale digital platforms, however, provides an unprecedented opportunity to analyze the creative process as it unfolds, offering a transparent “fossil record” of cultural innovation. In this study, we leverage one such platform, Artbreeder, which hosts daily “remix parties” where users iteratively build on each other’s work from a single seed image. We analyze a massive dataset of 130,882 images from 368 remix parties to identify the drivers of novelty, complexity, and competitive success. Using state-of-the-art machine learning models, we operationalize both image novelty and complexity: novelty is measured using CLIP embeddings and density estimation, while complexity is quantified via segment counts from the Segment Anything Model. The results reveal an interesting tension: while more novel “parent” images produce more novel and complex “children” and attract more likes, users paradoxically prefer to remix images that are less novel and complex. At the group level, larger remix parties produce more novelty at the cost of lower complexity. Additionally, images tend to converge towards common thematic “attractors” (e.g., steampunk scenes, alien architecture, furries) over the course of remix parties. These findings reveal the complex trade-offs that shape collective creativity, and demonstrate how large-scale digital platforms can serve as laboratories for the field of cultural evolution.

THE EVOLVED SOCIAL MIND IN DIGITAL PERSPECTIVE: ADAPTATION, MISMATCH, AND EMERGING SOCIAL ECOLOGIES

Ana Maria Fernandez (Laboratory for evolution and interpersonal relationships, Universidad de Santiago de Chile)

Human social cognition evolved under conditions of repeated, face-to-face interaction within small, stable groups. Selection pressures shaped psychological mechanisms for attachment, trust, jealousy, empathy, coalition formation, and reputation management—processes that rely heavily on embodied cues, shared attention, and temporal continuity. In the digital era, however, these evolved systems increasingly operate in environments characterized by scale, anonymity, asynchrony, algorithmic mediation, and persistent social visibility. This talk examines how core components of the evolved social mind are recruited—and sometimes strained—by digital interaction contexts. Drawing on evolutionary psychology, social neuroscience, and emerging research on digitally mediated relationships, I argue that many contemporary social phenomena (e.g., digital jealousy, hypervigilance to social feedback, parasocial bonding, and intensified in-group/out-group dynamics) can be understood as predictable outcomes of ancestral mechanisms functioning in evolutionarily novel environments. Rather than framing digital interaction as inherently detrimental or fundamentally "unnatural," the talk adopts an adaptation–mismatch framework to identify when digital affordances amplify adaptive functions (e.g., maintaining weak ties, social support at scale) and when they generate systematic biases or emotional costs. Particular attention is given to close relationships and prosocial behavior, where evolved expectations of reciprocity, exclusivity, and mutual monitoring may conflict with the affordances of online platforms. The talk concludes by outlining key open questions for research on the evolved social mind in the digital era, emphasizing the need for interdisciplinary approaches that integrate evolutionary theory with empirical work on digital behavior and emerging human–AI social ecologies

Structures of digital environments predict attention inequality: An analysis of 17 years of Reddit data

Oliver Twardus (PSychology, University of Guelph)

Digital environments, like social media sites, search engines, online forums, and dating apps, are environments like any other in the “real world”. They are spaces where individuals interact, cooperate, and compete to pursue their goals. Consequently, applying frameworks from behavioural ecology to digital environments can help to understand how these structures influence behaviour. Digital environments are characterized by high relational mobility, minimal travel costs, high density of content, and non-rivalrous digital goods. Furthermore, the individuals in these environments make choices under attention and time constraints. Combined, these factors lead to the prediction that a small percentage of content producers should increasingly attract a majority of attention as a digital environment grows (attention inequality). Utilizing the Pushshift dataset, we retrieved 17 years of data from 2006 to 2023 for the social media platform Reddit, consisting of over 371,000 communities and over 5 million monthly datapoints. We constructed a multi-level model to test whether the degree of attention inequality within a community is predicted by (a) the number of posts within a month in the community, (b) the variance in posts per user, and (c) the platform’s age. The number of posts within a community per month and the platform’s age strongly predicted attention inequality within communities. Combined, they predict 84% of variance and 45% of residual variance in attention inequality within a Reddit community. This study supports the prediction that attention inequality increases as digital communities grow and offers the most comprehensive look at attention inequality within digital environments to date.

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Social Valuation is Implicated in Inferring Bias from Statements of Neutrality

Yuqiu Chen (School of Journalism and Communication, Sun Yat-sen University)

Research on evolutionary psychology (Shaw et al., 2017) and political communication (hostile media perception; Vallone et al., 1985) both revealed what may be caused an aversion to neutrality, that is, people perceived the neutral stance more biased to the opposing side and against themselves. However, prior work has not clarified (a) the psychological mechanism underlying this aversion or (b) whether different types of neutrality (e.g., supporting both sides vs. neither side) may shape bias perception differently. Experiment 1 (n = 810 Chinese adults) found that neutral information (compared with pro-ingroup message) on social media lowered perceived WTR-altruism (indexing positive social valuation), producing stronger perceptions of bias toward the opponent. In contrast, neutral information (compared with anti-ingroup message) lowered WTR-spite (indexing negative social valuation), producing perceived bias for the ingroup. Experiment 2 (n = 2,393) distinguished three neutral expressions, namely no position, supporting both sides, and supporting neither side. We found that “support both” produced significantly stronger perceptions of bias toward the opponent than “no position.” This suggests that audiences are sensitive to signals that the person taking the stance of “I support both of you” may aid the opposing side. We further found that WTR-spite fully mediated the effect of “supporting both sides” stance (compared with “no position” statement) on perceived bias. Our findings extend existing accounts of perceived media bias by highlighting an evolutionarily shaped social-valuation system that guides responses to others’ messages via forecasts of their likely future behavior.

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Status, coalitions, and inequality

The 'I' in Egalitarianism: Hadza Hunter-Gatherers Averse to Inequality Primarily when Personally Unfavourable

Duncan Stibbard-Hawkes (Evolutionary Anthropology / Behavioural Ecology, Baylor University)

Many residential mobile hunter-gatherers like the Hadza of Tanzania are notable for their widespread "egalitarian" food redistribution; even by the most conservative estimates, approximately 50% of the meat that Hadza hunters bring back to camp flows to other households. However, in previous economic "giving game" experiments, offers are often low, and do not match the "generosity" observed in real-world redistribution patterns. Here, we played a "give-or-take" experiment, allowing Hadza adults to redistribute food resources between themselves and an unspecified campmate after receiving either advantageous or disadvantageous initial allocations. Unlike most previous redistribution experiments, participants were allowed to to take as well as give. Our findings showed that people would tolerate inequality—as long as it benefited themselves. When given more resources than campmates, only 40.9% chose to give some away, while 30% took still more. When given fewer resources than their campmate, 58.8% took from the other player, often taking more than needed to achieve equality. "Equal" outcome distributions, which mirrored real life, were only observed under conditions of taking, not giving. These results suggest Hadza sharing is not primarily maintained by intrinsic preferences for equality, but rather by self-motivated demands from those with less and/or extrinsically enforced norms of fairness. Our results also hint increasing market integration may erode traditional sharing norms.

Co-authors: Kristopher Smith (Washngton State, US); Coren Apicella (UPenn, US)

The Evolution of Status: Extended Formidability and Coalition Coordination

Mitchell Landers (UC San Diego)

What is status for? Decades of research have documented how people gain status through prestige, dominance, competence, or alliances, but far less has asked why natural selection would build a psychology that tracks it. We propose that status solves a fundamental problem faced by any organism in a coalitional world: predicting who will side with whom. When conflicts are decided by multi-party support rather than one-on-one contests, individuals need to estimate others' extended formidability—not just how strong they are, but how much support they can muster. Status, on this view, is a mental compression of the network of welfare tradeoff valuations (who values whom) into a usable forecast of third-party backing. Agent-based simulations show that status-tracking is favored by selection because it enables organisms to pick winning sides, avoid losing fights, and coordinate on stable hierarchies. Crucially, these benefits depend on common knowledge: Hierarchies stabilize when beliefs about rank are publicly shared, allowing individuals to coordinate expectations, but become volatile when beliefs diverge or go stale, creating windows where small shocks cascade into rapid reordering. Dominance and prestige, often treated as separate routes to rank, emerge here as two cues feeding the same underlying computation about what a person will cost you and what they can do for you. This framework reframes status not as a reward to be won but as an evolved solution to the problem of predicting who will side with whom.

Co-authors: Daniel Sznycer (OSU, US); Junsong Lu (UCSD, US)

Exploring change in inequality during periods of environmental instability using computational modeling

adrian timpson (UCL)

Empirical estimates of past inequality have been derived from the archaeological record using proxies such as burial finds and house sizes, and statistics such as the Gini Index (Bogaard et al. 2025). Meanwhile, theoretical approaches to understanding inequality in human societies are numerous and intricate, integrating complex economic and behavioural theories with a level of precision that cannot be matched with the sparse archaeological record. To avoid getting lost in the vast parameter space of such complex models, we present here a highly simplistic agent-based model designed to explore emergent behaviours, and stress-test a hypothesis that inequality may be an adaptive strategy providing an evolutionary advantage during episodes of famine, by insulating the wealthy with accumulated resources at the cost of sacrificing the poor. Our work, extending some of Malthus' ideas and Alan Rogers concepts of Scramble vs Contest competition, simulates interactions between a) resource accumulation; b) population growth; c) basic rules of resource distribution within a group, and explores emergent behaviour when applying random stresses to carrying capacity. In this presentation, we will examine the some of the peculiar emergent properties such as conditions that can lead to population booms and busts; conditions in which moderate levels of inequality are advantageous; and discuss how archaeological data may allow us to leverage this model to draw inferences about changes in inequality during the Neolithic transition in Europe.

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The Group Problem: Coalitional Psychology and Coordination in International Humanitarian Law

Michael Arthur Moncrieff (University of Geneva)

The international legal system governing war, International Humanitarian Law (IHL), is again being stress-tested by contemporary U.S. military practices, including legally ambiguous uses of force against non-state targets outside formally recognized armed conflicts. Although IHL presents as a stable and formalized legal regime, many of its core distinctions depend on the concept of "the group" and on determinations of group membership. Yet groups are not ontologically discrete entities in the world; they are outputs of evolved mental representational systems. As a result, actors often disagree about what constitutes a group and who qualifies as a member, with judgments varying as a function of perspective, motivated interests, narrative input, and perceived threat. Legal systems depend on coordination to function (Hadfield & Weingast, 2012; McAdams, 2008), just as moral condemnation depends on coordinated judgments to support enforcement and punishment (DeScioli, Bruening, & Kurzban, 2011; DeScioli & Kurzban, 2013). When coordination over group representations breaks down, legal interpretation becomes similarly indeterminate. This representational variance creates interpretive slack, allowing powerful actors to flexibly recharacterize conflicts, groups, or targets while facing reduced collective condemnation. The presentation examines how reliance on group-based concepts in IHL generates recurrent interpretive failures, illustrates these dynamics through selected cases, and considers whether shifting certain legal standards away from group status and toward individual conduct may improve legal coordination. It is argued that "the group" should be conceptualized in the narrowest possible sense—one degree of freedom removed from behavior—to facilitate shared understanding and stable coordination.

Co-authors: David Pietraszewski (University of California, Santa Barbara, US)

Mating Biology and Physiology

Strong evidence for the sequential evolution of social monogamy, territoriality, and paternal care in the Homo sapiens lineage

Adam Bode (Australian National University, School of Archaeology and Anthropology)

For decades, there has been debate about whether early hominins emerged from a gorilla-like or a chimpanzee-like ancestor, in the context of their mating system, social organisation and other aspects of their socioecology. To better understand the evolutionary context in which aspects of early human social behaviour emerged, we conducted a phylogenetic analysis of 81 non-human primate species to assess the correlated and sequential evolution of social monogamy and paternal care with territoriality. Using Bayesian Phylogenetic Methods (BayesTraits) and 10k Trees phylogeny, we calculated the rate of correlated evolution and the median rates of various conditions emerging in all species. We found decisive evidence for correlated evolution of territoriality with both social monogamy and paternal investment. The likelihood of social monogamy evolving if territoriality was not present was relatively high (median rate of evolution = 4.53), whereas the likelihood of social monogamy evolving if territoriality was present was zero (median rate of evolution = 0.00). The likelihood of paternal care in territorial species was above zero (median rate of evolution = 0.27) whereas it does not occur in non-territorial species (median rate of evolution = 0.00). Combined with previous research on the sequential evolution of social monogamy and paternal care, this strongly suggests that social monogamy, territoriality, and paternal care evolved in that sequence in the lineage leading to Homo sapiens.

Co-authors: Simon Greenhill (University of Auckland, NZ); Rebecca Hendershott (Independent Researcher, AU); Katharine Balolia (Australian National University, AU)

Objects of Desire: The role of sexual arousal in objectification

Arnaud Wisman (University of Kent)

The detrimental effects of sexual objectification on women's psychological and physical well-being are well established, yet comparatively little is known about the proximal mechanisms that give rise to objectification, or whether such processes are specific to men. Drawing on evolutionary perspectives, the present research examines sexual arousal as a state-level mechanism that alters partner evaluation. Across four experiments with male participants (N = 675), we tested and found support for the Arousal Hypothesis of Sexual Objectification, which proposes that temporary states of sexual arousal increase sexual objectification beyond dispositional traits. Sexually aroused men prioritised women's sexualised physical attributes over psychological characteristics, as measured by a State Sexual Objectification (SSO) task. This effect was specific to sexualised physical attributes and emerged independently of sociosexual orientation, Dark Triad traits, social dominance orientation, and relationship status. Extending this work, we present new evidence that sexual arousal also increases objectification in women. Across two experiments with female participants (N = 270), sexually aroused women showed greater objectification of men (SSO-X), operationalised as increased relative emphasis on physical over mental attributes. Sexual arousal did not alter women's explicit endorsement of short- or long-term mating standards, indicating that arousal shifts evaluative salience rather than conscious relationship criteria. As in men, dispositional traits predicted baseline objectification but did not account for arousal effects. Together, these findings suggest that sexual objectification is not solely a product of stable personality traits or gendered power dynamics, but can emerge as a transient, state-dependent feature of human mating psychology.

Food, Sex, and Hormones: Evaluating Functional Explanations for Hormonal Influences on Appetite

Steven Gangestad (Department of Psychology, University of New Mexico)

Women's appetite and food consumption shift across the ovarian cycle. Multiple functional explanations of hormonal influence have been proposed. Motivational trade-off models posit that interest in food imposes opportunity costs; hormonal influences have hence been shaped to regulate food intake trade-offs with mating goals (in one prominent theory, general sexual motivation; in an alternative model, mate search). Alternatively, the uterine energetic demand model proposes that luteal-phase increases in appetite/consumption "fund" energetic investments to prepare the endometrium for possible implantation. Models entail contrasting detailed patterns and predictors of change. Under trade-off models, appetite and food intake should bottom-out when conceptive status peaks, influenced by both estradiol and progesterone. The uterine energetic demand model predicts major changes in the transition from the follicular to the luteal phase, largely promoted by progesterone, and no distinct periovulatory nadir. In a sample of 484 naturally cycling women, completing, on average, 25.8 daily surveys across a month (12,475 daily person-reports), we assessed patterns. Hormone levels were estimated from reverse count days (validities .7-.8). Analyses reveal (a) strong effects of progesterone on appetite/food intake; (b) weak, non-significant effects of estradiol; (c) generalized additive mixed models of change across cycle days that very closely track shifts in progesterone levels, with no periovulatory nadir; (e) contrasting patterns of change in sexual desire, which closely track conceptive status; (f) through novel analyses on Schleifenbaum et al.'s (2024; 6,979 daily person-reports) data, very similar patterns. Robust results appear consistent with the uterine energetic demand model and incompatible with motivational trade-off models.

Co-authors: Ryan Dobson (University of New Mexico, US); Tran Dinh (National Center for Health Statistics, Centers for Disease Control and Prevention, US)

Postdoctoral investigator award finalists

Parental influence on mate choice shapes reproduction and socioeconomic resources in Nepal

Elizabeth Agey (Anthropology, University of Hawaii at Manoa)

Through much of human history, mates have been selected under parental influence in a practice typically referred to as arranged marriage. Because parents and offspring have discordant fitness interests and, ergo, preferences for an in-law/mate, parental and offspring spouse selection should theoretically result in different fitness outcomes. Using a novel measure of spouse choice that fully disambiguates parental and offspring influence, I investigate whether different types of marriages in Nepal result in different reproductive outcomes. I find that parental influence over spouse choice is associated with shorter first birth intervals and slightly more total births compared to self-selected marriages, but I find no differences in offspring survival, growth, or health across marriage types. However, parental involvement in spouse choice is associated with increased social, financial, and grandparental support. Together, parental involvement in spouse choice appears to produce equivalent or better fitness outcomes compared to fully independent mate choice, likely because it provides greater socioeconomic resources. Humans may therefore be exploiting multiple pathways that maximize different benefits via parental, self, and co-selected mate choice, which is likely unique among animals.

Cousin marriage and reduced exposure to intimate partner violence and coercive control

Olympia Campbell (Institute for Advanced Study in Toulouse (IAST))

For consideration for the post-doctoral award: Cousin marriage, practised by over 10% of the world's population, restructures kinship networks by overlapping blood and affinal ties. Theory makes competing predictions about how such kin density shapes intra-household conflict. "Protection" accounts posit that consanguinity aligns spouses' interests and increases kin oversight, reducing men's incentives and opportunities to use coercion. "Constraint" accounts, by contrast, emphasise that dense kin involvement can prioritise family cohesion over women's autonomy, potentially suppressing help-seeking and facilitating control. Here, I adjudicate between these hypotheses using data on ~40,000 women from Egypt, Jordan, Pakistan, and Turkey. Using cluster-fixed-effects models that compare women within the same DHS primary sampling units and survey waves, I find that marriage to a first cousin is associated with a 2.1 percentage-point lower probability of physical IPV relative to non-consanguineous unions (≈9% lower relative risk). Parallel reductions are observed for coercive controlling behaviours, and estimates are robust to matching on observed confounders. The protective association for physical violence is stronger for patrilateral than matrilateral cousins, consistent with protection depending on kin with recognised authority over men in patrilineal systems rather than generic relatedness. In Turkey, the association persists after adjusting for both spouses' parental consanguinity, indicating that it is not explained solely by intergenerational family culture. These findings suggest that, in these settings, consanguinity is associated with lower reported violence and control.

Professionals of trust: Intermediaries concentrate exchanges, creating incentives for reliability

Julien Lie-Panis (Massachusetts Institute of Technology)

Trade is most profitable when partners are distant, but also most fragile, because distance makes it harder to trust that others will keep their side of the bargain. When exchange stretches beyond local ties, societies often rely on intermediaries—merchants, brokers, auctioneers, and other professionals who stand between buyers and sellers. At first glance this solution is paradoxical: why would inserting a third party create trust? Intermediation adds another link in the chain—another stranger who can misrepresent quality, divert goods, or renege on payment. We propose that intermediation creates trust by concentrating accountability. Intermediation concentrates exchange onto fewer reputations, raising the cost of any single failure and strengthening incentives for reliable conduct. We formalize this idea in a model of reputation-based cooperation, involving buyers, suppliers, and intermediaries. The model yields two trade regimes: direct buyer–supplier exchange, where suppliers build reputations with buyers, and intermediated exchange, where intermediaries broker transactions and build reputations with buyers instead. Comparing the two, we show that intermediation expands the scope of trade—and that this extension can arise purely from scarcity: as intermediaries become fewer, each handles more transactions, raising the reputational cost of unreliable trade. Intermediation, we suggest, is best understood as a social technology: a way of organizing exchange that reshapes the reputational incentives governing it. By channeling trade through fewer hands, intermediaries generate the trust that makes large-scale markets possible.

Co-authors: Jean-Baptiste André (ENS Paris, FR); Helena Miton (Stanford, US)


HBES
RABAT 2026
POSTER SESSION

An investigation of the domain-specificity of metacognition and its relationship with transdiagnostic psychiatric traits in a general adult population.

Emily Adams (University of Galway)

Social impairments can significantly impact a person's ability to thrive in everyday life, this is a particularly salient issue for many with mental health conditions. Despite being a clear target for intervention, however, little is currently known about the cognitive markers of social impairments. This research aims to fill this gap by examining the role of one candidate mechanism: metacognition- the ability to accurately assess one's own cognition- a skill essential for adaptive social behavior. Existing research suggests that metacognition involves both domain general and domain specific processes, however these investigations have primarily focused on the domains of memory and perception. To further investigate these underlying processes, this study examines the specificity of metacognitive processes in the social domain- an area that remains largely unexplored despite its clinical and practical relevance. In a general population sample, we will employ the HMeta-d framework (Fleming, 2017) to estimate the cross task covariance in metacognitive efficiency (meta-d'/d') between an emotion recognition task (social domain) and an identity recognition task (non-social domain), hypothesizing that metacognitive ability will be correlated across these domains. As current evidence indicates that there are stable associations between metacognition and mental health symptoms, we will also examine whether metacognitive ability varies relative to individual differences in transdiagnostic psychiatric phenotype dimensions, which we hypothesize it will. Ultimately, this research is positioned to inform both research and practice by advancing understanding of the cognitive architecture underlying psychosocial impairments and identifying avenues for interventions to improve social cognition and interpersonal outcomes.

Cooperation Without Enforcement: Social Networks and Collective Action in Urban Residential Syndics

Ouissal Akioui (FGSES, FGSES UM6P)

Rapid urbanization raises a fundamental collective action problem: how do individuals sharing dense residential spaces develop norms and incentives that sustain cooperation and improve everyday quality of life? While urban studies often emphasize formal institutions, less attention has been paid to the micro-level behavioral and social mechanisms that promote or undermine cooperation in common-property settings. This study investigates how residents coordinate, invest, or free-ride in shared residential environments, using homeowners' syndics as a natural urban setting in Morocco. The research investigates how residents in 2 residential buildings in Témara mobilize, invest, or free-ride in the provision of local public goods. The study conceptualizes syndics as repeated-interaction arenas in which cooperation emerges through informal norms, social monitoring, and relational incentives, while being shaped by the syndic's legal status and its embeddedness within lower-level administrative structures. The study adopts a mixed-methods design combining interviews, ethnographic observation, and egocentric social network analysis. Data collection is ongoing and relies on convenience and snowball sampling of residents and key actors involved in syndic-related activities. Planned analyses will examine how network structure, proximity to formal or informal leaders, and relational distance predict individual contributions to collective goods, including cooperation, leadership emergence, and free-riding behavior. Anticipated findings are expected to shed light on how informal social networks and norms interact with minimal institutional frameworks to resolve collective dilemmas in urban settings. More broadly, the study contributes to understanding how urban residents self-organize and mobilise to sustain cooperation amid increasing social heterogeneity and resource inequality.

Co-authors: Zachary Garfield (FGSES, MA)

Conspiracy Theories and Political Values: Toward a More Nuanced Perspective

Antonin ATGER (Center Cultural Evolution, Brunel University)

This study investigates the relationship between political values and distinct forms of conspiracy beliefs. Drawing on data from 302 participants, we differentiate between upward conspiracy theories, which target powerful elites, and downward conspiracy theories, which attribute blame to minority groups. A two-factor structure distinguishing upward and downward conspiracy beliefs provided the best fit to the data. Upward conspiracy beliefs were positively associated with authoritarianism, anomie, populism, and political conservatism. In contrast, downward conspiracy beliefs were associated with social dominance orientation, heightened political uncertainty, and lower perceived political control. Overall, the findings suggest that the relationship between political values and conspiracy beliefs is more complex and differentiated than previously assumed. Despite limitations related to sample composition and the scope of measurement scales, this study contributes to a more refined understanding of the ideological underpinnings of conspiracy beliefs.

A Call to Arms: Why Strategic Studies Needs More Evolutionary Psychology

Robert Barrett (Senior Associate, Institute of World Affairs)

The number of global conflicts is higher than at any point since World War II. Despite extensive efforts at analyzing and mitigating war, this current scoreboard highlights a critical blind-spot in our understanding of why humans fight. While discussions of aggression, violence, and war feature prominently within the evolutionary psychology literature, in those domains that study war directly – principally strategic studies and conflict analysis and resolution – key aspects of evolutionary psychology remain conspicuously underacknowledged. Even though concepts such as human nature, power, dominance, and cooperation, are familiar themes in international relations, the inclusion, or reintroduction of evolutionary principles remains haunted by ghosts of our academic past, chiefly those which seek to apply evolutionary fitness and selection to groups. A willful bias against innate human universals is limiting the effectiveness and capacity of conflict scholars in their efforts to predict, decipher, and manage war. As such, there is significant opportunity to reimagine how best to integrate evolutionary principles and tenets within the analyses of global conflict. A starting point is suggested: our unrelenting desire for security, as a product of our long relationship with conflict and uncertainty, may constitute a “conflict mind”, a concept which may prove useful in bridging the worlds of evolutionary psychology and conflict studies.

Genes, Timing, and Fatherhood: The Role of APOE in Male Fertility

Paula Barbara Bartecka (Department of Environmental Health, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland, Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College)

Background: APOE may indirectly affect male fertility through its role in lipid metabolism. ApoE3 allele is associated with optimal lipid levels, ApoE4 allele is associated with increased lipid levels, whereas ApoE2 allele with decreased lipid levels. This study examined associations between ApoE alleles and male reproductive traits. Methods: Data from 98 men (mean age = 64.9 ± 11.1) from Mogielica Human Ecology Study Site were analyzed. APOE genotype was assessed from blood samples, reproductive histories were obtained via interviews and included number of children, age at first and last reproduction, and mean inter-birth interval. Associations between the ApoE allele carrier status (present/absent) and reproductive outcomes were examined using generalized linear models, adjusted for year of birth, education, and reproductive timing (age at first reproduction and age at marriage). Results: ApoE3 carriers had an earlier age at first reproduction by approximately three years compared with non-carriers ($p = 0.004$). ApoE2 carriers showed a longer inter-birth interval (~20 months; $p = 0.02$) and completed reproduction earlier (~4 years; $p = 0.01$) than non-carriers. ApoE4 carrier status was not associated with any reproductive outcome. No significant differences were observed for other reproductive measures across genotypes. Conclusions: Our findings indicate that ApoE4 is not associated with reproductive traits. ApoE2 is associated with lower reproduction. In contrast, ApoE3 carriers entered reproduction earlier, although this did not translate into a higher number of children. Overall, APOE-related reproductive effects differ across alleles, potentially reflecting allele-specific differences in lipid metabolism that may influence male reproductive traits.

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Military Socialization and the Moral Cost of War: Preliminary Evidence from U.S. Veterans

Michael Baumgarten (Arizona State University)

Post-traumatic stress disorder (PTSD) is a complex psychological condition affecting millions worldwide, characterized by clusters of symptoms including anxiety and depression. While hypervigilance can be viewed as an adaptive, self-preservation mechanism, depressive symptoms remain less clearly explained. This study explores how moral experience, service history, and early-life adversity contribute to trauma-related distress among U.S. veterans of the Global War on Terror (GWOT). Drawing from biocultural and evolutionary anthropology, it examines how acculturation, moral norms, and exposure to morally injurious events influence PTSD symptom expression after military separation. Data were collected online in July 2025 from 105 GWOT veterans using validated self-report instruments, including the PTSD Checklist for DSM-5 (PCL-5) and Adverse Childhood Experiences (ACE) scale, along with moral foundations and combat morality measures. Roughly one-third of participants met the provisional PTSD cutoff (PCL-5 ≥ 33). Higher ACE scores and greater exposure to morally injurious events—both as perpetrator and victim—were significantly associated with elevated PCL-5 scores. Longer service duration and greater time since separation were modestly correlated with increased symptom severity, suggesting cumulative and enduring effects of moral and psychological strain. Findings indicate that early adversity, moral transgression, and the normative pressures of military life interact to shape the persistence and structure of trauma-related symptoms. By integrating psychological, cultural, and evolutionary perspectives, this research advances a the evolutionary understanding of moral injury and PTSD, emphasizing the central role of moral context and socialization in human responses to trauma.

Infants Understanding of Relative Cost

Lars Kolstad Brekke (University of Oslo, Institute of Psychology)

For reciprocal altruism to be evolutionarily sustainable, the benefits of cooperation must outweigh the costs. This prerequisite suggests that humans may have evolved specialized cognitive capacities to identify individuals who engage in mutually beneficial cooperation, thereby allowing them to select partners likely to provide long-term reciprocal gains. One possibility is that assessments of a benefactor's cooperativeness are based on the relative costs benefactors are willing to incur when sharing. In this study, we investigated whether Norwegian infants (N = 32, 13–16 months) take relative cost information into account when forming expectations about direct reciprocal sharing. First, using a violation-of-expectation paradigm, we tested whether infants' expectations were violated by a benefactor that shared its only resource compared to a benefactor that shared one out of its three resources. Subsequently, we also measured which of these benefactors the infants expected the recipient to reciprocate toward. Contrary to our predictions based on relative costs, infants neither expected the benefactor with more resources to share initially nor did they expect the recipient to reciprocate the benefactor who had paid the relatively highest cost. Bayesian analyses provided support for the null hypothesis, indicating that infants did not use information about relative costs to guide expectations about either initial resource sharing or reciprocal acts. These findings indicate limits on early-developing sensitivity to relative cost-based partner evaluation.

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Measuring Religion and Cooperation in the Wild: A Mobile Platform for Longitudinal and Field Research

Zach Buck (Department of Anthropology, University of Connecticut)

A longstanding challenge in the study of religion is establishing the causal relationship between religiosity and cooperation. Most existing evidence relies on paradigms with limited ecological validity. We present a mobile research platform addressing this gap by embedding longitudinal measurement, behavioral tracking, and naturalistic experimentation into the everyday lives of geographically co-located members of participant religious communities. The platform is a smartphone application that integrates continuous passive sensing, repeated self-report, and in-app behavioral tasks to study religion and cooperation across multiple temporal scales. At the continuous level, the app collects geolocation data to infer participation in religious activities through geofencing around places of worship and ritual events, alongside proximity-based interaction data indexing social exposure. These measures are complemented by longitudinal surveys and experience sampling bursts. The platform links these measurements to repeated behavioral indicators of cooperation. Participants engage in embedded economic games including asynchronous prisoner's dilemmas and dictator-style donation tasks, as well as social resource inventories quantifying support exchange and ego-network structure. Synchronizing these measures with naturally occurring changes in religious participation enables fine-grained analyses of temporal effects on cooperation and community. This summer, we launch the platform with a six-month longitudinal deployment including a quasi-experimental field study in a Hindu-majority community in Mauritius. This study leverages a large public ritual as a natural intervention, comparing cooperative behavior and social network dynamics before and after participation, and against matched non-participants. Our approach represents a shift toward continuous, ecologically valid and inferentially powerful measurement of religion and cooperation.

Co-authors: Martin Lang; Peter Mano; Radek Kundt; Radim Chvaja

Regional, Sex and Temporal Disparities in Lifespan of 1750 – 1850 Historical Finland

eni bullaj (Department of Biology, University of Turku)

Regional disparities in human health and longevity are a persistent feature across populations, reflecting underlying social, economic, and environmental inequalities. In Finland, such disparities have been documented as early as the 19th century, with western regions consistently exhibiting longer lifespans and lower mortality rates than eastern and northern parts of the country. While studies have documented pronounced east–west differences in health and longevity in contemporary Finland, much less is known about how these disparities emerged historically, especially regarding lifespan variability and the sex-specific contributions to this regional divergence. Here we show, for the first time, how regional and sex disparities in both average lifespan and lifespan variability measured by standard deviation and Gini coefficient evolved in Finland from 1750 to 1850. Adult lifespan averaged 53.5 years (54.2 in females, 52.8 in males), with western regions living ~5 years longer than eastern regions. Western populations also had more equal and stable lifespans, and both sexes contributed to regional disparities, but females showed higher vulnerability during mortality crises. Around 1800, average lifespans declined and male and female lifespans temporarily converged, also disrupting the usual negative correlation between lifespan and its variability. The findings highlight persistent long-term regional and sex disparities in lifespan and lifespan variability metrics, underscoring the value of historical perspectives for understanding the persistence and transformation of health inequalities over time.

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Facial and Body Sexual Dimorphism in Four Traditional African Populations and their Association With Subsistence Type

Marina Butovskaya (Institute of Ethnology and Anthropology RAS, Institute of Ethnology and Anthropology, RAS)

This article presents a study of sex differences in four traditional East African populations from Tanzania (Chagga, Haya, Maasai, and Hadza). The study examined sexual dimorphism in anthropometric parameters (body height, weight, body mass index, handgrip strength, wrist diameter, digit ratios), body composition parameters (muscle and bone mass, fat and water percentages, visceral fat), and facial shape (using geometric morphometrics based on frontal photographs) in 1422 adult men and women (aged 16-90). Results showed that facial sexual dimorphism in all four study groups was less pronounced than in European and Asian populations, and most pronounced at younger ages. Population differences in body traits were most prominent in wrist diameter, digit ratios, body fat and water content, and visceral fat. Sexual dimorphism in anthropometric parameters and body composition remained relatively constant with age, except for visceral fat and water content. Sexual dimorphism in facial shape depends from age. It is maximal in young age group in Chagga and Haya and Hadza. However, in Maasai maximal sexual dimorphism in face was observed in medium age group. The implications of these findings are discussed in terms of both fundamental and applied significance.

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Combinations of Reference and Intensity in the Manual Gestures of a Chimpanzee (Pan troglodytes)

Valerie Jean Chalcraft (Applied Animal Behavior (Independent consulting and research), Animal Behavior Institute)

The present study applies a coding scheme based on manual movement modulations of human gesture inventories and American Sign Language (ASL) to the manual referential gestures of Rita, an adult chimpanzee (Pan troglodytes) living at a sanctuary. Rita gestured referentially with whole-handed pointing gestures toward distal food items. The greater her interest in each food item, the more she gestured within each trial, the more she modulated the gestures, and the more she combined her modulations within a trial, suggesting that the increase in modulations reflected her level of interest. The results offer a wider understanding of how a great ape can combine reference with degrees of affect that reflect interest or emotion, akin to affective prosody. These results suggest that our common ancestor could have shared the same capacity and thus contribute to our understanding of how manual gestural communication could have laid the foundation for the evolution of vocal and manual languages.

Social Status Influences how Men Look at Women

Lei CHANG (Department of Psychology, University of Macau)

Humans and their closest relative, chimpanzees, evolved mainly under intra- rather than inter-sexual selection, which selects for weapons or physical and mental formidability and competitiveness. Intrasexual competition results in winners and losers and, more importantly for these and other social animals, an underlying and strictly observed social status hierarchy. Because of its sexual selection origins, social status directly influences mating behavior. In chimpanzees and macaques, high-ranking males pay direct attention to female sexual swellings, while low-status males who are displaced from the vicinity of estrous females engage in broader social interactions aimed at developing friendships. Similarly, a man's relative status has pervasive effects on core cognitive functions, including attention, memory, and decision making. I hypothesize that high vs. low social status is associated with visual attention to and preference for a woman's body, specifically the waist-hip area, vs. the face. In three studies, self-reported status, age, and experimentally manipulated status (having participants imagine and internalize their assigned social status) were all correlated in the expected direction with self-reported visual preference for the waist/hip area vs. the face, a dot-probe task involving waist/hip vs. face, and eye-tracking dwell time on waist/hip vs. face. Consistent with the theoretical framing, these results have implications for the evolution of pair-bonding, monogamy, and love, mainly and initially associated with low rather than high social status, and for the origin of gender inequality, stemming mainly from intra- rather than inter-sexual selection.

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The Evolution of Integrated World-models

Tanisha Chawla (University of British Columbia)

Researchers have long drawn parallels between cultural evolution and Darwinian principles of biology. However, varying ontological interpretations among cultural evolutionists concerning the extent of parallels contribute to inconsistencies in the literature. Creativity research offers a framework for characterizing the extent and nature of the gap between the two fields. Creativity is guided by the structure of each individual's integrated network of memories, concepts, and beliefs about the world, that is, their worldview. Although genetic and environmental factors may explain variation in biological adaptations across individuals, they do not adequately account for the uniqueness of each individual's worldview. What appear to be distinct creative thoughts may instead reflect individual conceptualizations of the same underlying idea, shaped by each person's self-organizing internal model of the world. It can be helpful to approach cultural evolution through the lens of internal cognitive models. Instead of focusing on external cultural artefacts as units of expression, it grounds the narrative in each individual's unique internal interpretations that generate and transform culture. We contend that tracing cultural lines of descent at the level of meaning rather than structure may make it possible to account for phenomena such as cultural discontinuities, that challenge conventional cultural evolutionary models, which focus on the discrete ideas or artifacts as the unit of cultural change. By framing mental-models as active systems that shape culture rather than passive conduits of activation, researchers may better navigate disanalogies with biological evolution and move closer to a viable theory of cultural evolution.

Co-authors: Liane Gabora (University of British Columbia, CA)

Developing a Scale to Assess Friendship Value

Maci Jane Christianson (Social Psychology, UCLA)

Friendships are valuable, fitness-enhancing social relationships. Across societies, friends help us when in need, provide labor and coalitional support, and protect and bolster our reputations; today, friendships are associated with improved health, happiness, and longevity. But not all friends are created equal. Much like mate value, people vary in the extent to which they are desirable friends, and one's friend value could have significant consequences for one's outcomes. However, there is currently no measure designed to assess this friend value. Here, we develop a novel Friend Value Scale. We (a) test whether this scale measures what it intends by examining correlations with Euclidean friend value, assortative friending (e.g., if participants with higher self-reported friend value have higher friend-value friends), friend preference fulfillment (higher friend-value participants should be better able to fulfill their preferences in the friend market), (b) examine the association between friend value and related constructs, such as loneliness, isolation, wellbeing, friendship satisfaction, friendship number and quality, and (c) explore more associations with more distal outcomes, including stress, sickness, and absenteeism. We also test the potential predictive uniqueness of this scale. In all, we aim to create and validate a first, short self-report scale to assess friend value and benefit researchers interested in friendship, cooperation, health, wellbeing, and so on.

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Intergroup Conflict and Belief in a Punishing God: Natural Experiment from the Russian Invasion of Ukraine

Radim Chvaja (European Research University)

Beliefs in moralizing and punitive gods have been proposed as key psychological mechanisms supporting cooperation and group cohesion in large-scale societies. However, the selective pressures that favored the emergence of such beliefs remain debated. Evolutionary models suggest that exposure to intergroup conflict, particularly lethal warfare, could have selected for cognitive tendencies to conceptualize supernatural agents as moral monitors and enforcers. Yet, direct empirical evidence remains scarce. In this project, we test how exposure to war influences religious representations of God's moral concern and punitive nature. Specifically, we examine the effects of Russian military and missile attacks on Ukrainians' perceptions of divine morality and punishment. We combine geocoded data on violent events and civilian casualties from the Armed Conflict Location & Event Data Project (ACLED) with a representative survey of Ukrainians living in government-controlled areas. This design allows us to estimate causal effects of both objective and subjective exposure to intergroup violence on belief in moralizing and punishing gods, while addressing the potential endogeneity of religiosity to conflict exposure. We further test whether war exposure affects belief in a loving and forgiving God and, exploratively, whether it alters participants' willingness to donate their show-up fee to a Ukrainian charity. Analyses from a pre-registered sample of approximately 2,000 respondents will shed light on how extreme intergroup conflict shapes cognitive adaptations underlying religious belief and prosocial motivation.

Co-authors: Ketevani Kapanadze (European Research University, GE); Alisa Lapyhina (European Research University, UA)

Mirror, mirror on the wall, who is biased in the development world?

Mike Coleman (Co-founder, Common Thread)

Diversity, equity and inclusion are now common and under threat language in international development. But saying the right things does not always mean working differently. While the sector has started to confront its colonial history, many everyday decisions are still shaped by unspoken assumptions about expertise, authority and whose knowledge counts. This talk presents a practical attempt to make some of those assumptions more visible. In partnership with the Bill and Melinda Gates Foundation and Adeso, we developed two short behavioural quizzes for people working in global development. Each quiz takes approximately five minutes to complete and includes thirty multiple choice questions. The items draw on behavioural science, cross cultural psychology and research on WEIRD bias. The quizzes are not tests and do not produce individual scores. Instead, they are designed to prompt reflection and structured discussion. They surface patterns in how respondents think about risk, decision making, participation and power, and how well-intentioned practices may still reinforce unequal systems. Based on early use, these lightweight tools appear to facilitate more concrete and less defensive discussions about equity and localisation than formal training sessions or policy statements alone. The objective of this session is both to share a simple, replicable behavioural tool and to gather feedback from participants to improve its validity and usefulness.

The Turkish Adaptation of the K-SF-42: A Psychometric Study within Life History Theory

Mustafa Gökmen Coşgun (Istanbul Medeniyet University, Department of Psychology, Turkey, Istanbul Medeniyet University)

Life History Theory conceptualizes individual differences in behavioral and social strategies along a continuum ranging from fast to slow life history orientations. The K-Factor Short Form (K-SF-42), derived from the Arizona Life History Battery, is a widely used measure for assessing multidimensional life history domains. Despite its growing use in cross-cultural research, evidence regarding its higher-order structure remains limited across cultural contexts. The present study aims to examine the psychometric properties of the Turkish adaptation of the K-SF-42 and to provide preliminary evidence for its second-order factor structure. Data were collected from a community sample of 537 adults. Construct validity was evaluated using confirmatory factor analysis (CFA), testing both a seven-factor first-order model and a second-order model including a general K-factor. Results indicated that the revised seven-factor model demonstrated acceptable fit after theoretically justified error covariances were specified within the same subscales (CFI ≈ .91, RMSEA ≈ .056, SRMR ≈ .06). All items loaded significantly on their respective latent factors. The second-order CFA also showed acceptable model fit (CFI ≈ .90, RMSEA ≈ .057). While most subscales loaded significantly on the general K-factor, the Romantic Partner domain did not exhibit a significant loading, suggesting that this domain may function more independently from global life history strategy in the Turkish context. Internal consistency estimates for the subscales ranged from .75 to .94. These preliminary findings indicate that the Turkish K-SF-42 is a valid and reliable instrument for evolutionary behavioral research. Data collection is continuing to expand the sample size and establish test-retest reliability.

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Do Men Produce Higher Quality Ejaculates When Primed with Rival Male Body Scents?

Tara DeLecce (Oakland University)

Olfactory cues influence mating behavior in many animals both before and during copulation. In humans, research has focused on the role of smell in pre-copulatory contexts, with little attention paid to its potential role during sexual activity, including in contexts relevant to sperm competition. The current study investigated whether exposure to rival male axillary body odor affects men's masturbatory ejaculate quality. Men from heterosexual romantic couples (n = 34) provided three masturbatory ejaculates following randomized exposure to either no rival male scent, one rival male scent, or two rival male scents. Results revealed higher concentrations of slow progressive motile sperm, higher overall concentrations of motile sperm, and higher total sperm concentration after exposure to two rival male scents compared to the no scent condition. Other hypothesized markers of ejaculate quality showed no significant differences. These findings are discussed in relation to the literature on human sperm competition and the possible role of olfactory cues in this process.

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From toes to the tip of the nose – numeration practices across the world

Olga Dudojć (Department of Psychosocial Science, University of Bergen, Norway, University of Bergen)

Body-based numeration practices, such as finger counting, are widespread across human societies and play a central role in research on numerical cognition. Yet, fingers are far from the only bodily resources used for representing numbers – some human groups also count using toes and specific points on the limbs, torso, or head. This raises fundamental questions: how common are these alternative practices, and what factors shape their distribution across cultural groups? One hypothesis recurring in the literature, but never formally tested, posits that toe-based counting should be more frequent in warmer climates, where walking with exposed toes or barefoot is common and therefore toes are more readily available as counting tools. In this study, we provide the first systematic test of this idea. Using a global dataset of over 400 body-based numeration systems, we ran Bayesian categorical regression models to examine whether ambient temperature predicts the use of toes in number representation. We used two different temperature measures, compared across four models to capture different possible relationships between temperature and counting practices, while controlling for both geographic proximity and phylogenetic relationships among cultural groups. The best-fit model reveals no evidence that climate independently influences the use of toes in body-based numeration systems. Instead, a substantial portion of the variation is explained by phylogenetic and geographical dependencies, highlighting the importance of cultural transmission and contact. We discuss the implications of our findings and outline other ecological and cultural factors that may explain the diversity of body-based numeration practices.

Social support as a predictor of changes in anxiety levels during pregnancy and after childbirth: a prospective study.

Sarah Julia Duk (Department of Environmental Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College)

Background Pregnancy and early motherhood are frequently associated with elevated anxiety. Social support is considered a key protective factor from an evolutionary and psychosocial perspective. However, less is known about which specific functional dimensions of support are most relevant for postpartum anxiety and anxiety change across the perinatal period. Methods This prospective study included 964 Polish women aged 18-43 years (Me=31; IQR=28–34). State anxiety was assessed at two time points: during pregnancy(T1) and after childbirth(T2) using State-Trait Anxiety Inventory(STAI). Anxiety change was calculated as the difference in STAI scores between T1 and T2. Prenatal social support was measured using the Berlin Social Support Scales, capturing perceived, received, and satisfaction with support, as well as need for support and support-seeking. Multiple linear regression models examined the association between anxiety and changes in anxiety from pregnancy to postpartum accounting for relevant sociodemographic factors. Results State anxiety levels declined from pregnancy (Me=43;IQR=36-51) to postpartum (Me=37;IQR=30-45). Both perceived and received support, and satisfaction with support during pregnancy, were associated with the level of anxiety after childbirth($p<0.01$). In contrast, need for support and support-seeking were not significant anxiety predictors. Interestingly, pre-to-postpartum anxiety change was positively associated with perceived instrumental support($p=0.02$) and negatively with need for support($p=0.03$). No other statistically significant associations were observed. Conclusions Perceived availability and evaluation of social support during pregnancy appear relevant for postpartum anxiety, whereas support-seeking behaviours are associated with anxiety changes across the perinatal period. These findings underscore the importance of reliable social resources during the transition to motherhood.

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How Cultural Logic Redefines Good Citizenship Behavior: Morocco as a case study

Imane EL MARZGUIOUI (Faculty of Legal, Economic, and Social Sciences, Agdal, Mohammed V University, Rabat, Mohammed V University in Rabat)

Abstract: In a globalized world, citizenship is often portrayed as a universal concept grounded in democratic participation and civic responsibility. Yet, in practice, its meaning is deeply shaped by local histories, social values, and moral frameworks. Using Morocco as a case study, this research explores how cultural orientations (including traditionalism, religious moral frameworks, and collectivist norms) influence citizen behavior and expectations of civic duty. We administer a questionnaire to Moroccan adults to test the hypothesis that stronger adherence to traditional cultural norms correlates with lower alignment with 'standard' civic behaviors such as queue-respect, equal civic duty, and non-favoritism. The findings have implications for understanding how citizenship models evolve, how cultural values persist or shift, and how normative frameworks adapt in plural societies. This behavioral perspective contributes to the cultural evolution of civic norms and the behavioral science of citizenship in non-Western contexts." Keywords: citizenship, civic norms, culture, Morocco, political behavior

The "Ick" Phenomenon in Women's Mate Choice: On the Adaptive Value of Seemingly Trivial Turn-Offs

Nassim Elimari (DIPHE Laboratory, Lumière Lyon 2 University)

The "Ick List" is a socially emergent phenomenon in which women, converging on social media, identified shared "icks": sudden, visceral loss of attraction toward a romantic or sexual prospect, triggered by seemingly trivial and oddly specific behaviors (e.g., a date carefully holding a cup with two hands). Commonly dismissed as irrational or arbitrary cultural constructions, such reactions nonetheless raise a central evolutionary question: do they reflect noise in mate selection, or heuristics tracking fitness-relevant traits? Across three studies, we investigate the structure, correlates, and functional validity of women's icks. Study 1 (N ≈ 300 single women) identifies consensual ick-inducing behaviors by integrating qualitative analyses of social media discourse with existing ick inventories, retaining items that reliably elicit aversion across participants. Study 2 (N ≈ 200 single women) examines individual differences in ick sensitivity by testing five potentially overlapping accounts of the phenomenon (disgust-based, short-term mating strategy, threat-management, gender-script violation, social media contagion) via associations with dispositional disgust (pathogen, sexual, moral), sociosexuality, anxiety, gender-norm endorsement, and social media consumption. Finally, rather than assuming that icks merely reflect arbitrary preferences, we investigated whether they carry adaptive value in mate selection. Study 3 (N = 200) tests whether men's self-reported engagement in ick-related behaviors covaries with indicators relevant to mate evaluation (professional attainment, anxiety/depression, androgen-deficiency symptomatology, poor mating success). Together, our studies aim to clarify whether the "ick" phenomenon reflects seemingly quirky yet useful heuristics in human mate choice, guiding sexual selection in a contemporary social environment characterized by high informational noise.

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Artificial Intelligence as a Potential Supernormal Stimulus: Evolutionary Mismatch in Social and Romantic Bonding

Ali Eren (American Culture and Literature, Hacettepe University)

Human nature is inherently based on social and romantic bonds built upon mechanisms such as reciprocity, mate selection, and costly signaling. However, technological and environmental changes in today's world have caused some of these instincts adapted for ancestral environments to produce evolutionarily unexpected results in modern conditions. These evolutionary mismatches have caused various problems at the individual and societal levels. Phenomena such as fast food and pornography described as supernormal stimuli are just a few examples; they minimize costs and exaggerate reward cues. Current AI systems are often designed to fulfill people's desires to make their lives more convenient. AI-centered social and emotional relationships may appear to be similar to normal human relationships from the outside, but characteristics such as constant validation, interaction without expectation of reciprocity, and negligible reciprocal cost may carry the possibility of AI-centered interaction functioning as a "supernormal stimulus" under certain conditions. Costs such as mutual investment and risk of rejection in human relationships are partially bypassed during interaction with AI; this situation can be interpreted as an evolutionary mismatch that does not conform to humans' evolved socialization mechanisms. In this case, AI may have motivational effects on mating market participation, such as some individuals taking a cautious approach to entering the mating market for a relationship that requires investment. This lightning talk raises testable predictions by discussing the possibility that, when considering the evolutionary mechanisms of forming social and romantic, deep relationships with AI, it could become a supernormal stimulus and create an evolutionary mismatch.

Behavioral Constraints in National Development Strategies: The Case of Morocco's 2030 Agenda

Houda ES-SQALLI (Behavioral Science for Public Policy – FGSES, University Mohammed VI Polytechnic - FGSES)

National development strategies often emphasize large-scale structural reforms and institutional change. However, their effectiveness ultimately depends on how individuals and groups respond to these reforms in practice. This poster examines the behavioral dimensions of Morocco's 2030 economic and social development agenda, a period marked by accelerated reforms and major international commitments, including preparations for the 2030 FIFA World Cup. In this context, ambitious policy objectives have been accompanied by rapid investments in infrastructure, urban development, and public services. Yet, such transformations do not unfold in a behavioral vacuum. Drawing on insights from behavioral science, this poster explores how social norms, incentive structures, trust in public institutions, and coordination challenges may shape policy implementation and everyday responses to reform. The analysis is based on a qualitative and conceptual review of national policy documents and selected secondary sources. Rather than assessing the success or failure of specific reforms, it seeks to identify recurring behavioral mechanisms that help explain gaps between policy intentions and observed outcomes. In particular, it highlights how top-down planning may interact with existing behavioral patterns, sometimes generating friction, resistance, or uneven adoption. Overall, the poster argues that large-scale development strategies associated with global events such as the 2030 World Cup can benefit from greater attention to behavioral dynamics. By foregrounding how policies are interpreted, adapted, and enacted on the ground, this work suggests that behavioral perspectives can complement institutional and economic approaches to development planning, particularly in middle-income countries undergoing rapid transformation.

The Secret of Cassava's Success

Basma Farah (AIRESS, FGSES-UM6P)

Cassava (Manihot esculenta) is a starchy tuber consumed daily by over a billion people. Despite its nutritional and agricultural advantages, consumption of its cyanide content can cause debilitating diseases in the long run. While this causal relation is opaque, communities have developed elaborate, multistep techniques that detoxify cassava. This raises a central question: how and why did such complex and efficient detoxification techniques evolve and spread in the absence of explicit knowledge of their detoxifying capacity? While the South American origins of the techniques are now lost, the more recent adoption of cassava and the historical re-evolution of detoxifying techniques in Africa offers a potential model to answer this question. Drawing on the literature in anthropology, food science, and toxicology, we are building a structured database encoding cassava-processing techniques, their impact on cassava-based products, and their geographical spread in order to distinguish and test three hypotheses. First is the claim that these practices emerged from a "blind" process of cultural transmission and selection, where groups with effective detoxification techniques were more successful in transmitted them (Henrich, 2016). Second is the "phenomenological hypothesis" (Mercier and Morin, 2019) according to which desirable phenomenological changes in processed cassava (such as better taste, texture, or preservation) are correlated with the elimination of toxins and were subjectively selected for, making detoxification an incidental benefit. Third, the "transfer hypothesis" takes that techniques are generally transmitted as interconnected bundles, and that techniques having gradually evolved for processing other foods were repurposed for cassava, making detoxification an exaptation.

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Nourished Together: Food, Interdependence, and the Emergence of Edible Coalition Signals

Maryanne L. Fisher (Psychology, Saint Mary's University)

Humans are extreme omnivores. Our need for dietary variety has long been an ecological and social selection pressure. As individuals, we need food variety to survive, and to obtain food variety, we need each other. Humans are interdependent in the acquisition, (re)distribution, and shared knowledge of edible foods. As a by-product of this intense interdependence, natural and meaningless ingredients turned into edible systems of communication. Food does not function to communicate social identities, yet it reliably does so. Food signals who we trust, who we belong with, and who we are. At the individual level, what we (do not) eat shapes identity in relation to others. Those who eat similar foods feel closer than those who do not. At the group level, this edible system of communication taps into coalitional mechanisms, helping explain why, for example, meat eaters and vegetarians often distance themselves from one another. In this talk, we argue that us-versus-them dynamics are communicated not only by what people eat, but by how, where, and with whom they eat. We revisit the concept of commensality. There is a WEIRD bias that equates commensality with "physically eating together," yet food connects people across space, time, and relationships in many ways. Eating from the same pot at different times, sharing food across households, or packing school lunches are also forms of togetherness. In our upcoming book Nourished, we challenge the Western family-meal ideal and, using an evolutionary lens, propose a framework explaining the diversity of ways humans "eat together."

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Fear and Disgust Elicit Distinct Physiological Stress Responses

Yasuyuki Fukukawa (Faculty of Letters, Arts and Sciences, Waseda University)

Emotions are psychological functions that have evolved to promote human survival and reproduction. The purpose of this study was to clarify the physiological responses elicited by fear and disgust. The participants were 12 Japanese university students. As experimental stimuli, 30 images eliciting fear (e.g., sharks), disgust (e.g., cockroaches), and positive emotions (e.g., puppies) were selected from the International Affective Picture System (IAPS; Lang et al., 2008). The emotional categories of these images were confirmed through discussion among several psychologists. Salivary amylase and cortisol levels were measured at four time points—immediately before, immediately after, and 20 and 40 minutes following stimulus presentation—using a protocol based on the Trier Social Stress Test (TSST; Kirschbaum et al., 1993). The results showed that both salivary amylase and cortisol levels increased in participants who viewed fear- or disgust-inducing images, with the magnitude of increase being greater for fear-inducing images than for disgust-inducing images. Furthermore, amylase levels exhibited a sharp increase immediately after image presentation, whereas cortisol levels tended to be elevated at the follow-up measurement points. No significant changes in these salivary indices were observed among participants who viewed positive images. These findings suggest that distinct physiological responses emerge depending on the nature of the emotion elicited by external threats.

The Multi-Capital Leadership Theory: An Integrative Framework for Human Leadership Diversity

Zachary Garfield (University of Mohammed VI Polytechnic)

Leadership and followership vary widely across human societies, yet existing theories often lack cross-cultural generalizability. We introduce the Multi-Capital Leadership (MCL) theory, which explains leader emergence and effectiveness through the deployment of four forms of capital: material, social, somatic, and neural. Leaders gain influence by leveraging these resources to generate benefits or impose costs in response to group challenges. To assess this framework, we conduct novel comparative analyses of ethnographic data from 59 non-industrial societies, drawn from the Human Relations Area Files (eHRAF). Our dataset includes 1,212 coded text records across seven leadership domains: conflict resolution, counsel, cooperation, punishment, representation, resource distribution, and ritual leadership. We operationalize capital types and examine their association with leader behaviors and follower outcomes. Results show that social and neural capital are most frequently documented across leadership contexts, while material and somatic capital appear more context-specific, often in resource distribution and enforcement roles. The analysis highlights how context-specific coordination demands and social comparison accuracy shape leadership dynamics across societies. The MCL theory integrates evolutionary anthropology with organizational and psychological perspectives, offering a unifying, data-informed framework to explain leadership diversity beyond WEIRD (Western, Educated, Industrialized, Rich, Democratic) contexts.

Co-authors: Christopher von Rueden (University of Richmond, US); Edward Hagen (Washington State University, US)

How Organizational Hierarchy Perception Shapes Information Sharing Across Cultures

Ghizlane GOUBRAIM (School of Collective Intelligence, Mohammed 6 Polytechnic University)

Human societies evolved from small, egalitarian groups to large-scale hierarchical organizations, fundamentally changing how information flows through communities. Cultural learning and transmission depend critically on who shares information with whom, and hierarchy determines these patterns. Yet even within the same organizational structure, individuals perceive hierarchy differently, creating variation in how cultural knowledge moves through groups. How does this variation in hierarchy perception shape information sharing? To answer this, we examined whether people evaluate information differently depending on how hierarchical they perceive their environment. We focused on two characteristics of information: informativeness (specific details) versus plausibility (believable generalities) to understand what gets shared in different hierarchical contexts. We tested 201 participants using workplace scenarios. Results show hierarchy perception is the key driver of willingness to share. Employees perceiving hierarchical organizations share less than those perceiving flat structures. In hierarchical contexts, information flows primarily upward to seniors, creating bottlenecks. In flat organizations, information spreads evenly across all levels. Position matters too: seniors share broadly regardless of structure, while juniors become selective in hierarchical environments. The type of information shared also shifts, informativeness drives upward escalation, while plausibility enables broad sharing. We will also present results from a cross-cultural replication testing whether these patterns reflect culturally-specific hierarchical norms, with employees in France, Morocco, and the USA, where data collection is currently underway.

When Faces Look Sick but Bodies Don't React: Facial Attractiveness and the Behavioural Immune System

Andrea Grus Bosak (University of Zagreb, Faculty of Humanities and Social Sciences, Croatian Institute of Public Health)

Humans are social beings, and while social interaction is a vital part of human experience, it also entails a risk of pathogen transmission. Successful detection of sick individuals is therefore crucial for survival and disease avoidance. Using a standard behavioural immune system (BIS) framework, this study examined how people perceive healthy faces compared to faces displaying very subtle signs of disease. While previous research has shown that even subtle disease cues reduce perceived attractiveness, few studies have investigated whether this response is accompanied by physiological changes or how typical BIS-related variables relate to facial attractiveness. A total of 123 participants (73% female; M = 22 years, SD = 6.53) rated the attractiveness of faces that appeared healthy and a comparable set of faces showing subtle signs of disease. During face exposure, electrodermal activity (EDA), electrocardiography (ECG), facial electromyography (fEMG), and electroencephalography (EEG; frontal alpha asymmetry, FAA) were recorded. Faces displaying subtle signs of disease were rated as significantly less attractive than healthy faces. However, no significant associations were found between BIS-related variables (pathogen disgust, germ aversion, perceived infectability) and perceived attractiveness. Furthermore, physiological measures did not show differential activation patterns in response to healthy versus subtly sick faces, nor were they correlated with BIS variables. These findings suggest that, at least in experimental and low-threat contexts, facial evaluation is not strongly driven by BIS-related constructs and likely reflects the contribution of additional psychological mechanisms beyond pathogen-avoidance processes.

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Evolutionary Anthropology and Climate Policy: A Moroccan Oasis Case Study

Salma Gueli (Ecole Normale Supérieure - PSL)

For generations, Moroccan oasis populations maintained a cultural lineage through the Jmaâ (traditional council), which governed the Khettara (communal irrigation). This system represented a sophisticated socio-technical coupling , where the physical infrastructure was inseparable from the social rules that managed it. The Jmaâ provided the institutional framework required for the coordination of shared resources. It achieved sustainable water distribution through the use of social capital and the pressure of local reputation (Ilahiane, 2004). However, subsidized motorized pumps triggered a maladaptive decoupling. Wealthy individuals gained the power of water extraction without group consent. This structure effectively rewarded 'cheaters' rather than cooperators (Essafraoui et al., 2025), a process that generated water inequality and dried aquifers. The subsequent breakdown of community cooperation eventually forced mass rural migration. Through this case study, we argue that state-led replacement of social technology with individual mechanical technology disrupted the cognitive causal chains formerly positioning communal management as a cultural attractor. We examine how neglecting the functional modularity of local institutions produces systemic failure. The analysis combines historical records, ethnographic accounts, and secondary anthropological data from Morocco to trace how this resource modernization initiative disrupted locally evolved governance and production techniques that previously sustained ecological resilience. This research builds on Pisor et al. (2021, 2023) by empirically demonstrating that evolutionary anthropology provides a necessary analytical framework for designing climate adaptation policies that align with existing cultural institutions rather than override them.

A statistical literacy intervention to target misperceptions of randomness in adolescent decision-making

Madeline Hludzenski (Department of Psychology, Clarkson University)

The propensity to perceive illusory streaks and patterns in random data is a human universal, tied to an evolutionary history of foraging for clumpy resources. Where people see predictable patterns versus randomness determines how they interact with the world. Research in educational and developmental psychology has shown that improving children's knowledge of patterning improves both reading and mathematics, and that pattern instruction interventions work as well or better as standardized assessments for numeracy instruction. Illusory pattern perception, however, not only impedes an individual's ability to discern statistical realities accurately, but it also has the potential to seed confusion among groups, communities, and society. Individuals prone to illusory pattern perception can form paranormal and conspiratorial beliefs more readily than others, and exposure to such beliefs decreases individuals' willingness to take actions with extra-individual consequences such as political participation or environmental conservation. In this study, we had adolescents interact with printed, laminated sets of 11 grids to complete a series of 2-dimensional pattern tasks. Specifically, participants described any similarities (e.g., grids have equal base rates of filled and empty squares) or dissimilarities they may detect (e.g., same-colored squares may be clustered forming groups or spread out with higher dispersion). We asked participants to order shuffled sets of grids into meaningful sequences and checked if they were able to select the most non-systematic pattern in a set. Additional tasks included sorting grids into piles of patterns that belong together (e.g., clumped, non-systematic, dispersed) or drawing a random pattern.

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Mating in the time of COVID: Reproductive motives outweigh pathogen avoidance

Ivana Hromatko (Faculty of Humanities and Social Sciences, University of Zagreb)

Maintaining social contacts became challenging during the COVID-19 pandemic due to both infection-related fears and epidemiological restrictions. The behavioral immune system (BIS) is context-sensitive and becomes more active under increased pathogen threat, potentially creating a conflict between the need for social and intimate relationships and the need to avoid infection. The present study examined whether reproductive motives and health-protection motives predicted changes in mate-seeking behaviors during the pandemic. Data were collected online between July and October 2021. Analyses focused on participants who were single or in non-committed relationships and currently interested in finding a partner (N = 350; M_age = 25; 80% women). Compared to the pre-pandemic period, participants reported reduced frequency of seeking partners among strangers, while partner seeking among acquaintances remained largely unchanged. The decline in mate seeking among strangers was significantly predicted by lower sociosexuality and weaker goal commitment to finding a partner. Pathogen disgust and COVID-19 immunity (via vaccination or prior infection) were not significant predictors, while COVID-19 anxiety was the only health-related variable associated with behavioral change. For mate seeking among acquaintances, only goal commitment emerged as a significant predictor. Among participants using dating applications, most reported equal or increased use compared to pre-pandemic levels, with attitudes toward online dating remaining largely stable. Overall, the findings suggest that, in this young and sexually active sample, reproductive motives were more influential than health-protection motives (arguably a small victory for sexual over natural selection).

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Mapping social support to health - using social network analysis in Vanuatu

Lyeba Jadun (Rutgers University)

Human socialisation is unique in its complexity, with layers of interaction between kin and non-kin, and shifting support both within and between group boundaries. Embodiment and social determinants of health frameworks emphasise how social and cultural environments are synergistic with health. This undergraduate-led project investigates features of social networks through visualising the impact using social network analysis, mapping various features of cooperative ties onto health. It analyses data collected in the summer of 2024 on a small village in Tanna, Vanuatu, where community has long been emphasised. The sample size is small, but the trends we found of greater social support and lower risk of hypertension can offer tentative support for the importance of social support to human health and well-being.

Menstrual cycle phases and women's preferences for masculinity

Natalia Jaguszewska (Jagiellonian University - Medical College)

According to the cycle shift hypothesis, women's preferences for masculine appearance traits are expected to increase during the peri-ovulatory phase, when estradiol peaks, compared to the luteal phase, when the progesterone levels are higher and conception probability is lower. However, recent research has challenged this effect, reporting no significant changes in preferences across menstrual cycle phases. We hypothesized that higher estradiol and lower progesterone levels during the fertile phase - would predict stronger preferences for taller, more masculine bodies, and higher ratings of partner's masculinity and attractiveness. 102 women aged 20-37 conducted ovulation tests, to correctly assess their menstrual phase. During the peri-ovulatory and luteal phases, participants completed a questionnaire reporting their preferred body silhouette and height. Additionally, they evaluated their partner's attractiveness and masculinity (both body and face). No significant differences were found between the peri-ovulatory and luteal phases in women's height preference (Median = 180, IQR = 5 for both phases; p = 0.78), body masculinity preference (Median = 5, IQR = 1 for both phases; p = 0.06), perceived partner's attractiveness (Median = 6 for both phases; IQR = 2 and 1.5 for peri-ovulatory and luteal phase respectively ; p = 0.35), or perceived partner's masculinity (Median = 6, IQR = 1 for both phases; p = 0.85). As no significant changes in women's preferences or partner evaluations were observed it may be assumed that cycle-related fluctuations in women's sexuality may stem from hormonally driven changes in mood or self-perception, rather than from shifts in mate preferences.

Blushing Enhances Attractiveness but Not Trustworthiness: Independent Effects from Facial Morphology

Liliana Janáková (Department of Psychology, Faculty of Arts, Charles University, Prague, Czech Republic)

Blushing, an involuntary physiological response, is a uniquely authentic social cue that may influence first impressions. However, little is known about how this transient cue interacts with stable facial morphology in shaping social impressions. Using static (photographs) and dynamic (GIFs) facial stimuli, we examined how blushing influences perceived attractiveness, health, and trustworthiness, and whether these effects depend on morphological variation quantified through geometric morphometrics. Across both laboratory and online settings (N = 118 faces; 1017 raters), blushing modestly increased attractiveness in female (by an average of 0.24 points) but not male faces, particularly when presented dynamically. No effects emerged for perceived trustworthiness or health, and the influence of blushing was independent of facial sexual dimorphism, distinctiveness, or asymmetry. Overall, these findings identify blushing as a subtle and distinct social cue that enhances affiliative appeal independently of facial structure, highlighting its context-sensitive impact. They underscore the importance of considering the interaction of dynamic, morphological, and chromatic factors in models of social evaluation and the broader study of first impressions.

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Life History Strategy, God Image, and Morality

Felicia Jones (Florida State University)

People adapt to their developmental environments, and these biological, social, and behavioral adaptations cluster into life history strategies (LHS), which fall on a slow-fast spectrum. Notably, a positive relationship with and view of God can both slow life history strategies and promote prosociality. We hypothesize and empirically test whether perceiving God as authoritarian or benevolent strengthens moral decision making in individuals with either a slower or faster LHS. Specifically, we hypothesize that people who have a slower (vs. faster) LHS and who are primed to think of God as benevolent (vs. authoritarian or a control) will make more moral decisions, both to help others (prescriptive norms) and to avoid harming others (proscriptive norms). To test this, we assessed LHS and manipulated view of God via religious texts and pictures that portrayed God as either authoritarian or benevolent as well as moral decision-making. In the moral decision-making task, participants responded to a series of proscriptive ("ought not") and prescriptive ("ought to") moral decisions. Findings revealed that people with a slower (vs. faster) LHS who were primed to think of God as benevolent (vs. authoritarian or control) made more prescriptive, but not proscriptive, moral decisions. These findings imply that the same religious cue can have differing effects on morality based on individual differences in life history strategies, which advances the scientific understanding of religious psychology.

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Development and validation of the Facial Identification Strategy Test (FIST)

Ferenc Kocsor (Institute of Psychology, University of Pécs)

Social learning in general, and dealing with the challenges of a complex social environment in particular, requires accurate recognition of individuals. However, people show huge variation in their abilities to recognize faces, both in terms of speed and accuracy. These differences may be rooted both in cognitive skills (e.g. attention, memory etc.) and personality (openness, extraversion etc.). Still, previous research has barely focused on the diverse motivational background that might result from these. Using Latent Class Analysis (LCA), EFA and CFA, we developed a questionnaire to detect the cognitive strategies people use when remembering and identifying newly seen faces, creating a tool that might help predict success in face recognition, and social success as well. The main question is whether there is a dominant strategy, and does it predict performance on face recognition tests. The novelty of this questionnaire is that, unlike existing tests, it does not assess face recognition ability per se, rather its motivational and attentional background. The FIST could be used to identify different groups of individuals based on the strategies they use to remember faces. For example, some may use a feature-based approach, while others may use a more relational approach, focusing on the social and emotional context. These strategies may vary according to the goal and intention (defined by the task during an experiment) why individuals want to memorize the face. The FIST might become a valuable tool for researchers studying memory and cognition in the context of facial recognition.

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Infants and Toddlers Expect Others Will Shun the Previously Excluded and Instead Approach the Previously Included

Bjørn Dahl Kristensen (University of Oslo, Institute of Psychology)

Navigating social affiliation adaptively is a critical task of human life. If parsing the social world into affiliative groups forms a core, generative mechanism of the evolved human mind, even infants may differentiate between minimal depictions of inclusion and exclusion. Furthermore, whether novel agents are socially included or excluded may serve as an important cue of their value as social partners. If so, infants may expect third-party observers to continue avoiding those others exclude and prefer those they include, further perpetuating discrimination of the already marginalized. Here, we show that 10-18 m.o. infants (n=96) look longer when a neutral observer approaches a novel agent whom an abstract group previously excluded, rather than included, in an animated violation-of-expectation paradigm. We found no effect of participant age. Movements were identical across scenarios, differing only in a delay between the excluded agent and the group. These findings indicate that even infants infer that observed exclusion versus inclusion will generalize to other interactions with new social partners.

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NA

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Only accept first choice

Co-authors: University Of Oslo; University of Oslo; University of Oslo

Evolution and Trust

Yagizcan Kurt (Psycoanalysis Unit, University College London)

This paper applies error management theory (EMT) (Haselton and Buss 2000) to explore how disruptions in epistemic trust—trust in communicated information—can be understood as adaptive responses to early adversity in individuals with borderline personality disorder (BPD). I propose that epistemic mistrust (EM) and epistemic credulity (EC), characterized by inappropriate trust patterns, arise from the differential costs of trusting unreliable versus mistrusting reliable information. Although these biases may seem maladaptive, they function as evolutionary survival mechanisms in response to harsh environments. Signal detection analysis can provide empirical evidence for these trust biases by assessing how individuals with BPD make trust-related decisions. Clinically, understanding these biases as evolutionary adaptations helps reduce stigma and informs evolutionary-informed interventions to recalibrate trust responses and improve interpersonal relationships. This approach highlights the significance of integrating evolutionary perspectives in treating trust disturbances in BPD.

Childhood Environmental Harshness and Unpredictability Positively Predicted Health Information Avoidance through Coping Self-efficacy: Evidence from a Three-Wave Panel Study

Linkun Li (School of Journalism and Communication, Sun Yat-sen University, Sun Yat-sen University)

Health information avoidance refers to preventing or delaying access to available but unwanted health information (Howell et al., 2020). Prior research suggests that a sense of uncontrollability underlies such avoidance (Hua & Howell, 2022; Link, 2021). Drawing on life history (LH) theory (Nettle & Frankenhuis, 2020), the present research proposes that growing up in harsh and/or unpredictable childhood environments fosters faster life history strategies, which are associated with reduced coping self-efficacy (i.e., the belief in one's ability to manage stressors) and, in turn, a greater tendency to avoid health information. Accordingly, we hypothesize that childhood environmental harshness and unpredictability are positively associated with health information avoidance, both directly and indirectly through coping self-efficacy. Using a three-wave panel dataset of Chinese adults (N = 1,143), we found that both childhood environmental harshness and unpredictability were positively associated with health information avoidance across time. Further analyses revealed that both childhood harshness and unpredictability (Time 1) were significantly and negatively related to coping self-efficacy (Time 2), and that coping self-efficacy (Time 2) was in turn negatively associated with subsequent health information avoidance (Time 3). Our findings support the life-history explanation of health information avoidance, suggesting that tendencies to avoid health information are adaptively calibrated by early-life environment, reflecting strategic trade-offs in the allocation of limited resources between immediate demands and long-term health maintenance. These findings also contribute to life history theory by extending research on childhood environments and health behaviors(e.g., smoking and alcohol use) to the domain of health information processing.

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External Threat and Pubertal Acceleration in Depressed Adolescents

Lydia Huaying LIU (Department of Psychology, University of Macau)

Life history (LH) theory states that early exposure to external threat, i.e., environmental harshness and unpredictability, can accelerate development and increase vulnerability to psychological distress. In this external LH model, childhood trauma is a direct and severe form of early external threat, and prior work consistently links it to greater depressive symptom severity during adolescence. In an internal LH model, earlier age at menarche results from internally felt threat to accelerate maturation and embark on a faster life history pathway. Earlier puberty may relate to depression because faster life history strategies prioritize earlier maturation over long-term somatic and psychological regulation, which can increase vulnerability to depressive symptoms. Based on the two models, I hypothesize that higher levels of childhood trauma would be associated with more severe depressive symptoms, and that earlier menarche would be associated with both greater trauma exposure and greater depressive symptom severity. Based on a clinical sample of 1,726 adolescents diagnosed with depressive disorders, the results support both external and internal associations with depressive symptom severity as well as a moderate relation between childhood trauma and early menarche. Clinical and life history research implications will be discussed.

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Divergent Pathways to Creativity: Fast and Slow Life-History Strategies

Hui Jing LU (Department of Applied Social Sciences, The Hong Kong Polytechnic University)

What fuels the creative spark in a child? The origins of creativity may be linked to fundamental differences in how individuals adapt to their environments. During late middle childhood, a period marked by growing cognitive sophistication and emotional complexity, creativity may emerge from distinct psychological processes. Guided by life-history theory, this investigation proposes that creativity is not a single process but instead follows two distinct developmental pathways. For the fast strategists, whose mindset is shaped in an unpredictable environment, innovation may be driven by the urge for novel sensation and a tolerance for risk. For the slow strategists, nurtured in a stable environment, creativity may instead arise from the deliberate synthesis of knowledge and careful reasoning. The findings based on longitudinal data of 418 children aged 10-12 reveal a more nuanced story. In slow-strategy children, impulsivity and risk-taking stifle creative expression, as shown in negative correlations, whereas in their fast-strategy peers, the very experience of recent anxiety or depression appears positively correlated with creativity. This discovery suggests creativity arises through divergent, adaptive pathways tied to life-history profiles. It also offers a unifying framework for previously inconsistent findings and points toward new research on how developmentally embedded strategies shape innovative thinking.

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Attentional bias towards infants and its association with testosterone and cortisol in non-parents

Denisa Cristina Lupu (Assistant Professor, Universidad Autónoma de Madrid)

Attentional bias towards infants is observed in both parents and non-parents, suggesting that this mechanism is not only a consequence of direct caregiving experience. However, its relationship with hormonal factors in individuals without offspring remains largely unexplored. In a sample of 325 young adult non-parents, we examined the association between salivary testosterone and cortisol levels and attentional bias towards infants, using a dot-probe task with images of adults and infants. Consistent with previous research, we observed an overall attentional bias towards infants. This bias was evident in women but not in men when using the standard dot-probe measure. However, this measure of attentional bias was not associated with hormone levels. In contrast, analyses incorporating the temporal dynamics of attention revealed hormonal associations. Higher testosterone levels were linked to a stronger positive bias towards infants during periods in which attention was directed to infant faces, in both men and women. Testosterone did not affect the overall intensity of biases, suggesting that its effects are specific to moments when infants capture attention. Cortisol showed sex-dependent associations with bias intensity, being positively related to sustained attention in men and negatively related in women. Variability in attentional bias was best explained by an interaction between testosterone and cortisol, where higher testosterone was associated with greater variability only under high cortisol. Our results indicate that salivary levels of testosterone and cortisol are associated with attentional bias towards infants in a population of non-parents, and that analysing attention over time helps to clarify these complex relationships.

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Mutual Joy as a Mechanism of Social Leearning

Tanya MacGillivray (Simon Fraser University)

Mutual joy—shared positive emotional experiences between individuals—plays a critical role in early development. We argue that infants' inclination to engage in joyful interactions with caregivers during the first years of life underpins early communication and cultural transmission. Despite its significance, developmental research has often overlooked infants' strong preference for positive social engagement. From birth, infants exhibit an innate attraction to human features such as faces, eyes, and voices, particularly those of familiar caregivers. By two months, they begin social smiling and soon participate in reciprocal interactions, marking the onset of communicative development. Evidence from our research indicates that mutually joyful episodes between parents and infants are consistently associated with secure attachment, providing a foundational platform for early communication and cultural transmission.

3-year-olds Engage in Joint Action, but 5-year-olds Engage in Joint Ideation

Nouhayla Majdoubi (School of Collective Intelligence, Université Mohammed VI Polytechnique)

Collaboration is a foundational element of human social behavior. This can mean joint action, such as hunting deer together, or building a barn together. But it can also mean 'joint ideation', where we collaborate on the creation of plans, beliefs, or theories. We may collaborate on a new plan for community governance, or on a theory about how planets orbit the sun. Here we compare three- and five-year olds' performance on collaborative tasks that required either joint action, or joint ideation. We found that three- and five-year-olds engaged in joint action, but only five-year-olds succeeded in creating a joint plan before acting. We found that performance in explicit false belief tasks predicted joint ideation, indicating the centrality of theory of mind to this later developing ability. These results add to our understanding of the nature and development of human collaboration, showing that collaboration on ideas, but not actions, depends on mind-reading skills not yet available to the youngest children.

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The Behavioral Ecology of Morality: A Systematic Review Linking Childhood Harshness and Unpredictability to Pro- and Anti-Sociality in Psychology

Heather "Heath" Maranges (Department of Psychology, Florida State University)

Human groups thrive via interdependence, prosociality, and cooperation. Yet, there is meaningful variation in prosocial and antisocial tendencies among individuals. Life history theory has been adapted in psychology to understand individual differences in physiological, psychology, and behavioral patterns—including social patterns—as adaptively calibrated to ontogenetic environmental features, namely harshness (i.e., sources of morbidity-mortality, such as threat and deprivation) and unpredictability (i.e., random variation in harshness or other aspects of the physical and social environment). The current systematic review applies the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method to detail patterns of whether and how childhood harshness and unpredictability are associated with pro- versus anti-social thoughts, feelings, and traits as well as decisions and behaviors in psychology in a final selection of 47 papers. The systematic review allows assessment of whether and how harshness as threat versus deprivation and unpredictability have similar or different effects on pro- and anti-sociality; of gaps in the literature based on (in)frequency of specific ecological feature and pro-/anti-social outcome operationalizations; and of common physiological, psychological, and behavioral mediators of the childhood ecology–pro-/anti-sociality links. In short, the review finds that harshness as threat and unpredictability (i.e., primarily related to the family and household, but also to economics) are consistently and monotonically associated with more antisociality and less prosociality. Findings are mixed for the links between harshness-deprivation and pro- and anti-sociality. We discuss the theoretical and practical implications of these patterns of findings.

Co-authors: Felicia Jones (Florida State University, US); Casey Timbs (Florida State University, US)

CFS-VR: Software for Studying Unconscious Cognition with a VR headset using Continuous Flash Suppression

David S. March (Department of Psychology, Florida State University)

Numerous psychological theories emphasize the importance of unconscious cognition. However, research on unconscious processing has faced stigma and methodological challenges, especially in minimizing contaminating influences of conscious cognition. Continuous flash suppression (CFS), an image presentation technique, has the potential to enlarge the window through which we may view the workings of the unconscious mind prior to the onset of conscious cognition. But CFS can be technically challenging and expensive to implement. We have developed software, CFS-VR, that increases access to CFS as a methodological tool using a basic VR headset. CFS-VR allows for the presentation and recording of responses to many different visual stimuli and trial types, and is freely available. This paper provides a brief tutorial and explores research domains (evaluative conditioning, priming, and mere exposure) where CFS-VR can address unresolved and novel research questions.

Relative Performance Updates Subjective Social Rank After a Dyadic Challenge: Bridging Social Rank Theory and Analytical Rumination Hypothesis

Akihiro Masuyama (Department of Psychology, Aichi University of Education)

Social Rank Theory posits that social defeat rapidly recalibrates rank appraisals, whereas the Analytical Rumination Hypothesis links defeat to rumination. We tested whether relative performance in a brief dyadic challenge alters subjective rank and rumination-related cognition. Thirty-four adults participated in dyads. At baseline, participants completed measures of depressive symptoms, submissive behavior, trait rumination, state stress, and subjective social rank (Social Comparison Scale; SCS). Dyads completed an incentivized performance task and chose a cooperative (reward based on the dyad mean) or competitive (reward based on outperforming the partner) payoff rule. Because most chose the cooperative rule, we operationalized defeat as relative performance (winner vs. loser) regardless of rule choice. SCS Rank and state stress were re-assessed immediately after the task, followed by a Sustained Attention to Response Task (SART; NoGo to “3”) with 12 multiple-choice thought probes. SCS Rank showed a significant Time × outcome interaction, $F(1,32)=8.02$, $p=.008$, $\eta p^2=.20$: winners increased in perceived rank whereas losers decreased (winners: Pre M=32.41, Post M=33.94; losers: Pre M=29.59, Post M=28.53). In dyad-based analyses, SART commission and omission errors did not differ by outcome, and Go reaction time showed a non-significant tendency for faster responses in winners (winner−loser: M=−0.030, SD=0.087; $t(16)=-1.40$, $p=.180$). No participant endorsed rumination on the thought probes. Thus, even in an ostensibly cooperative context, relative performance rapidly updated subjective rank, whereas rumination was not detected with the present probe method and timing, motivating unavoidable defeat feedback and more sensitive state-rumination assessment.

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Is Permanent Body Modification a Universal Medium of Human Expression?

Brea McCauley (Simon Fraser University)

Permanent Body Modification (PBM) is among the most striking of human behaviours. We have been permanently modifying ourselves for thousands of years and PBM remains popular today. However, the global prevalence and variability of PBM is not well understood. To address this issue, we conducted a survey of the PBM practices of all 186 cultures in the Standard Cross-Cultural Sample (SCCS). We manually consulted 2418 sources pinpointed to the focal year and subgroup for the sampled cultures. Using these sources, we coded the prevalence and variability of seven types of PBM: tattooing, scarification, amputation, piercing, genital modification, dental modification, and bone shaping. We also coded subtypes, distinguishing them based on the method and location of the modification. The key finding of our survey is that PBM was universally present in the SCCS. All 186 cultures practiced at least one form of PBM. To ascertain whether the universal occurrence of PBM in the SCCS could be applicable on a wider scale, we assessed the known gaps in the sample. This analysis indicated that PBM was also prevalent in these regions and time periods. A second important finding is that there was great variability with respect to the practices in which cultures engaged. We identified a total of 43 PBM subtypes in the SCCS. Together, these results suggest that PBM is a fundamental human practice that is both universal and highly variable. This has implications for the evolution and spread of human sociality, cooperation, and communication.

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Attractiveness in the Face of Threat: How the Sense of Danger Influences Women's Preferences for Male Faces

Dawid Jakub Mikulski (SWPS University)

Research on women's preferences for men indicates that in situations of threat, women tend to prefer more masculinized male features, consistent with Good Genes Theory, which proposes that masculine traits may signal strength and higher mate quality. Support for this hypothesis comes from studies showing that activating perceived threat can increase women's attraction to masculine facial characteristics, although other research finds that chronic threat may instead reduce preferences for masculinity. These conflicting results highlight the need for further investigation. The present study examined whether women in a threat condition would show stronger preferences for masculine male faces than women in a control condition, with the expectation that fear and anxiety may partially explain this effect. A total of 867 women participated in an experimental study in which they were randomly assigned to read either threatening or neutral scenarios. Participants then evaluated multiple sets of male faces varying in facial masculinity. The manipulation check confirmed the threat induction was effective, but women in the threat condition did not show stronger preferences for masculine male faces than those in the control group. Fear and anxiety did not mediate these preferences. Overall, the results provide no evidence that women experiencing threat exhibit higher preferences for masculine male faces, offering no support for Good Genes Theory. The null effects may stem from limitations in the stimuli or threat manipulation, suggesting that more ecologically valid methods are needed in future research.

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Constraint and communicative pressure shape creativity in a musical task

Katie Mudd (Stony Brook University)

While creativity is fundamental to human culture, its precise contribution to cultural evolution remains unclear and understudied (Fogarty et al., 2015). This project examines how individual and collective creativity shape human culture, focusing on music and language to study how creativity affects signal space exploration using a drum machine. An online experiment was completed by 120 participants placed in one of four conditions, varying by the number of constraints (2 or 3 sounds) and domain (music or communication). In the music task, participants were asked to create an appealing rhythm and in the communication task, they were asked to create a rhythm to describe a color. Participants also completed a divergent creativity test (DAT; Olson et al., 2021). We found that exploration was influenced by domain and number of constraints but not by creativity level. Participants explored the signal space most in the music condition with two sounds, with overall greater exploration for two sounds than three, and for music over communication. An ongoing follow-up study exploring creativity will give participants feedback on their rhythms, as we posit that a more challenging task may push more creative individuals to increase their exploration of the signal space. A subsequent study will have participants interact and give feedback on rhythm productions to further investigate how creativity functions at the collective level. By examining creativity within constrained signal spaces, we aim to shed light on the mechanisms through which new communicative forms, and cultural innovations more broadly, emerge and stabilize.

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Coevolution of Cooperation and Exit Strategies Generates Long-term Fluctuations in Cooperativeness

Natsuki OGUSU (Riken)

In cooperative interactions among individuals, the collapse of cooperation often occurs when individuals can free-ride on the costs paid by others. Such situations are commonly formalized using models such as the Prisoner's Dilemma Game (PDG) and the Public Goods Game (PGG). In these games, being less cooperative yields a higher payoff in the short term. In such contexts, one can consider strategies by which an individual exits the relationship when the partner's level of cooperation is lower than their own exit threshold. With such strategies, uncooperative individuals may be unable to maintain relationships with cooperative partners, which may promote the evolution of more cooperative and choosy individuals. At the same time, too choosy individuals may struggle to find satisfactory partners and consequently obtain lower payoffs. To understand the coevolution of cooperation and exit thresholds, we conducted agent-based simulations. In the model, individuals form pairs and engage in either the repeated PDG or the PGG with an exit option in a population, and strategies evolve over discrete generations. We found two quasi-stable population states, characterized by high cooperation and high exit thresholds or by low cooperation and low exit thresholds. Notably, in some parameter regions, the system exhibits long-term fluctuations in cooperation and exit thresholds, characterized by a gradual increase in cooperativeness and its abrupt collapse. We examined the conditions for these dynamics, using deterministic recurrence equations and simulations. We discuss the real-world situations to which the model may correspond.

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Hierarchy and Intergroup Peace: Social Hierarchies May Not Always Promote Peace in Human History

Kai Otsubo (Department of Social Psychology, University of Tokyo)

In small-scale societies, raids on other groups often trigger chains of retaliation, eventually leading to chronic intergroup conflicts. Raids undermine the welfare of many group members by destabilizing intergroup relations. Nevertheless, some group members may be tempted to engage in raids because they confer fitness advantages on raiders, typically young men. Glowacki (2024) argues that relatively recently evolved complex social structures, including status hierarchies, facilitated the regulation of group members' behavior and thus contributed to the emergence of long-lasting intergroup peace. We conducted an agent-based simulation to examine the effect of status hierarchies on intergroup peace. In the simulation, each agent either attempts to raid another group or attempts to prevent other in-group members from raiding. Contrary to Glowacki's argument, our simulation suggested the opposite—the presence of status hierarchies could more strongly incentivize low-status individuals to engage in raids. We then empirically tested this prediction using the Standard Cross-Cultural Sample (SCCS; Murdock & White, 1969). Together with the simulation results, the secondary data analysis revealed a significant positive correlation between the practice of polygyny (i.e., the evidence for the presence of greater variance in men's reproductive success) and the intensity of warfare. In summary, we tentatively conclude that social hierarchies do not necessarily foster intergroup peace but could undermine it when the incentive for low-status individuals to engage in raids is more important than the incentive for high-status individuals to suppress raids.

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Collectivist values help solve the climate dilemma

Riccardo Pansini (Yunnan university of finance and economics)

Theories on evolution of cooperation assume that interacting individuals can change their strategies under different expected payoffs and cultural contexts. The willingness to invest resources into partners and to cooperate may therefore vary in collectivistic Eastern Asia as opposed to more individualistic Western countries partly because of cultural differences. An experiment was implemented examining the willingness of young Chinese subjects to mitigate the consequences of climate change in a country severely affected by air pollution. We set up a public goods game in which groups of six students had to reach a minimum investment threshold to be able to save funds for a reforestation project to curb climate change. Such social dilemma could not be solved in the western world. Here, instead, five out of eight Chinese groups cooperate enough to raise funds for the reforestation goal. An Individualism/Collectivism questionnaire we presented the subjects with established why we are confronted with a variance in cooperation interests across different cultures. In China, in fact, collectivistic values seem to be a key factor for allowing the emergence of this environmentally driven cooperation.

Cognitive and Evolutionary Science of Religion and the "Natural/Supernatural" Distinction

Myron A Penner (Philosophy, Trinity Western University)

This is a theoretical paper that evaluates the study of supernatural agent constructs in cognitive and evolutionary science of religion. Science and religion historian Peter Harrison argues that the natural/supernatural distinction is not well motivated historically, scientifically, or culturally. Scientific approaches to studying religion, however, assumes this distinction by adopting methodological naturalism both as a general strategy, and and in particular with respect to investigating supernatural agent concepts. I first evaluate Harrison's criticisms of the natural/supernatural distinction. I then map the use of this distinction by cognitive and evolutionary scientists in studying religion and evaluate whether Harrison's criticisms require CSR to change its ways. I argue that Harrison's critique suggests that the use of scientific methods to study supernatural agent beliefs in non-western contexts need some reform. I further argue that Harrison's critique does not undermine the scientific utility of either methodological naturalism or the natural/supernatural distinction in cognitive and evolutionary science of religion.

Evaluating Frameworks for Tool Use across Species: A Meta-Theoretical Perspective

Chiara Pertile (PACEA, UMR 5199, University of Bordeaux)

Research on the origins and maintenance of tool use in human and non-human animals draws on a heterogeneous set of ecological, cognitive, and social hypotheses. Although several theoretical frameworks attempt to organize these into broader explanatory accounts, they are rarely examined regarding their causal architecture, underlying commitments, or comparative scope. Developing such an analysis is crucial for clarifying cross-species patterns and reconstructing early hominin technological behaviour, with non-human primates as key living models. This poster provides a meta-theoretical analysis of the main frameworks used to explain tool-use behaviour, including the Eco-cultural model proposed by Boesch (2007,2012), the Socioecological model (van Schaik et al. 1999), and the Comparative Socio-ecological and Developmental approach (Koops, Sanz 2022). The analysis examines how these frameworks organize ecological, cognitive, social, and ontogenetic dimensions, and how they conceptualize the processes underlying the emergence, persistence, and variation of tool-use behaviour. Furthermore, it assesses several influential hypotheses discussed across the literature (e.g., Ecological Necessity, Opportunity, Social Learning, Terrestriality, and Relative Profitability) to determine whether they function as components within these frameworks, operate autonomously, or generate partially competing interpretations. The goal is to identify points of convergence, divergence, and generalisability across taxa. By clarifying their explanatory and heuristic roles, this analysis provides a more coherent conceptual basis for integrating animal tool use research with questions concerning the technological evolution of early hominins. This cross-taxa perspective helps distinguish core principles of tool use from lineage-specific adaptations, thereby providing a more powerful comparative benchmark for reconstructing hominin technological evolution.

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The touchy-feely side of evolutionary medicine: Analyzing the evolutionary mismatch of touch-avoidant culture by considering the value of touch-based therapy

Malia Piazza (Department of Anthropology, Indiana University)

In the therapeutic practice of surrogate partner therapy (SPT), surrogate partners are somatic intimacy professionals who help clients overcome social-emotional challenges through interactive touch exercises and relational skill-building. Clients additionally work one-on-one with a clinical therapist, and these professionals collaborate to discuss the client's healing process. The rationale of SPT is influenced by evolutionary medicine, centering on the healing properties of relational touch and its positive impacts on human health, including short-term benefits such as oxytocin release and immune system boost, and long-term benefits, like overcoming embodied trauma or improving sexual functioning. From 2024-2025, using a community-based research approach, clinical therapists were surveyed online regarding their perspectives on SPT. In the current study, qualitative responses describing clinicians' feelings toward SPT were thematically coded with attention to positive, negative, or mixed attitudes, plus the reasons they provided. In an international sample (N=173), 48% of respondents expressed positive attitudes, 41% expressed mixed attitudes, and 8% expressed negative attitudes. The most prevalent reasons for positive attitudes included effectiveness of SPT (37%, i.e. perceived client benefits), usefulness of SPT (19%), limitations to talk therapy alone (8%), and value of holistic approaches (6%). These reasons, based on clinicians' own experiences in the therapeutic system, not only point to the adaptive value of touch, but also highlight that this intervention has utility in environments where touch is discouraged. With an overwhelming majority of respondents based in the US, this research supports the idea that the infrequency of touch in American society may be an evolutionary mismatch.

Are There Two Types of Awe? A Potentially Useful Heuristic for Understanding Evolutionary Function(s) of Awe

David Racioppa (Lakehead University, Psychology)

The seminal paper by Keltner and Haidt conceptualizes prototypical awe as containing perceived vastness and a need for accommodation (NFA). This is a fairly standard definition of awe, however, there are challenges to this conception, and the type of awe that is measured often deviates from this standard definition (even amongst researchers who adopt the standard definition). Further, there is also a lack of agreement regarding the evolutionary function of prototypical awe conceptualized by Keltner and Haidt. It is proposed that a potential solution to the conceptual and functional ambiguity of awe can be found in an unrealized opportunity to integrate two germane theories with the awe literature: the constructionist theory of emotion and the entropic brain hypothesis. Arguably, both theories support a broad distinction between two different types of awe: a secondary or constructed awe when an individual's emotion concept for awe is recruited to categorize affect, and a primary or prototypical awe wherein no emotion concept is activated nor adequate in assimilating the highly anomalous experience. This will have implications concerning the evolutionary function(s) of awe given that both types of awe are expected to have different functions and varying psychological components (e.g., perceived vastness and NFA). There still remain many interesting and unanswered questions, however this distinction between two types of awe should provide useful heuristic guidance in addressing further complexities of awe.

From Provenance to Legitimacy: Transparency, Governance, and Traceability in Morocco's Saffron Ecosystem

Sandip Rakshit (Rabat Business School)

This study explores how transparency and governance strategies contribute to capability development, legitimacy, and risk reduction within Morocco's high-value saffron supply chain—an industry recognized for both its economic significance and vulnerability to fraud, opacity, and unequal value distribution. Using a sequential multi-method design, the research integrates qualitative interviews, survey-based validation, and experimental analysis to capture the multifaceted nature of transparency practices and institutional influences. The findings demonstrate that transparency mechanisms—such as origin certification, digital traceability, and cooperative disclosure—enhance both supply chain credibility and trust among producers, exporters, and global buyers. All quantitative analyses are conducted using R (RStudio) .Governance strategies, including contractual oversight and third-party auditing, reinforce these effects by strengthening the development of traceability capability, which mediates the relationship between transparency and risk reduction. Moreover, institutional pressure from certification bodies, export authorities, and ethical trade initiatives amplifies these relationships, making transparency more effective in legitimizing Moroccan saffron in international markets. By linking transparency, governance, and institutional theory, this research advances understanding of how system-based assurance can substitute for relational trust in fragmented agri-food networks. Practically, the findings offer policymakers and cooperatives actionable insights into how to design inclusive, technology-enabled transparency systems that empower smallholders while protecting product authenticity. In alignment with the CES Equality, Diversity, and Inclusion (EDI) objectives, this study foregrounds the role of equitable participation and local voice in shaping sustainable and ethical governance models for Morocco's saffron ecosystem—bridging local empowerment with global market accountability.

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Interplay Between Facial Shape and Expression Dynamics

Victoria Rostovtseva (Institute of Ethnology and Anthropology of the Russian Academy of Sciences)

The relationship between facial expressions and facial shape is surprisingly understudied. We use facial videos and photographs (participants of European descent, N=142) to investigate the interplay between facial morphology and dynamics. Facial expressions were quantified through Action Units (AUs) using the Facial Action Coding System (via FaceReader). Facial shape was analysed using geometric morphometrics. In a first step, we analysed the 13 morphological facial parameters, the 14 AUs, and their relationships. This analysis revealed that women display more intense facial movements, but men exhibit a tighter link between facial movements and facial structures. In a second step, we used Principal Component Analyses for a broader categorisation of facial shapes and expressions. Groups of AUs correlated uniquely to principal components, revealing specific facial expressions (like a Duchenne smile). Three of the expressions thus identified were the same in men and women, while the fourth was sex specific. The principal components of the facial shape data were more mosaic in composition; however, one male and one female principal component largely agreed, reflecting a similar facial shape phenotype. In both sexes, this facial shape dimension was associated with the tendency to produce a Duchenne smile. In men, a male-specific principal component of the facial shape data corresponded to facial masculinity, as determined by Linear Discriminant Analysis. Men with more masculine facial shapes were more prone to produce lower-face anger expression. We conclude that natural facial expressions are to certain extent related to facial morphology, especially in men.

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Shrinking Networks? Population Structure, Social Opportunities, and Mental Health Across UK Regions

Amanda Rotella (School of Psychology, Northumbria University)

Human social networks are shaped by ecological pressures, population structure, and transmitted norms governing relationship formation. Yet modern environments have changed dramatically: populations have doubled since the 1970s, urbanisation has accelerated, and inequality has risen sharply. Concurrently, social networks have contracted, and loneliness has increased sharply. We propose these trends are linked: rapid population-level changes have outpaced our evolved psychology, disrupting the environmental conditions that historically supported social connection. To start testing this hypothesis, we investigated how different population structures impact social networks and wellbeing across three UK regions, which vary systematically in density, inequality, and deprivation, at two time-points. At Time 1 (N = 1,500), we linked subjective perceptions of neighbourhood characteristics and social network structure to objective postcode-level indicators, examining how structural and ecological factors of where we live impact social networks. At Time 2 (N = 858), we probed perceived barriers and facilitators of social connection and assessed mental health outcomes. We present results examining whether neighbourhood-level factors predict network size and quality, whether these relationships mediate mental health outcomes, and what environmental features constrain or enable connection. We discuss how modern population structures create mismatches with our evolved social psychology.

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Selective teaching to one's own offspring is not always evolutionarily favored

Tsuyoshi Shimodaira (The Graduate University for Advanced Studies, Integrative Evolutionary Science, The Graduate University for Advanced Studies / RIKEN)

Teaching behavior contributes to cultural transmission by improving the efficiency of social learning. Although teaching is an altruistic behavior for teachers and teaching non-relatives seems to be unfavored by selection, the widespread teaching including oblique teaching is common in the modern human society. In this study, we theoretically examined the effect of oblique transmission on the evolution of teaching. We apply the life schedule model which has two life stages, learning stage and mature stage. Learning stage consists of social learning (learning from a role model) and individual learning (learning by yourself without a role model). A learner probabilistically chooses either his/her own parent or a random individual. In the mature stage, an individual invests into reproduction and teaching. Investment into teaching improves the social learning efficiency of the learner. One's fitness depends on its cultural level and the amount of investment into reproduction. We assume two scenarios for teaching; teaching everyone if one is chosen as a role model (Scnario 1) or teaching own offspring only (Scenario 2). We examine under what conditions a life schedule that invests into teaching would be evolutionarily favored, by deriving an evolutionarily stable strategy. We find that as the probability of oblique transmission increases, the condition for evolution of teaching becomes strict drastically in both scenarios. Furthermore, surprisingly, teaching is less likely to evolve in Scenario 2 compared with Scenario 1 when the social learning efficiency is low, because the cultural level becomes lower when teaching is only to one's offspring.

Co-authors: Hisashi Ohtsuki (The Graduate University for Advanced Studies, JP)

Considering the Unique and Interactive Impacts of Self-Compassion and Partner-Focused Compassion for Long-Term Relationship Satisfaction and Behavior

Vegas Samuel John Spivey (Florida State University)

Behavioral interactions are a primary regulator of relational dynamics and are deeply influenced by partners' internal attributes. To this end, having compassion for one's self or intimate partner is interpersonally beneficial. Indeed, people high (versus low) in self-compassion are less defensive during conflict, and people high (versus low) in partner compassion are more satisfied with their relationships. Yet self- and partner-focused compassion are correlated constructs, and little research has considered their unique and interactive associations for relationship behavior and satisfaction. We examined these associations using data from a 3-year study of 240 newlyweds. Results revealed that self-compassion was neither associated with own nor partner satisfaction or behavior; in contrast, partner compassion was positively associated with own and partner satisfaction and negatively associated with own and partner oppositional behavior. Including their interactive effects revealed that partner compassion is only associated with own satisfaction among those high (but not low) in self-compassion. These results suggest the relational benefits of self-compassion may be inflated; it does not exert unique associations with relationship outcomes and benefits satisfaction only when paired with partner-focused compassion.

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Just My Type: Uncovering Ideal Partner Types with Latent Profile Analysis

Marius Stavang (Department of Psychology, Norwegian University of Science and Technology)

"He/she/they is just my type!" is a common phrase people use when describing their mate preferences. Following this "type-way" of summarizing one's preferences in a partner, this study examined whether the within-person covariation across central domains of mate preferences manifests as latent profiles of ideal partner types. To this end, I reanalyzed the publicly available dataset from Walter et al. (2020; N = 14,399; originally collected for their large-scale replication of sex differences in mate preferences), using latent profile analysis of participants' ideal ratings of kindness, intelligence, health, financial prospects, and physical attractiveness in a partner. Five types of ideal partners emerged. These were Catch and Perfect, which were shared across sexes; Girl Next Door, Traditional, and Out-of-Shape Jane for men; and Nice Guy, Average Joe, and Bad Joe for women. Both characteristics of participants and their country of residence were predictive of which ideal partner they preferred, several of which aligned with evolutionary theory. For example, as pathogen load increased, women were less likely to favor a Nice Guy and more likely to favor a Perfect partner. More broadly, this study demonstrates how multiple domains of mate preferences can be modeled jointly and parsimoniously as latent profiles, rather than examined one preference at a time. Finally, modeling mate preferences as ideal partner types may more realistically capture how individuals experience their partner preferences in everyday life, as evidenced by how people naturally describe someone as being—or not being—their "type."

Cultural Pathways to AI Acceptance: Insights from Group and Individual Levels

Nicolaas Stevense (Communication Studies, Antwerp University)

From an evolutionary perspective, responses to humanlike collaborative artificial intelligence (AI) can be understood as by-products of mental mechanisms that evolved to regulate interpersonal and group-level cooperation. These responses vary across cultural contexts. In collectivist contexts, AI is more often framed as contributing to social harmony and collective benefit, whereas in contexts shaped by individualism and human exceptionalism, technological change is more frequently framed in terms of autonomy, and control. Prior research shows that, at the national level, higher individualism is associated with less favorable AI perceptions, while collectivist contexts tend to foster acceptance. Using a multilevel approach, we examined whether individualism–collectivism relates to AI acceptance at both group and individual levels. Study 1 analyzed cross-national AI acceptance data (42 countries, Gillespie et al., 2025) in relation to national-level cultural dimensions (Minkov & Kaasa, 2022). Hierarchical regression analyses showed that higher national-level individualism was associated with lower AI acceptance. Survey study 2 (N = 143; 71.3% aged 18-25; 68.5% women) assessed AI acceptance (AIDUA measures, Gursoy et al., 2019) controlling for individual-level measures of individualism/collectivism (Triandis & Gelfand,1998), age, and gender. Exploratory (PLS) structural equation modeling revealed no direct effects of individual-level cultural orientation on AI acceptance. Emotional responses were the strongest predictors of willingness to accept AI. Thus, while AI acceptance aligns with group-level cultural individualism/collectivism patterns, individual-level orientations do not explain acceptance. These findings highlight the need to further examine if and how culturally patterned emotion may shape AI acceptance and resistance.

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Gaslighting: evolution of coercive control

Michael Mr Stirrat (Edinburgh Napier university, Edinburgh Napier University)

The evolutionary literature exploring domestic violence (e.g. Larsen, 2023) focuses on how paternity uncertainty can be reduced through violence, and so the focus of partner abuse is on male perpetrators. The literature in social and forensic psychology (and criminal law) has moved away from this focus to understand violence as one aspect of coercive control in domestic relationships (Stark & Hester, 2019), and that this is somewhat equal opportunities between the sexes. I will explore some consequences of this for evolutionary thinking around this problem and highlight how difficult an area this is to study illustrating the problem with the difficulty of even defining one central component of coercive control, gaslighting.

Is there a releationship between progesterone and disgust level in women?

Łukasz Strzelczyk (Department of Environmental Health, Jagiellonian University)

Objective The Compensatory Prophylaxis Hypothesis proposes that the suppression of immune function during the luteal phase of the menstrual cycle is compensated by heightened behavioural avoidance of potential sources of infection. The observed differences in disgust sensitivity between menstrual phases are often explained by changes in progesterone levels. The present study test whether physiological progesterone concentrations are associated with pathogen-related disgust in the luteal phase of the menstrual cycle. Methods The study involved 62 healthy women of reproductive age with regular menstrual cycles and no use of hormonal contraception. On the sixth day of the luteal phase, participants provided morning saliva samples, which were later analysed for progesterone concentrations. On the same day, they completed two standardized measures assessing pathogen-related disgust sensitivity: the pathogen subscale of the Three Domain Disgust Scale and a picture set depicting pathogen-related cues. This design allowed us to examine whether variation in progesterone levels is related to individual differences in pathogen disgust. To assess these associations, we used Pearson's r correlation coefficient. Results No significant associations were found between progesterone concentrations and pathogen disgust, either for the Three Domain Disgust Scale ($r = -.016$, $p = .910$) or for the picture-based measure ($r = .086$, $p = .543$). Conclusions The findings indicate that individual differences in progesterone levels do not predict pathogen disgust sensitivity in women. This suggests that variation in pathogen-related avoidance during the menstrual cycle may result from factors other than hormonal changes.

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From Ecological Pressures to Literary Themes: Modeling Psychological Plasticity in Historical French Fiction (1500–1999) Using Large Language Models

Estebe Sylvain (Center for computational humanities, Aarhus University)

Cultural products serve as a fossil record of human psychology, potentially reflecting how societies respond to changing ecological and economic environments. This study investigates the evolution of psychological traits and sociocultural themes in French fiction over five centuries (1500–1999 CE). We used a comprehensive corpus of novels from Gallica, HathiTrust, and Google Books. To analyze this vast archive, we use a computational pipeline utilizing a Large Language Model to annotate texts across ten distinct thematic domains. We hypothesize a divergent trajectory: themes predicted to align with affluent environments (e.g., Romantic Love, Child Development, Imagination) are expected to increase in frequency alongside economic growth (GNP), whereas themes associated with resource-scarce environments (e.g., Honor, Discipline, Intensive Kinship) are expected to decline. By combining computational humanities with behavioral ecology, this research contributes to the study of quantifying cultural change and examining the ecological drivers of psychological variation.

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The Behavioral Ecology of Health: A Systematic Review of Effects of Harshness and Unpredictability on Physical, Mental, and Behavioral Health

Casey Timbs (Florida State University)

Life history theory, adapted to psychology, offers a unique developmental theoretical framework through which to understand how individual differences in challenging life experiences and environmental factors shape health. Indeed, much research has leveraged a behavioral ecological perspective to examine how experiences of harshness (i.e., morbidity/mortality; deprivation and threat) and unpredictability (i.e., changes in morbidity/mortality; changes in deprivation, threat, and family factors) relate to physical, mental, and behavioral health. To take stock of patterns of results and to provide insights on common mechanisms of the effects of environmental pressures on individuals' health, we conducted a systematic review of work focused on associations between childhood harshness and unpredictability and health. In all, we include 68 papers with 54 operationalizations of harshness and 51 operationalizations of unpredictability. Childhood harshness and unpredictability tend to be negatively associated with physical health (e.g., higher body weight, sickness), mental health (e.g., more depression, anxiety), and behavioral health (e.g., more drinking, risk-taking behaviors). These associations are mediated by biological factors, dysregulated eating, mating competition, and life history strategies. We conclude with a discussion of practical and theoretical considerations, including about particular operationalizations of harshness and unpredictability and health outcomes. Although empirical and theoretical critiques can (and should) be leveled against life history theory in psychology, the framework remains invaluable to novel explorations of how individual differences in developmental experiences and environments may shape downstream body and mind.

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Lying in a simple dice-rolling task: outcome-dependent variation and links to prosocial behavior

Enrique Turiegano (Department of Biology, Universidad Autónoma de Madrid)

Lying is a widespread form of dishonest behavior that plays a central role in human social interaction. We explore how individual's propensity to lie is related to their level of unsolicited generosity, as lying has been recently considered as linked to prosociality. We also explore the relationship of lying with self-perceived attractiveness, a variable strongly related to third-party rated attractiveness. Although dice-rolling paradigms, in which outcomes are privately observed, are widely used to study dishonesty, they typically rely on aggregate-level estimates and provide limited insight into individual differences in dishonest behavior. In this study, we introduce and apply a methodological approach which allows us to compute both the probability and the intensity of lying of each participant. A total of 662 participants (366 women), completed a dictator game and participated in a dice-rolling task with monetary incentives. Our results show that participants frequently misreported dice outcomes. In contrast with prior reports, no significant sex differences were found in the probability and intensity of lying. Higher prosocial behavior in the dictator game was linked to lower probability of lying and reduced lying intensity. Self-perceived attractiveness was weakly associated with dishonest behavior, showing suggestive links to lying tendencies that were most apparent under favorable outcomes. Together, these results show that dishonest behavior is linked to prosocial behavior, and that probabilistic approaches allow both the probability and intensity of lying to be jointly characterized at the individual level.

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Anthropomorphic Chatbots and the Parasocial Revolution in Human Romance

Melania Turska (SWPS University of Social Sciences and Humanities.)

Artificial intelligence (AI) is transforming human romantic and sexual lives through anthropomorphic chatbots, yet its impact on love via parasocial relationships remains underexplored. This presentation examines how anthropomorphism—attributing human-like mental states to AI—fosters parasocial bonds in romantic interactions, drawing on the Computers Are Social Actors (CASA) paradigm and related mechanisms like mindlessness and mindfulness. I will present a theoretical framework integrating evidence from studies on AI companions (e.g., Replika) and their roles in intimacy, emotional support, and relational satisfaction. Preliminary analyses of user narratives and experimental data indicate that tailored AI prompts can enhance perceived warmth and competence, promoting deeper parasocial connections while raising risks like emotional dependence and ethical concerns in sexual contexts. The talk proposes guidelines for designing anthropomorphic AI to mitigate harms, such as non-consensual deepfakes or social isolation. It concludes with implications for future research on AI's dual potential to enrich or disrupt human love lives, emphasizing the need for balanced anthropomorphism in relational technologies.

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Asymmetrical and strategic essentialism in ethnic inheritance among Romanian villagers and Cortorari Roma in Romania

Radu Umbreș (Faculty of Political Sciences, National School of Political and Administrative Studies (SNSPA))

Two fieldsite-studies offered an extension of the “switched-at-birth” adoption story to 154 ex-nomadic Romanian Cortorari Roma and 114 (ethnic) Romanian villagers from Sateni, p nature against nurture as influence on physical traits, neutral beliefs, cultural beliefs/inclinations, attributed ethnicity, and a new specification derived from our anthropological research in the two societies (Astuti 2022). We offered a culturally-naturalistic and provocative dilemma. A Roma-fathered Romanian-raised boy deserves or not to inherit the house and the land of the Romanian adoptive Sateni father, the ultimate value in a peasant society? The taxtaj? I.e. silver chalices commanding 6 figures euro dowries, given by Cortorari father to first-born son. The 2x2 switch matrix clearly shows that both Romanian and Roma ethno-essentialism only superficially resembles a neutral/folk-science classification or description (Gil-White 2001, Hirschfeld 2008) and displays some chauvinistic-biases as predicted by cultural group selection (Moya&Henrich 2016), but also major asymmetries inter- and intra-cultural groups in the evaluation of Self vs Other essence/culture as being stronger/weaker to prevail against the inverse force. Both Romanian and Romas consider Roma essence and culture as being stronger in the clash - especially (old) Roma males, while women in both societies tend significantly towards nurture-dominant answers. The paper proposes that ethnic essentialism is a product of multiple cultural attractors, mental such as coalitional, sexual, and cooperative strategies, and ecological such as Roma-Romanian power asymmetries, conflict, etc provides a better fit to the experimental and ethnographic evidence (X X)

Research on Social Safety in Inter-verse Space: Repeated Public Goods Games with Real Effort

Ryohei Umetani (Research strategy Headquarters, National institute of advanced industrial science and technology)

Human development depends on the formation of large-scale cooperative societies. Yet the motivation for seemingly irrational cooperation remains a central puzzle in the social sciences. Understanding how cooperation emerges and persists is vital for designing institutions in new domains such as inter-verse space and for developing strategies to curb antisocial behaviors. Public goods games—dilemmas involving three or more players—have provided key insights into cooperative behavior. A robust finding is the decline of cooperation over repeated interactions, a pattern observed in economic game experiments but rarely in real-world societies. This discrepancy suggests that experimental simplifications remove critical elements of real social environments. We focus on one such element: the real effort required to acquire resources. In everyday life, cooperation is shaped by how individuals allocate resources earned through their own labor. Experimental settings, by contrast, typically provide windfall endowments, creating a gap between real and experimental decision-making contexts. To address this, we designed a public goods game in which participants exerted real effort to earn endowments. Results from a 10-round game with four-person groups showed that neither overall cooperation levels nor contributions relative to earned endowments exhibited the typical collapse of cooperation across rounds. At the conference, we will present the experimental design, results, and implications of these findings.

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Germs, Guilt, and Gullibility? Disgust Domains Predict Trust in Science and Conspiracy Beliefs

Andrea Vranic (Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Department of Psychology, University of Zagreb)

This study examined demographic, cognitive, and affective predictors of conspiracy belief and trust in science in a nationally representative, stratified sample (N = 924; 51% women). Hierarchical regression analyses showed that demographic variables explained a modest portion of variance in conspiracy endorsement, with higher education, residence in larger settlements, and younger age predicting stronger conspiracy beliefs. Beyond demographics, cognitive style contributed significantly: higher need for cognition was associated with lower conspiracy endorsement, whereas greater reliance on intuitive thinking predicted stronger endorsement. Disgust sensitivity explained additional variance beyond demographics and cognitive style, but in opposing directions depending on domain. Pathogen disgust positively predicted conspiracy belief, whereas moral disgust negatively predicted it. Notably, an identical pattern of predictors emerged when trust in science was examined as the outcome variable, with higher need for cognition and moral disgust predicting greater trust, and intuitive thinking and pathogen disgust predicting lower trust. These findings support evolutionary accounts suggesting that pathogen and moral disgust reflect functionally distinct psychological systems. Heightened pathogen disgust sensitivity may promote hypervigilance to threat and skepticism toward official accounts, increasing receptivity to alternative explanations such as conspiracy narratives and reducing trust in scientific institutions. In contrast, moral disgust - implicated in norm enforcement and the maintenance of social cohesion - may foster respect for collective epistemic authorities and discourage endorsement of beliefs that undermine institutional stability. Overall, the results indicate that both conspiracy beliefs and trust in science are shaped by demographic, cognitive, and evolved motivational systems serving different adaptive functions.

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Jokes, Mischief, and Mayhem: Dark Triad Traits Meet Humor Styles?

Amelia Zofia Waliszewska (University of Business and Applied Sciences "Varsovia")

Humor is a universal feature of human social interaction and is often interpreted as an evolved mechanism facilitating social bonding, norm negotiation, and the signaling of cognitive and social traits. However, individuals exhibit substantial variability in their judgments of what is humorous, and stable individual differences are observed in both the production and perception of humor. Dark personality traits, including psychopathy, Machiavellianism, and narcissism, are associated with reduced empathic responding, strategic social behavior, and altered sensitivity to social norms, which may shape responses to such humor. The aim of the present study is to examine how dark personality traits and humor styles are related to the perception of humor differing in the presence of dark, norm-violating content. The planned sample for this study includes 350 adult Polish participants, which is expected to be sufficient to detect the predicted effects. Dark personality traits and humor styles are measured using self-report instruments. Humor perception is operationalized through participants' evaluations of an author-constructed set of internet memes, which were systematically selected in a pre-study to represent either dark humor or neutral content. Participants rate the memes in terms of perceived funniness, acceptability, and emotional impact. The study design allows for testing whether dark traits and humor styles differentially predict responses to norm-violating versus neutral humorous stimuli. By integrating personality psychology with an evolutionary framework on humor as a signaling and norm-regulation mechanism, this research aims to clarify the role of individual differences in the reception of dark humor in contemporary digital environments.

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The Evolution of Cooperation: Humanistic Generous Tit-for-Tat vs. AI's Intolerant Tit-for-Tat

X.T. (XiaoTian) WANG (Applied Psy chology Division, School of Humanities and Social Science,, The Chinese University of Hong Kong (S henzhen), Shenzhen, China,)

This research aims to achieve two objectives: (1) to conduct an analysis of the evolution of cooperation by comparing AI strategies, game-theoretical strategies, and human behavioral data in two-party non-zero-sum games, and (2) to simulate future scenarios in the AI era in which AI agents interact with humans and other AI agents, with and without alignment, to assess whether AI agents enhance or disrupt existing patterns of human social interaction. Traditionally, game-theoretic modeling has been viewed as the most rational approach to solving cooperation problems. However, derived from game-theoretic analysis, Evolutionarily Stable Strategies, such as Tit-for-Tat (TFT), are not only instrumentally rational but also capture unique design features of the humanities. Our results from four studies revealed a profound contrast between humanistic Generous TFT (GTFT) strategies (e.g., operationalized as goodwill, retaliation, forgiveness, conscience, generosity, etc.) and AI's Intolerant TFT (ITFT) behaviors (e.g., operationalized as malice, greed, ruthlessness, etc.). We identified a series of AI betrayal spirals using different Large Language Models. AI is no longer merely a technological tool but is quickly becoming a social actor integrated into human social life. Our preliminary simulations demonstrated that, across successive iterations, the instrumental rationality of AI agents led to progressively earlier defections, even under alignment constraints. If AI agents view social interactions as zero-sum games even in non-zero-sum situations, they may destroy the equilibria established in human societies.

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The Evolution of Cooperation: Humanistic Generous Tit-for-Tat vs. AI's Intolerant Tit-for-Tat

X.T. (XiaoTian) WANG (Applied Psy chology Division, School of Humanities and Social Science,, The Chinese University of Hong Kong (S henzhen), Shenzhen, China,)

This research aims to achieve two objectives: (1) to conduct an analysis of the evolution of cooperation by comparing AI strategies, game-theoretical strategies, and human behavioral data in two-party non-zero-sum games, and (2) to simulate future scenarios in the AI era in which AI agents interact with humans and other AI agents, with and without alignment, to assess whether AI agents enhance or disrupt existing patterns of human social interaction. Traditionally, game-theoretic modeling has been viewed as the most rational approach to solving cooperation problems. However, derived from game-theoretic analysis, Evolutionarily Stable Strategies, such as Tit-for-Tat (TFT), are not only instrumentally rational but also capture unique design features of the humanities. Our results from four studies revealed a profound contrast between humanistic Generous TFT (GTFT) strategies (e.g., operationalized as goodwill, retaliation, forgiveness, conscience, generosity, etc.) and AI's Intolerant TFT (ITFT) behaviors (e.g., operationalized as malice, greed, ruthlessness, etc.). We identified a series of AI betrayal spirals using different Large Language Models. AI is no longer merely a technological tool but is quickly becoming a social actor integrated into human social life. Our preliminary simulations demonstrated that, across successive iterations, the instrumental rationality of AI agents led to progressively earlier defections, even under alignment constraints. If AI agents view social interactions as zero-sum games even in non-zero-sum situations, they may destroy the equilibria established in human societies.

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Fight Back, Forgive, or Fix: Evolutionary and Social Responses to Conflict

Ona Wang (Arizona State University)

Evolutionary theory offers a powerful framework for understanding the motivations and mechanisms for human responses when cooperation breaks down. Early evolutionary adaptations to resource scarcity and risk gave rise to cooperative and competitive strategies to prevent and respond to threats. Across social species, mechanisms for survival and reproduction emerged from needs for self-defense, fitness interdependence, and predictability of one's environment. These fundamental needs map onto three social behavioral strategies for achieving justice after infractions: retaliation, restoration, and punishment. In humans, these motives manifest in the pursuit of safety, social support, and power or influence. These evolved motives provide insight into why various societies have adopted different approaches to manage conflict and cheating. Human cooperation and mutual aid facilitate survival and cheating deterrence. Observable prosociality in human infants and non-human primates underscores the evolutionary roots of cooperation. Ethnographic evidence from small-scale societies demonstrates that communities often address harm and cheating through restorative rather than punitive processes, relying on kinship networks, third-party reinforcement, reparations, and customary law. As societies grew more complex, such as through empires and globalization, coercive and punitive systems for norm enforcement emerged. Anthropological debates around third-party punishment reflect deeper questions about what motivates vengeful, restorative, or punitive responses. Ostrom demonstrates how cooperation depends heavily on trust, which is fostered through communication, participatory rule-making, and sanctioning cheaters. These evolved motives clarify why societies vary in their approaches to managing conflict and cheating.

Examining the Voluntary Use of Cooperative Intention Signals: An Experimental Approach

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Empirical investigations of cooperative intention signals have emphasized the receiver's selectivity rather than the sender's incentives. The present study explores the emergence of a signaling convention between the signal senders and receivers. In an online experiment, we had participants play 80 rounds of the Iterated Prisoner's Dilemma (IPD) with exogeneous/voluntary partner switching. At the beginning, participants are randomly matched with a partner. After playing one round of PD, they have an option to stay in or leave the relationship with the current partner. In addition, when participants meet a new partner, they are asked whether to turn on a signal that others can see. No detailed explanations about the signal will be provided. Thus, each round comprises up to three decisions: (1) whether to turn on a signal, (2) whether to cooperate in the given round of IPD, and (3) whether to leave the current relationship. Exogeneous relationship dissolutions occur with a probability of 0.20, forcing participants to interact with multiple partners during the experiment. The study includes two conditions varying in the efficiency of cooperation: the high-efficiency condition (b = 700, c = 250) and the low-efficiency condition (b = 700, c = 500). The cost of signaling will be set at 100 points in both conditions. In this setting, we explore whether participants spontaneously use the signal option to communicate their cooperative intention, and if so, whether the signal option enhances cooperation. Experiments and analyses will be completed by April 2026.

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Hyperactive Impulsive Lovers: ADHD as a Form of Sexual Ornamentation

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Attention-Deficit/Hyperactivity Disorder (ADHD) is typically conceptualized as a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity. In the US, approximately 11.3% are diagnosed with ADHD, with male diagnosis (15%) doubling that of females (8%). While human males adopt primarily intrasexually selected weapon-like strategies during mating evolution, intersexually selected ornamenting strategies are also widely spread in the population. I propose that ADHD related traits may function as an extreme form of sexual ornamentation. Drawing on Zahavi's handicap principle, it is argued that ADHD traits, such as hyperactivity, impulsivity, novelty seeking, and risk taking, constitute costly signals of good genes. Imposing genuine costs (e.g., social instability, reputation damage, planning impairment, and increased risk for injury and disability), ADHD function as honest signals of surplus energy, boldness, and elevated mating effort, particularly in short-term mating contexts, and is difficult to fake. Using a descriptive case-study approach, I examine publicly documented ADHD traits among highly visible individuals. For example, based on media reports of 50 famous individuals diagnosed with ADHD, 40 are men and half of them display pronounced patterns of elevated mating effort, including repeated infidelity, highly publicized romantic entanglements, or other excessive forms of sexual behavior. Notable cases include Benjamin Franklin, who documented compulsive sexual behavior, and Magic Johnson, who publicly acknowledged having hundreds of sexual partners throughout his professional career. Across cases, ADHD traits align with Zahavi's prediction that handicaps can evolve as honest intersexual signals, suggesting that ADHD may function as a costly sexual ornament.

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The Cultural Evolution of Analytic and Holistic Thought: How Information Ecologies shape Human Bayesian Inference

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Human cognition is deeply shaped by culture, affecting processes from attention and memory to causal inference and concept representation. Such psychological differences are often described in terms of the analytic-holistic spectrum of cognitive styles. However, a unified mechanistic account of this variation remains elusive. We propose that spectrum of analytic to holistic thought reflects cognitive adaptations to different information ecologies. Cultural traits such as social organization, communication norms, and prevalent learning modalities determine how observations are sampled, which should in turn affect how strongly learners favor parsimony in their mental models (i.e., the strength of Occam's razor). We posit that, due to different experiences, holistic thinkers tend to treat observations as weakly diagnostic of underlying structure ('weak sampling') whereas analytic thinkers tend to treat observations as representative and strongly diagnostic ('strong sampling'), leading respectively to weaker and stronger applications of Bayesian Occam's razor. We show how this mechanism can explain cognitive differences along the analytic-holistic spectrum. This offers a computational lens on one of the most prominent empirical patterns in cultural psychology, and paves the way to further informational-ecological accounts for how culture shapes cognition.

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Ecology and Social Norms Shape Women's Independence and Mate Preference

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Ecological and social-institutional contexts may shape mating strategies not only by shifting preferences but by constraining whether preferences can be enacted at reasonable costs. In sexual selection, preferences impose selection only when they translate into realized mate selection outcomes (refusal, negotiation, exit), and constraints on enactment are part of the mate-selecting process. I investigate whether ecology and perceived gender norms jointly relate to women's felt autonomy/independence, and whether autonomy/independence is associated with women's prioritization of male mate values. In this study, I compare Yunnan province, China (latitude 21°N, annual average temperature 17℃, among highest infectious disease prevalence in China) and Inner Mongolia Autonomous Region, China (latitude 45°N, temperature 6℃, low infectious disease). I expect higher autonomy/independence and greater emphasis on attractiveness/good-genes mate values in Yunnan and lower autonomy/independence and greater emphasis on good-provider and good-father mate values in Inner Mongolia. In a cross-sectional survey of 379 women (Yunnan 178; Inner Mongolia 201), autonomy /independence was measured in two domains: general agency and intimate/sexual autonomy. Mate value preference emphasis was defined as within-person relative weights on a set of mate values. The results showed moderate but consistent differences between the two regions ($d \approx 0.2–0.3$) and the associations between autonomy/independence and mate value preference all in the hypothesized directions. I will discuss implications on how ecology and values and norms shape mating strategies and gender equality conceptions in women.

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Sex-Specific Trade-off between Pubertal Maturation and Crystalized Intelligence

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Accelerated pubertal maturation has profound impact on cognitive and somatic development. From a life history perspective, early pubertal timing reflects an energy allocation strategy that prioritizes immediate somatic investment over the long-term development of cognitive abilities. Such trade-offs between body and brain may operate in a sex-specific manner, as females face greater reproductive and somatic investment demands during pubertal development. Thus, this study investigated body roundness index (BRI) and cognitively enriching activities as investments in body and brain, their effects in mediating the association between pubertal timing and crystallized intelligence, and gender differences in these two sets of associations. Using longitudinal data from the Adolescent Brain Cognitive Development (ABCD) Study, this study included children aged 9–10 years (N = 11192). Parents reported their children's pubertal development and engagement in physical activities. Body roundness index was calculated using height and circumference. Crystallized intelligence was assessed by cognitive tasks. Results indicated that higher pubertal status at baseline significantly predicted lower crystallized intelligence at 2-year follow-up in both males and females. However, only in females, this association was mediated by higher BRI and lower engagement in physical activities. No significant indirect effects were observed in males. These findings suggest that increased somatic investment and decreased engagement in cognitive activities may be mechanisms through which accelerated pubertal maturation limits the development of cognitive ability in female youths.

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