EAORC BULLETIN 1,160 – 7 September 2025

CONTENTS

NOTICES

FORMATTED VERSION OF THIS BULLETIN

A pdf formatted version of this Bulletin is available for download at martinedwardes.me.uk/eaorc/eaorc_bulletins.htm.

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.
If there is a journal you feel I should be tracking on a regular basis, let me know.
And if you have any other ideas for extending the "EAORC experience", please contact me.

EDITORIAL INTERJECTIONS

Comments in curly brackets are editorial interjections. The Editor reserves the right to be wrong, and doesn't object to being called out on it.

ACADEMIA.EDU – Nubian Levallois technology associated with southernmost Neanderthals

Nature Scientific Reports 11:2869 (2021).

JAMES BLINKHORN et al with CHRIS STRINGER & MICHAEL D. PETRAGLIA – Nubian Levallois technology associated with southernmost Neanderthals

Neanderthals occurred widely across north Eurasian landscapes, but between ~ 70 and 50 thousand years ago (ka) they expanded southwards into the Levant, which had previously been inhabited by Homo sapiens. Palaeoanthropological research in the first half of the twentieth century demonstrated alternate occupations of the Levant by Neanderthal and Homo sapiens populations, yet key early findings have largely been overlooked in later studies. Here, we present the results of new examinations of both the fossil and archaeological collections from Shukbah Cave, located in the Palestinian West Bank, presenting new quantitative analyses of a hominin lower first molar and associated stone tool assemblage. The hominin tooth shows clear Neanderthal affinities, making it the southernmost known fossil specimen of this population/species. The associated Middle Palaeolithic stone tool assemblage is dominated by Levallois reduction methods, including the presence of Nubian Levallois points and cores. This is the first direct association between Neanderthals and Nubian Levallois technology, demonstrating that this stone tool technology should not be considered an exclusive marker of Homo sapiens.
https://www.academia.edu/143730490/Nubian_Levallois_technology_associated_with_southernmost_Neanderthals

NEWS

NATURE BRIEFING – Infant orangutans watch and learn

Young Sumatran orangutans (Pongo abelii) pick up the complex nest-building skills of their elders by closely watching their mothers, and later their peers, at work. Researchers found that the infants begin to take an interest at as young as six months old, and must pay attention to learn — simply being around others while they build their nests isn't enough. Young

orangutans also actively practice trickier tasks, such as those required to build a multi-tree nest, after watching them performed, which suggests a desire to learn specific skills.
https://www.earth.com/news/orangutans-learn-to-build-complex-tree-nests-by-watching-their-mothers/

NATURE BRIEFING – The poetry of pigment

From the ochre that the earliest humans used to create cave paintings, to the 'bone black' made from the remains of North America's once-mighty bison herds, environmental writer Stephanie Krzywonos delves into the tangled histories of iconic pigments.
https://emergencemagazine.org/essay/museum-of-color/

NATURE BRIEFING – When we measure the world with a ruler for humans, other species come up short

Flawed experiments such as the mirror test — which emphasises vision over, say, smell — have bolstered a harmful myth of human exceptionalism, argues primatologist Christine Webb.
https://nautil.us/putting-humans-first-is-not-natural-1235544/

NEWS FROM SCIENCE – Human ancestors braved England's ice-covered northlands 440,000 years ago

How exactly ancient toolmakers survived the harsh conditions remains a mystery.
https://www.science.org/content/article/human-ancestors-braved-england-s-ice-covered-northlands-440-000-years-ago

NEWS FROM SCIENCE – Trust in elections rises after 'inoculations' meant to preempt false fraud claims

New U.S.-Brazil study points to ways of countering election misinformation, political scientists say.
https://www.science.org/content/article/trust-elections-rises-after-inoculations-meant-preempt-false-fraud-claims

NEWS FROM SCIENCE – Ant queen lays eggs that hatch into two species

Bizarre discovery of interspecies cloning "almost impossible to believe," biologists say.
https://www.science.org/content/article/ant-queen-lays-eggs-hatch-two-species

SCIENCEADVISER – Bigger isn't better

Being a part of a larger team hampers career prospects, a study found. For each one-person increase in average team size for a given research field, newly minted Ph.D.s working in that discipline are 24% less likely to hold a tenure-track job, 29% less likely to receive tenure, 11% less likely to receive federal grants, and 11% more likely to leave science. "There are a lot of papers out there about the benefits of teams, but there are not many papers about the cost," one expert said.
https://www.nature.com/articles/s41587-024-02351-8

SCIENCEADVISER – The taming of the horse

Horses weren't easy to tame. People had domesticated pigs, goats, sheep, cattle, and even donkeys for millennia before they reigned in horses. The beasts were simply too wild—except for a population of them on the ancient Eurasian Steppe, a new Science study suggests. The horses living in that region—from what is now Eastern Europe to Mongolia—were apparently different. " A few individuals had key mutations that made them more docile and—perhaps more notably—altered their morphology and endurance to make them more rideable," explains paleogenomics expert Laurent Frantz in a related Perspective.

Those individuals had a different version of a gene called ZPFM1—which is known to influence anxiety in mice—that may have lessened their fear of humans. The researchers discovered this gene underwent strong selection 5000 years ago, when evidence suggests domestication occurred. "The selection was not only very strong, but the timing was bang on," co-author Ludovic Orlando told Gizmodo. The team also found that a version of the GSDMC gene, which influences spinal anatomy and locomotor traits, went from being present in about 1% of horses to virtually all of them over the span of a few hundred years. Perhaps, they suggest, this variant made the animals more physically capable of bearing a rider, and was therefore heavily favored by selective breeding.

Intriguingly, the findings contradict the prevailing idea that horses were tamed by selective breeding for coat color, Orlando explained. "What was really surprising to me in our data is that we don't see evidence of color being the trigger in the very beginning," he said.
https://www.science.org/doi/10.1126/science.aea6151

SCIENCEADVISER – Some like it cold

Stone tools found near London suggest that humans occupied the British Isles some 480,000 years ago—when most of the land was covered in thick ice. "A hominin presence under cold conditions raises important questions as to how they survived," one expert noted.
https://www.science.org/content/article/human-ancestors-braved-england-s-ice-covered-northlands-440-000-years-ago

SCIENCEADVISER – Ant queen lays eggs that hatch into two species

Reproduction is strange in many social insects, but the Iberian harvester ant (Messor ibericus) takes the weirdness to the next level. Queens mate with males of another species and then clone them, which means this ant is the only known organism that propagates two species by itself.

The finding "is almost impossible to believe and pushes our understanding of evolutionary biology," says Michael Goodisman, an evolutionary biologist who was not involved with the new research.

The research team had previously discovered that the worker ants of M. ibericus had unexpectedly diverse DNA, perhaps a sign their queens had mated with distantly related males. Further genetic analysis hinted at another surprise. The hybrid workers' fathers seemed to belong to M. structor, another species altogether. But there was something puzzling. Colonies were thriving even in regions outside of the range of M. structor. After collecting 132 males from 26 M. ibericus colonies, the researchers found that about half of the males had the nuclear genomes of M. structor but the mitochondria of M. ibericus, proving the males had hatched from eggs laid by M. ibericus queens. Although mysterious in its details, cloning has been observed in a few ant species, but cloning another species has never been reported before.

In one sense, some of the cloned males are captives. Outside the range of their species, they can't reproduce with their own queens. But really, the two species are sexually interdependent. In areas without any M. structor nests, the clonal males and the M. ibericus queens need each other to reproduce. "Just when you think you've seen it all, social insects reveal another surprise," says Goodisman.

https://www.science.org/content/article/ant-queen-lays-eggs-hatch-two-species

THE CONVERSATION – Bilingualism possible in people with genetic condition that normally limits speech

A study shows people with Rett syndrome, a rare genetic condition, can be bilingual, challenging long-held assumptions.

https://theconversation.com/bilingualism-possible-in-people-with-rare-genetic-condition-that-normally-limits-speech-244858

THE CONVERSATION – Surzhyk: why Ukrainians are using a formerly low-status hybrid language

Once reviled as a 'humiliating' Russified form of the language, now Surzhyk is emerging as a tool for Russian speakers to identify as Ukrainians.

https://theconversation.com/surzhyk-why-ukrainians-are-increasingly-speaking-a-hybrid-language-that-used-to-be-a-marker-of-rural-backwardness-264280

PUBLICATIONS

American Journal of Biological Anthropology

PAPERS

MARIANNE J. COOPER & NOREEN VON CRAMON-TAUBADEL – An Evolutionary Quantitative Genetic Analysis of the Impact of Cephalopelvic Disproportion on Cranial and Pelvic Co-Evolution in Anthropoids

Evolutionary quantitative genetics methods are increasingly applied to studies of human skeletal evolution, with a growing emphasis on investigating postcranial evolution and the evolution of multiple skeletal elements. Here, we apply a commonly used method from evolutionary quantitative genetics, the drift-rate test, to test whether broad patterns of cranial and pelvic co-evolution within male, female, and pooled-sex samples of anthropoid primates follow those expected under the long-standing hypotheses of obstetric selection via cephalopelvic disproportion.

Using interlandmark distances from the cranium and articulated pelvis from samples of four platyrrhine, four cercopithecoid, and five hominoid primate genera, we tested cranial, pelvic, and craniopelvic traits for evidence of deviation from neutral evolutionary patterns using both regression tests of within- on between-group eigenvalues and correlation tests of principal component scores.

Results for analyses of shape data indicate that patterns of non-neutral evolution are different in male and female samples at multiple taxonomic levels, and that cranial and pelvic shape are co-evolving. Rejection of neutral evolution was pervasive for tests of form, but inconclusive regarding sex-specific selection or whether the cranium and pelvis appeared to covary or evolve independently.

Sex-specific patterns of evolution support hypotheses that obstetric selection may have impacted multiple primate lineages. Although size may play a role, it does not appear to be the dominant factor in evolution for either element. This study highlights the usefulness of using methods from evolutionary quantitative genetics to test long-standing hypotheses by incorporating multiple skeletal elements simultaneously.

https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.70109

Animal Behaviour

PAPERS

ANTONIO LORENZO LOPRETE et al with MARINA DAVILA-ROSS – Yawn contagion plasticity in semiwild chimpanzees: females 'leading' the way at times

Yawning is pervasive across vertebrates, fulfilling physiological and social functions. In this study, we investigate yawning and its potential contagious nature in 60 semiwild chimpanzees, Pan troglodytes, a species living in a male-bonded society characterized by male philopatry and female dispersal. Through ChimpFACS, unsupervised clustering, and NetFACS analyses, we detected two distinct morphological forms of yawning that vary in duration depending on the yawner's age and sex. Such variability fosters nuances, challenging the traditional view of yawning as a fixed action pattern. Furthermore, our study demonstrated yawn contagion in chimpanzee groups where females cannot freely migrate, thus forming long-lasting associations. Contrary to existing literature attributing yawn contagion in chimpanzees predominantly to males, our data reveal evidence of a sex bias in yawn contagion sensitivity with females: (1) eliciting higher yawn response rates; (2) responding more frequently; and (3) responding rapidly to other females. Such notable divergences from previous literature highlight variability in this phenomenon. We contend that sex influences yawn contagion more than social closeness, challenging conventional interpretations. The current study indicates that both proximate and ultimate factors shaping the adaptive value of contagious yawning remain complex and not yet univocally identified. Studying yawn contagion in different settings allows us to examine a more complex picture of the phenomenon, which in the past has been identified as a fixed action pattern, but the contribution of recent research does not appear to be fixed at all.
https://www.sciencedirect.com/science/article/abs/pii/S0003347225002039

CHISATO YAMAMOTO & NOBUYUKI KASHIWAGI – Effects of others' actions on own action choices in common bottlenose dolphins

Social learning enables individuals to adopt more successful actions and allows them to select whom to copy depending on the situation. Studies have suggested that individuals copy others' behaviour, regardless of available alternatives. This study investigated how common bottlenose dolphins, Tursiops truncatus, copy each other's actions when group members learn different responses to the same cue. The subjects learnt different actions from other group members (opponents). To investigate the effect of the majority, the experimental groups comprised several opponents and one subject. To investigate the effect of the initiator (the first individuals who responded to the cue), we recorded the actions of followers who learnt a different action from the initiator. Subjects were likely to perform the opponent's action, and followers were likely to perform the initiator's action in the test. When a single individual acted differently from the group, they typically adjusted their behaviour to align with others. These results suggest that common bottlenose dolphins copied other dolphins' actions even when those actions conflicted with prior learning or decisions. In addition, copying another person's actions may be affected by the order of the reaction or the number of individuals who performed different actions.
https://www.sciencedirect.com/science/article/abs/pii/S0003347225002052

MARIE PADBERG, DANIEL HANUS & DANIEL HAUN – Great apes show altercentric influences when confronted with conflicting beliefs

Humans' beliefs are automatically impacted by others' beliefs. This so-called altercentric influence indicates that we rely on automated mental simulation to track others' beliefs. It is unclear whether nonhuman great apes rely on similar cognitive processes. In this study, we used a novel search task where nonhuman apes could dig for buried rewards in a trough after seeing an experimenter hiding them. The task was designed as a game between a human agent and an ape participant. There were two hiding locations of the reward in the trough, and the participant always had full visual access to the original hiding of the reward and its relocation to another location. The human agent, however, only saw the relocation in the true belief condition but missed it in the false belief condition. Our results show that others' (conflicting) beliefs seem to impact nonhuman great apes' information encoding by showing that apes searched for the reward closer to the first hiding location when the agent believed it to be there (false belief condition) compared with when the agent knew the reward was at the new location (true belief condition). Moreover, humans and nonhuman great apes undergo similar ontogeny with a stronger altercentric influence in younger individuals. The present study provided additional evidence that nonhuman great apes possess basic abilities to track the beliefs of other individuals, indicating that automatic belief simulation might be part of the shared evolutionary history of all great apes.
https://www.sciencedirect.com/science/article/pii/S0003347225002313

LINDSAY E. MURRAY & SERGIO DIAZ – Long-term stability of chimpanzee personality: comparing trait ratings and behaviour codings over a quarter of a century

There is a lack of research examining whether trait ratings and behaviour codings yield similar measures of personality in nonhuman animals and whether these measures are stable over the long term. Here, we compare personality assessments in the same group of zoo-housed chimpanzees over a 25-year period, offering a rare opportunity for the analysis of long-term temporal stability of personality in this species. We attempt to disentangle the effects of time and measure through an analysis of similarities and differences at a group and individual level. The first wave of the study rated 59 chimpanzees' personality traits on an adapted version of the Madingley Questionnaire. The trait principal component analysis revealed five

components: Submissiveness, Extraversion, Neuroticism, Agreeableness and Openness. A separate principal component analysis identified five components based on behavioural codings: Grooming, Play, Sociability, Aggression and Responsibility. The second wave, with 19 individuals, identified three components arising from behavioural codings: Popularity, Sociability and Influence. When comparing across time for the 11 chimpanzees common to both waves, our primary hypothesis, that trait ratings from the first wave would not correlate with behaviour codings from the second because they are measuring different axes, was largely supported. Our second hypothesis that the behaviour codings carried out during the two waves would correlate because they were measuring the same thing, was supported, both at the component level and the individual behaviour level, thus providing evidence of stability of behaviour codings over time, particularly those reflecting sociability measures. Personality trait ratings were different from behavioural codings and included aspects not captured through those codings, including intelligence, apprehension, excitability and gentleness; thus, we argue that they represent a more comprehensive characterization of individuality.
https://www.sciencedirect.com/science/article/pii/S000334722500168X

THEO D.R. O'MALLEY et al with TOMOS PROFFITT – Material matters: raw material influences stone tool performance in capuchin monkeys

Identifying the conditions that facilitate and shape tool use is a central focus in the field of human evolution and animal behaviour. Particular interest lies in the use of stone hammers by nonhuman primates to open encased food sources. It is widely theorized that similar behaviours were used by early hominins and provided a foundation for the emergence of stone knapping. Environmental factors are thought to be important in shaping the emergence and progression of tool use. However, there is limited information on whether access to different types of raw tool material for hammerstones and anvils affects the reliability or efficiency with which tool users exploit encased resources. Here, we experimentally provide wild capuchins, Sapajus libidinosus, in Brazil with raw materials differing in hardness. Materials were sourced globally from primate and hominin tool use sites. We measured the reliability and efficiency with which monkeys could crack nuts when using different raw materials, and how these metrics changed over the course of the experiment. We further reported variations in the durability of different raw materials, which directly relates to how long a tool remains useable. Our results showed that differences in capuchin nut-cracking performance were largely driven by the ability of the tool material to stabilize the nut on the anvil. Furthermore, there was wide variation in anvil durability during use. These differences appeared to be driven by multiple tool characteristics, including hardness, surface texture and anvil and hammerstone mass. When compared with similar studies, our results also suggest that stone properties, particularly hardness, may have differing effects on nut-cracking outcomes across species. Overall, the differences in raw material performance and durability seen here, respectively, highlight how local raw materials may influence the selective costs and benefits of tool use behaviours, and the accumulation of tools within the landscape.
https://www.sciencedirect.com/science/article/pii/S0003347225001812

ALICE M. GODARD, JUDITH M. BURKART & RAHEL K. BRÜGGER – The ontogeny of play in a highly cooperative monkey, the common marmoset

Play is mostly observed in juvenile mammals, and the type of play (social, locomotor/rotational and object play) often mirrors adult behaviours, with juveniles engaging in activities that reflect the behaviours they will show as adults. In some species, adults also play with immatures, in particular if same-aged play partners are lacking, and adults also invest in caretaking. We studied the ontogeny of play in cooperatively breeding common marmoset, Callithrix jacchus, groups composed of parents and twin offspring between the age of 2–6 months. Social play was by far the most prevalent play type and increased in frequency with age. Adults were important play partners. Before 19 weeks old, the play partners of immatures was an adult for 54% of the time spent playing socially. After week 19, this decreased to 29%. The rest of the social play time was spent playing with their twin. Thus, despite the constant presence of a twin, adult–immature play remained considerable, with equal contributions by mothers and fathers and no trade-offs with other caretaking behaviours (that is, carrying and food sharing) for either of the parents. Notably, parents avoided playing simultaneously, presumably to avoid periods when no one could be vigilant. Together, these results resonate strongly with the highly interdependent and cooperative lifestyle of common marmosets.
https://www.sciencedirect.com/science/article/abs/pii/S0003347225002027

eLife

PAPERS

LEE R. BERGER et al with AGUSTÍN FUENTES – Evidence for deliberate burial of the dead by Homo naledi

In this study, we describe new results of excavations in the Dinaledi Subsystem of the Rising Star cave system, South Africa. In two areas within the Hill Antechamber and the Dinaledi Chamber, this work uncovered concentrations of abundant Homo naledi fossils including articulated, matrix-supported skeletal regions consistent with rapid covering by sediment prior to the decomposition of soft tissue. We additionally re-examine the spatial positioning of skeletal material and associated sediments within the Puzzle Box area, from which abundant H. naledi remains representing a minimum of six individuals were recovered in 2013 and 2014. Multiple lines of evidence exclude the hypothesis that skeletal remains from these three areas come from bodies that decomposed on the floor of the chamber or within a shallow depression prior to burial by

sediments. The spatial positioning of skeletal material, the topography of the subsystem, and observations on sediments within and surrounding features exclude the hypothesis that rapid burial by sediment was a result of gravity-driven slumping or spontaneous movement of sediments. We present a minimal hypothesis of hominin cultural burial and test the evidence from all three areas, finding that this hypothesis is most compatible with the pattern of evidence. These results suggest that mortuary behavior, including cultural burial, was part of the repertoire of Homo naledi.
https://elifesciences.org/articles/89106

Evolutionary Anthropology

PAPERS

JUDITH M. BURKART et al with CAREL P. VAN SCHAIK – Cooperative Breeding as a Likely Early Catalyst of Human Evolution

Unlike any other great ape, humans give birth to large, secondarily altricial babies, show precocial social development, have bigger brains that require a long maturation period, and engage in cooperative breeding (CB). These traits, which characterize the human adaptive complex, are intricately linked and must have mutually reinforced each other over evolutionary time. Here, we use recent evidence from paleontology, developmental psychology, and pediatrics, complemented with comparative analyses, to ask what may have triggered this coevolutionary feedback loop: bipedality, direct selection on altriciality, a higher-quality diet, or cooperative breeding. An early adoption of extensive allomaternal care during human evolution, that is, the CB-first model, best accommodates the available data. In particular, CB was a catalyst enabling further increases in brain size, because even though larger brains slow down life history and neurodevelopment and thus lead to a demographic dilemma, CB enabled the necessary increase in birth rates.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.70016

TOLGA YILDIZ – The Cognitive Foundations of Ritual Monumentality: Multicausal Pathways to the Neolithic in Southwest Asia

This article reconceptualizes the Neolithic transformation in Southwest Asia as a cumulative and recursive process shaped by the interplay of symbolic cognition, ecological thresholds, ritual innovation, and demographic intensification. Departing from linear or monocausal models, it proposes that the emergence of agriculture, sedentism, and monumentality resulted not from discrete breakthroughs but from feedback loops between communication, cooperation, and cosmology. Drawing on recent archeological evidence from sites such as Göbekli Tepe, Körtik Tepe, WF16, and Jericho, as well as theoretical insights from cognitive evolution and ritual theory, the paper argues that symbolic institutions—ritual, architecture, and myth—were not consequences of surplus, but preconditions for its development. It distinguishes between ancient symbolic potential and the formalization of shared meaning into durable, transmittable cultural systems. Rather than treating Göbekli Tepe as an anomaly, the study situates it within a broader regional network of symbolic convergence and architectural innovation, tracing how ritual ecologies stabilized early social complexity. The article concludes by offering a multicausal, testable framework for understanding the Neolithic as a transformation in relations—between humans, environments, and shared representations.
https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.70017

Frontiers in Aging Neuroscience

PAPERS

MAËLIG CHAUVEL et al – Corpus callosum microstructure in chimpanzees (pan troglodytes): associations with age, handedness and cognition

Studies on the human brain have emphasized the loss of gray matter volume and decreased thickness during normal aging, along with variations in the density of small axon fibers across different regions of the corpus callosum (CC). Here, we investigated age-related changes in white matter connectivity in the CC and their association with handedness and cognitive decline in chimpanzees. To this end, microstructural measures of CC morphology were obtained from a sample of 49 chimpanzees. Initial assessments included quantifying streamline density, fractional anisotropy (FA), axial diffusivity (AD), and radial diffusivity (RD) values, which were then correlated with age and cognitive measures using the Primate Cognition Test Battery. We found an inverse association between streamline density and age in chimpanzees, particularly in the anterior and central CC regions. We also found an inverse association between FA and age in the splenium. Lastly, after controlling for age and sex, chimpanzees with higher cognition values also had higher FA values in anterior regions of the CC. Collectively, our results show that chimpanzees diverged from the typical human pattern, suggesting stronger interhemispheric connectivity integrity in frontal cortical brain regions compared to humans.
https://www.frontiersin.org/journals/aging-neuroscience/articles/10.3389/fnagi.2025.1611611/full

Frontiers in Behavioral Economics

PAPERS

LOUIS PUTTERMAN – Herb Gintis on economics and welfare, political economy, and evolution and human behavior

Herbert Gintis's research cut to the heart of what scientists must probe in order to understand what kinds of economic arrangements are possible, and which of those arrangements have the potential to make possible human flourishing among the largest numbers of people. Early in his career, he recognized that economics' standard depiction of human actors constituted a barrier to serious research on these questions. Gintis can be called a behavioral economist, but he was also an adept practitioner of neoclassical-style modeling, a game theorist, an insatiable reader of psychology, anthropology and sociology, a contributor to gene-culture co-evolutionary analysis, and a sociobiologist in the broad sense of appreciating that the evolved Homo sapiens rewards inspection with the eye of an ethologist.
https://www.frontiersin.org/journals/behavioral-economics/articles/10.3389/frbhe.2025.1633414/full

Frontiers in Psychology

PAPERS

KAY BRAUER & RENÉ T. PROYER – Is the Impostor Phenomenon expressed in language? An LIWC analysis of textual self-descriptions

The Impostor Phenomenon (IP) describes individual differences in self-perceptions of intellectual fraudulence. Based on the notion that personality traits are reflected in individual differences in language use, the literature provided initial evidence that the IP relates to language use. While earlier research was limited to job application letters, we expanded the study of the interconnectedness between the IP and language use by analyzing open self-descriptions (length limited to up to five sentences). We analyzed short textual self-descriptions by 325 participants with Linguistic Inquiry and Word Count (LIWC) software and examined their associations with self-reports of the IP. Contrary to earlier research, we found that the IP is unrelated to language use according to quantitative text analysis with the LIWC, except for using more words expressing anxiety ($r = 0.22$). Thus, our findings show that the IP is not robustly connected to language use in the domain of broad textual self-descriptions. We discuss implications for the interpersonal perception of the IP and discuss future directions to extend this line of research.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1628389/full

GABRIELA TAVARES et al – From meaning to sound: how word learning shapes non-native speech perception

Adult learners often struggle to perceive and acquire unfamiliar speech sounds in a second language, especially at the initial stages of learning. Traditional perceptual training methods, such as discrimination tasks, tend to be less effective with beginners, as they rely on low-level acoustic judgments and lack meaningful context. This study investigates whether training with cross-situational word learning (CSWL), a meaning-based learning paradigm, can improve the perceptual discrimination of non-native vowel contrasts.

Thirty-seven native speakers of Hungarian were trained on eight European Portuguese pseudowords through a single CSWL session involving alternating passive and active learning blocks, feedback, and exposure to multiple native voices. Participants completed identification and discrimination tasks before and after training. Non-native word learning and vowel discrimination were measured before and after training, by means of identification and discrimination tasks, respectively. Learners achieved above-chance word identification, indicating successful lexical learning. However, improvement in vowel discrimination was contrast-specific: participants improved in three of six contrasts, while performance remained low for the most difficult contrast. Learners also showed lower identification accuracy for pseudowords containing this contrast, and individual discrimination ability was associated with word learning success.

These findings highlight that while meaning-based training through CSWL can support early lexical and phonological learning, perceptual challenges remain for difficult contrasts. The study advances our understanding of how word learning and sound perception interact during second language acquisition and demonstrates the potential of lexically grounded approaches for perceptual training at the onset of learning.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1620837/full

iScience

ARTICLES

GABRIELA AMORÓS et al – Out of the cave: Rewilding deep time at the Venice Biennale

Out of the Cave, part of the 2025 Venice Architecture Biennale, reimagines prehistoric human life through scientifically grounded paleoart. This visual installation bridges deep-time knowledge with contemporary ecological and ethical issues. By integrating paleoecological data, biodiversity representation, and dietary insight, the project invites reflection on sustainability and modernity. This Backstory outlines the scientific and conceptual foundations of the artwork, offering a model for transdisciplinary practice at the intersection of biology, anthropology, and spatial design.
https://www.cell.com/iscience/fulltext/S2589-0042(25)01653-0

PAPERS

HIROKI SAITO et al – Developmental Changes in Upper Limb Muscle Synergies during Throwing: A Comparison between Preschoolers and Schoolers

Throwing is a fundamental motor behavior that undergoes marked refinement during childhood, yet the neuromuscular mechanisms underlying this process remain unclear. We compared upper limb muscle synergies in preschool-aged (3–5 years; n = 13) and school-aged (6–9 years; n = 8) children during overarm throwing. Participants threw balls toward a fixed target while electromyographic activity from 16 upper limb muscles and ball kinematics were recorded. Muscle synergies, extracted using non-negative matrix factorization, were analyzed for structure and sparseness. School-aged children exhibited higher ball velocity, improved accuracy, and greater synergy sparseness, reflecting more selective muscle recruitment. Cluster analysis identified eight synergy clusters in schoolers versus six in preschoolers, with several preschooler synergies fractionated into functionally specialized components in schoolers. These refinements—across the upper limb—likely enhance energy transfer efficiency and release control. The findings highlight fractionation-driven specialization as a key developmental adaptation that supports improved throwing performance.
https://www.cell.com/iscience/fulltext/S2589-0042(25)01758-4

Language Sciences

PAPERS

WOJCIECH LEWANDOWSKI & ŞEYDA ÖZÇALIŞKAN – Do metaphors we move by follow the same patterns across structurally different languages?

Speakers across different languages of the world talk about a wide array of abstract concepts in terms of spatial motion (i.e., metaphorical motion events; e.g., idea crosses the mind, time flies by, emotions run wild; Lakoff and Johnson, 1980). In this study, we asked what aspects of a metaphorical motion event show crosslinguistic similarities as well as differences across three structurally different languages (German, Polish, Spanish). Our analysis of 450 metaphorical motion descriptions, extracted from novels written in each of the three languages (150/language) using random sampling, showed robust cross-linguistic similarities: productions in all three languages described the metaphorical motion of the same types of target domains (abstract entity, abstract state, perceptual activity, fictive activity) with the same metaphorical mappings (abstract concept is a moving entity; abstract concept is a location) at similar rates. The robust crosslinguistic similarities were accompanied by patterned variability in the specification of the source domain, largely following a binary typological split between the world's languages (Talmy, 2000): Polish and German writers produced greater metaphorical motion descriptions with manner compared to Spanish writers. Our results thus provide strong evidence for both universal and language-specific forces that jointly shape the way we structure and talk about abstract concepts as physical motion.
https://www.sciencedirect.com/science/article/pii/S038800012500052X

Mind & Language

PAPERS

SPENCER PAULSON – A social model of cognitive integration

In this article, I draw on the social intentionality hypothesis to develop an account of cognitive integration. My account sheds light on the variety of cognitive integration that has been of most interest to epistemologists by arguing that it is best understood as the intrapersonal analogue of a paradigmatically interpersonal problem. Furthermore, the intrapersonal version of the problem is solved by simulating the solution to the interpersonal version. Consequently, we better understand the intrapersonal version of the problem relevant to epistemology by considering the interpersonal version.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12556

DOMINIC ALFORD-DUGUID – Learning from presupposition

P.F. Strawson famously distinguishes what a speaker presupposes from what she asserts in uttering a sentence like “The present King of France is bald”. This paper defends a claim about presupposition's epistemic significance, namely that presupposition can provide a distinctive testimony-based way for an audience to learn about the world.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12549

MIHNEA CAPRARU – Displacement and quantification without representation

Perry and Recanati have argued that thought and speech can concern entities that they do not represent. This is possible because speakers and thinkers are pragmatically situated within their environs. I argue that thought and speech can go much farther than that. Consider a semi-nomadic tribe who tell the time only by sundials, and who say such things as, “Everywhere we go, we dine at 7”. Their speech and cognition can thus transcend the local environment, and concern remote entities without the aid of either representation, or the context of utterance, or that of assessment.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12540

COREY J. MALEY – Declaring independence from medium independence
Computation is widely assumed to be necessarily medium independent, meaning that it is not defined in terms of any physical properties, but only by abstract automata (or something similar). I argue for two things. First, computation is not necessarily medium independent, because characterizing analog computation requires reference to physical properties. Second, insisting on the necessity of medium independence makes it impossible to characterize natural systems as legitimately computational (as opposed to being merely computationally describable). I conclude with some remarks on why concerns about medium independence and implementation in the philosophy of computation may be misguided in the first place.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12543

ZOE DRAYSON – Defending the medium-independence of computation
The computational properties of a system are generally thought to be independent in some sense from its physical properties, in virtue of the fact that computation is a formally characterized concept. Several philosophers have recently challenged the idea that such "medium-independence" is an essential feature of computation by arguing that some kinds of computation lack medium-independence. This paper explores and rejects three such arguments in an attempt to defend the essential medium-independence of computation.
https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12536

Nature Ecology & Evolution

PAPERS

ALASTAIR KEY et al – Hominin glacial-stage occupation 712,000 to 424,000 years ago at Fordwich Pit, Old Park (Canterbury, UK)
Few high-latitude archaeological contexts are older than marine isotope stage (MIS) 15 and even fewer provide evidence of early human occupation during a glacial period. New discoveries at Old Park, Canterbury (UK), provide evidence of both the oldest accessible artefact-bearing sediment in northern Europe and cold-stage adaptation. Radiometric and palaeomagnetic dating places the earliest suggested occupation of this site between 773 thousand years ago (ka) and 607 ka, with hominin presence inferred during MIS 17–16. Two additional artefact-bearing stratigraphic units, dated to around 542 ka and 437 ka, strongly align with the MIS 14 and 12 cold stages, respectively. The latter unit contains convincing evidence of glacial-stage occupation by Acheulean hominins; fresh, unabraded flakes (including biface-thinning) between clearly defined glacial-aged sediments displaying mixed grassland palaeoenvironmental evidence. An historically collected assemblage of more than 330 handaxes is argued to be derived from both the MIS 17–16 and MIS 12 sediments, providing evidence of the earliest known Acheulean bifaces in northern Europe, and re-occupation by Acheulean populations 200,000 years later. Together, Old Park provides evidence for Lower Palaeolithic hominins reoccupying a location over several mid-Pleistocene MIS cycles, early human presence above 51° latitude during a glacial stage and handaxe production in northern Europe from MIS 17 to 16.
https://www.nature.com/articles/s41559-025-02829-x

GREGORY F. ALBERY et mul with TIMOTHY CLUTTON-BROCK – Density-dependent network structuring within and across wild animal systems
Theory predicts that high population density leads to more strongly connected spatial and social networks, but how local density drives individuals' positions within their networks is unclear. This gap reduces our ability to understand and predict density-dependent processes. Here we show that density drives greater network connectedness at the scale of individuals within wild animal populations. Across 36 datasets of spatial and social behaviour in >58,000 individual animals, spanning 30 species of fish, reptiles, birds, mammals and insects, 80% of systems exhibit strong positive relationships between local density and network centrality. However, >80% of relationships are nonlinear and 75% are shallower at higher values, indicating saturating trends that probably emerge as a result of demographic and behavioural processes that counteract density's effects. These are stronger and less saturating in spatial compared with social networks, as individuals become disproportionately spatially connected rather than socially connected at higher densities. Consequently, ecological processes that depend on spatial connections are probably more density dependent than those involving social interactions. These findings suggest fundamental scaling rules governing animal social dynamics, which could help to predict network structures in novel systems.
https://www.nature.com/articles/s41559-025-02843-z

Nature Reviews Psychology

PAPERS

ANDREA GREGOR DE VARDA – Learning meaning from latent patterns in language use
Learning the meaning of words might seem like a very complex enterprise, yet children learn tens of thousands of words with very little direct instruction. Scholars from many disciplines have grappled with how children achieve this feat, often concluding that linguistic input alone does not provide enough information to explain such rapid acquisition. However, in their 1997 paper, Landauer and Dumais showed that word meanings can indeed be learned from language data alone with

the right learning algorithm — one that infers global knowledge from local co-occurrence statistics by extracting the right number of latent dimensions. This process is formalized in the computational steps of latent semantic analysis.
https://www.nature.com/articles/s44159-025-00490-6

Nature Scientific Reports

PAPERS

ESHA HALDAR et al with CLAUDIO TENNIE – Third-party imitation is not restricted to humans

Imitation of cultural practices is ubiquitous in humans and often involves faithful copying of intransitive (i.e., non-object directed) gestures and societal norms which play a crucial role in human cumulative cultural evolution. Apart from learning these directly from a tutor, humans often learn passively as third-party observers from the interactions of two or more individuals. Whether third-party imitation has evolved outside humans remains unknown. In the current study, we investigated whether undomesticated blue-throated macaws (Ara glaucogularis) could imitate in a third-party setting. A naïve test group (N = 6) passively observed a conspecific demonstrator performing rare intransitive actions in response to specific human gestural commands. Directly afterwards, the observer received the same gestural commands and performance-contingent rewards. An equally naïve control group (N = 5) was tested correspondingly, in the absence of third-party demonstrations. The test group learned more target actions (mean = 4.16 versus mean = 2.2) in response to the specific commands, significantly faster and performed them more accurately than the control group. The test group also spontaneously imitated some of the actions even before they received any gestural commands or rewards. Our findings show that third-party imitation, even for intransitive actions, exists outside humans, allowing for rapid adaption to group specific behaviours and possibly cultural conventions in parrots.
https://www.nature.com/articles/s41598-025-11665-9

FENG XIAO & XT XIAOTIAN WANG – Evaluating the ability of large Language models to predict human social decisions

Recent advances in large language models (LLMs) have highlighted their potential to predict human decisions. In two studies, we compared predictions by GPT-3.5 and GPT-4 across 51 scenarios (9,600 responses) against published data from 2,104 human participants within an evolutionary-psychology framework. We further examined our findings with GPT-4o across eight social-group and kinship conditions (1,600 responses). Our results revealed behavioral differences between humans and LLMs' predictions: Humans showed a greater sensitivity to kinship and group size than the LLMs when making life-death decisions. LLMs align closer with humans with a higher risk-seeking preference in financial domains. While human choices followed Prospect theory's value function (risk-averse in gains, risk-seeking in losses), LLMs often predicted reversed patterns. GPT-3.5 matched the average level of human risk preference but showed reversed framing effects; GPT-4 was indiscriminately risk-averse across social contexts. While humans were more risk-seeking in small or kin groups than in large groups, GPT-4o made the opposite predictions. Our results suggest a set of criteria for a psychological version of the Turing Test reflected in framing effects and social context-dependent risk preference involving kinship, group size, social relations, sense of fairness, self-age awareness, public vs. personal properties, and social group-dependent aspiration levels.
https://www.nature.com/articles/s41598-025-17188-7

New Scientist

ARTICLES

CHANDA PRESCOD-WEINSTEIN – Should it be space-time or spacetime – and why does it matter anyway?

Seeking endorsements for her new book, Chanda Prescod-Weinstein finds herself staring at fundamental questions of space, time – and grammar.
https://www.newscientist.com/article/mg26735592-500-should-it-be-space-time-or-spacetime-and-why-does-it-matter-anyway/

PLoS One

PAPERS

CHARLOTTE PRUVOST et al – A Later Stone Age quartz knapping workshop and fireplace dated to the Early Holocene in Senegal: The Ravin Blanc X site (RBX)

Well-dated and well-preserved Later Stone Age sites are unfortunately scarce in West Africa. The few known ones exhibit significant typo-technical variability, reflecting diverse socio-cultural behaviors that remain poorly understood. The Ravin Blanc X (RBX) site in eastern Senegal provides new insights into this period. Excavations at one of the sectors of the site (RBX-1) have revealed a well-preserved Early Holocene occupation, featuring a quartz knapping workshop associated with a fireplace. This site is the latest known LSA occupation in the Falémé valley and bridges a critical gap in the region's prehistoric sequence. The lithic industry at RBX-1 is dominated by a very homogeneous quartz, which was specifically selected for its high-quality knapping properties. Two main categories of sought blanks were produced: broad, thick, and rectilinear blanks, and elongated, thin and narrow blanks with an oblique distal termination forming a natural asymmetric point. The strong investment in blank standardization from the extraction stage significantly reduced the need for subsequent retouching, which was rarely observed in the RBX-1 lithic assemblage. Comparisons with other LSA sites in West Africa suggest that RBX-1

shares technological similarities with the sites of Fatandi V (Falémé valley, Senegal) and Damatoumou 1 (Ounjougou, Mali), possibly indicating a West African Late LSA Sahelo-Sudanian facies. In contrast, sites located in Guineo-Congolian forest contexts exhibit different knapping strategies and typological choices. The discovery of RBX-1 enhances our understanding of the LSA in West Africa by providing a rare, well-dated stratigraphic context (around 9100 calBP/7100 calBCE) which highlights the complexity of regional lithic traditions and raises new hypotheses about cultural transitions during the Pleistocene-Holocene shift.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0329824

ISABELL K. ADLER et al – Introducing CACIE: Development of the first Conceptual Assessment of Children's Ideas about Evolution

The theory of evolution is the core theory of the life sciences. However, due to its counterintuitive nature, learners of all ages have difficulties building coherent knowledge about evolution. Researchers propose to facilitate learning about evolution in school by introducing the topic to children at a younger age to foster learners' pre-scientific ideas and prevent the establishment of inaccurate beliefs. However, assessment tools that could be used with young children are still lacking. This article presents the development and psychometric evaluation of the interview-based Conceptual Assessment of Children's Ideas about Evolution (CACIE). The CACIE comprises 20 items about 10 concepts of the evolutionary principles variation, inheritance, and selection. They can be used with six different animal and plant species. The CACIE was tested with 85 children (1) in cross-sectional interviews and (2) in a test-retest design (n = 14). The instrument was developed using an empirically validated theoretical framework, informed by published instruments and interviews, and refined through pilot studies and observations. The assessment showed good agreement between raters and moderate test-retest reliability. The validity evidence for the responses generated by the CACIE is discussed, and guidelines for its use to measure children's ideas about evolution are provided.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0331380

PAULA BECERRA FUELLO et al – Funerary practices of cremation at the megalithic societies of South-Eastern Iberia: The cemetery of Los Milanes

The archaeological excavations undertaken at the Chalcolithic necropolis of Los Milanes have revealed a previously unknown variability in funerary practices in the south-eastern Iberia. For the first time, a megalithic tomb housed a large funerary deposit (28,740 bone fragments) of exclusively cremated human bone remains. For a comprehensive characterization of the funerary ritual, a cutting-edge multi-proxy approach has been undertaken including the osteological study of cremated bone remains, radiocarbon chronology, Fourier-Transform Infrared spectroscopy in Attenuated Total Reflectance mode (FTIR-ATR), and carbon, oxygen and strontium isotope analyses. As a result, the cremation ritual consisted of multi-depositional events of at least 21 individuals chronologically concentrated in the first quarter of the third millennium, principally in the 28th century cal BC. The absence of charcoal/ashes in the funerary chamber and the underrepresentation of anatomical regions such as lower limb and trunk suggest that the cremation took place elsewhere and the bone remains were carefully collected and placed as secondary burial depositions. Different proxies including colour patterns, heat-induced fractures, the presence of cyanamide in calcined bones would also suggest the cremation of principally complete corpses, burnt soon after death. The ritual of cremation coexisted with inhumations during the third millennium cal BC, suggesting a variability in the body manipulation that previously went unnoticed. Unlike inhumations, through cremation, bodies would have been reduced until being indistinguishable, transforming radically the nature of human beings and their ontological status.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0330771

GRZEGORZ MICHALEC et al – Geoarchaeological research on site formation process, paleoenvironment, and human behaviors in the early Holocene of the Gobi Desert, Mongolia

This paper presents a rare example of the multi-proxy investigation results on the prehistoric settlement from vast areas of the Mongolian Gobi Desert, where, during favorable climatic conditions, postglacial hunter-gatherer groups occupied a seasonal lake district. The geoarchaeological research conducted at site FV92, located at the Luulityn Toirom Paleolake, provides insight into the problem of human relations with the changing environment of the Early Holocene, as well as the problem of the site formation process in the Gobi area. Sedimentological studies and luminescence dating of the Luulityn Toirom Lake sediments indicate the presence of the lake and favorable environmental conditions for human settlement in the Early Holocene in the period before 8130 ± 83 BP. Spatial analyses of the artifact distribution, as well as refitting studies of the discovered lithic assemblage, enabled the determination of the site's formation process. Initially, the site was influenced by fluvial processes, but as the climate dried, it was subsequently affected by aeolian processes. The techno-typological analysis, refitting studies, and microscopic analyses carried out provide the first such detailed insight into the technological behavior and identification of the chaîne opératoire used by the Early Holocene hunter-gatherer communities of the Gobi area. The results confirmed that the lithic technology was mainly based on microblade technology. Microscopic analyses of traces created during tool use indicate butchery activity and the use of plant resources. The studies indicate a high degree of mobility of hunter-gatherer communities living by the lakes, as evidenced by the medium-range transport of raw material brought to the campsite from the surrounding mountainous Altai area.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0330209

JIAXIN YU & WANJUN ZHENG – Revenge or collusion? An experiment on payoff subtraction and addition in team contests
Group competition is prevalent in contemporary society. In this paper, we focus on the effects of payoff subtraction (revenge) and payoff addition (collusion) on expenditures in team competitions. Although theory predicts that the equilibrium of aggregate team contributions does not change, we find that competitive expenditures are indeed affected. Our results indicate that (1) embedding the payoff subtractions that target either the top investor or the entire team significantly reduces the contest expenditures of the targeted group; (2) targeting the top investor with conditional payoff subtractions (depending on relative expenses) leads to a slight reduction in total expenditures across both competing parties; and (3) if the primary objective is to reduce competitive expenditures, either to lower the rival group's expenditures or to lower that of both sides, payoff additions of equal magnitude may be less effective than payoff subtractions. These findings provide valuable insights into potential mechanisms for reducing competitive resource waste.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0331015

REBECCA E. HUGHES & BRANDON D. STEWART – The influence of perceived threat on the motive attribution asymmetry bias for groups in conflict
Previous research shows higher perceived threat is related to more intergroup bias, usually via greater ingroup positivity. Newer research has identified the Motive Asymmetry Attribution Bias in which ingroup and outgroup members make very different explanations for the motives about why their groups are in conflict. We were interested in this Motive Asymmetry Bias and its relationship to perceived threat with groups in conflict, so we designed two studies to investigate it cross-sectionally (Study 1) and longitudinally (Study 2). We recruited samples of American Republicans and Democrats to complete an online survey measuring perceived threat and Motive Asymmetry Bias. Regression analyses indicated that perceived threat was not related to ratings of one's own party; however, higher perceived threat was related to more negative ratings of the other party. This discovery is important to help inform different ways to intervene to improve intergroup relations, especially for groups in conflict.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0330927

PNAS

ARTICLES

LEANNE CHUKOSKIE – The nonadaptive advantage: Why our brains can't quit gaming
No summary available.
https://www.pnas.org/doi/abs/10.1073/pnas.2517079122

PAPERS

ELIZABETH T. HALLERS-HAALBOOM et al – Communication increases cooperation among students in a coordination game
Cooperation often requires individuals to balance personal risk with mutual gain. The Stag Hunt game provides a well-established paradigm for studying such decision-making. Prior research suggested that verbal communication about the game correlated with participants finding the optimal coordinated solution, but these studies either did not manipulate communication directly or informed participants of the payoff structure in advance. This study examined whether communication improves cooperative decision-making among college students under conditions in which the payoff structure had to be inferred through repeated play. A total of 127 same-sex dyads (Mage = 22.8 y, 51.2% female) played 40 rounds of an online Stag Hunt game, with dyads randomly assigned to either a no communication or communication condition. Participants were not informed about the game's payoff structure in advance and had to infer it during play. Results showed that coordination on the payoff-dominant outcome (Stag–Stag) increased across trials, but only when communication was possible. No significant sex differences were observed. These findings highlight the central role of communication in fostering cooperation, particularly in environments in which information must be jointly discovered. This is an important consideration for developing and interpreting future research. Moreover, subsequent research should explore how the content, timing, and relevance of communication shape cooperative outcomes over time.
https://www.pnas.org/doi/full/10.1073/pnas.2517669122

STEVEN A. LEHR et al – Kernels of selfhood: GPT-4o shows humanlike patterns of cognitive dissonance moderated by free choice
Large language models (LLMs) show emergent patterns that mimic human cognition. We explore whether they also mirror other, less deliberative human psychological processes. Drawing upon classical theories of cognitive consistency, two preregistered studies tested whether GPT-4o changed its attitudes toward Vladimir Putin in the direction of a positive or negative essay it wrote about the Russian leader. Indeed, GPT displayed patterns of attitude change mimicking cognitive dissonance effects in humans. Even more remarkably, the degree of change increased sharply when the LLM was offered an illusion of choice about which essay (positive or negative) to write, suggesting that GPT-4o manifests a functional analog of

humanlike selfhood. The exact mechanisms by which the model mimics human attitude change and self-referential processing remain to be understood.
https://www.pnas.org/doi/10.1073/pnas.2501823122

COMMENTARIES

JAMIE CUMMINS, MALTE ELSON & IAN HUSSEY – Cognitive dissonance in large language models is neither cognitive nor dissonant
Lehr et al. (LSHVB) claim that ChatGPT-4o exhibits an analog to "humanlike cognitive selfhood" in a classical cognitive dissonance paradigm (p. 1). We argue that the observed effects require neither cognition nor dissonance to be explained.
https://www.pnas.org/doi/full/10.1073/pnas.2517912122

STEVEN A. LEHR et al – Reply to Cummins et al.: GPT reveals cognitive dissonance that is both irrational and alarmingly humanlike
We (Lehr et al., LSHVB) reported that GPT-4o a) shifts its attitudes after writing pro- or anti-Putin essays, and b) shifts attitudes more so after ostensibly choosing (versus being assigned to) which essay to write (1). Cummins et al. (CEH, 2) call these results "context window effects," disputing that they reflect cognitive dissonance. We clearly stated that GPT-4o mimics humanlike cognitive dissonance, and that these results do not indicate large language model (LLM) sentience (p. 4). We therefore reject CEH's attribution of anthropomorphization. Here, we clarify our argument and offer new data that invalidate CEH's evidentiary claim–and thank them for the opportunity.
https://www.pnas.org/doi/full/10.1073/pnas.2518613122

Proceedings of the Royal Society B

PAPERS

JESSIE C. TANNER et al – Complex choice environments shelter unattractive signallers from sexual selection
For many animals, options abound when choosing a mate in socially complex environments like a breeding chorus or lek. In such environments, receivers often choose their mate based on individual differences in signal repetition rate. However, signallers also differ in the regularity with which they produce repeated signals. Irregularity in signalling introduces uncertainty in decision-making by masking the among-individual variation in signalling rate that is a target of mate choice. At present, we know little about how the complexity of the choice environment affects selection on rate and regularity, two signalling behaviours that receivers can only compare after sampling series of signals produced by multiple signallers. In this study of female grey treefrogs (Hyla chrysoscelis), we measured multivariate sexual selection on the rate and regularity of male calling behaviour using two-, four- and eight-choice tests. Receivers overwhelmingly chose faster, more regular calling rates in two-choice tests, but did so markedly less often when they chose among four or eight stimuli. Sexual selection imposed by female choice became markedly weaker and differently shaped as the complexity of the social environment increased, suggesting noise and choice overload effects may allow relatively unattractive males to mate.
https://royalsocietypublishing.org/doi/10.1098/rspb.2025.0585

Science

NEWS

Human ancestors braved England's ice-covered northlands 440,000 years ago
How exactly ancient toolmakers survived the harsh conditions remains a mystery.
https://www.science.org/content/article/human-ancestors-braved-england-s-ice-covered-northlands-440-000-years-ago

ARTICLES

LAURENT FRANTZ – The rise of rideable horses
Early horse riders selected a rare mutation in a single gene to enhance rideability.
https://www.science.org/doi/10.1126/science.aea6151

PAPERS

XUEXUE LIU et al – Selection at the GSDMC locus in horses and its implications for human mobility
Horsepower revolutionized human history through enhanced mobility, transport, and warfare. However, the suite of biological traits that reshaped horses during domestication remains unclear. We scanned an extensive horse genome time series for selection signatures at 266 markers associated with key traits. We detected a signature of positive selection at ZFPM1—known to be a modulator of behavior in mice—occurring ~5000 years ago (ya), suggesting that taming was one of the earliest steps toward domestication of horses. Intensive selection at GSDMC began ~4750 ya with the domestication bottleneck, leading regulatory variants to high frequency by ~4150 ya. GSDMC genotypes are linked to body conformation in horses and to spinal anatomy, motor coordination, and muscular strength in mice. Our results suggest that selection on standing variation at GSDMC was crucial for the emergence of horses that could facilitate fast mobility in human societies ~4200 ya.

https://www.science.org/doi/10.1126/science.adp4581

REVIEWS

BARBARA J. KING – The end of human exceptionalism
Anthropocentric worldviews harm us all, argues a primatologist
Review of 'The Arrogant Ape: The Myth of Human Exceptionalism and Why It Matters' by Christine Webb. Avery (2025).
https://www.science.org/doi/10.1126/science.ady5473

Trends in Cognitive Sciences

PAPERS

MICHAEL TOMASELLO – How to make artificial agents more like natural agents
The quest to make artificial intelligence models more human-like could profit from a study of biological agents and their evolution. Recent research suggests that animal species on the evolutionary line to humans employed a series of qualitatively distinct agentive architectures of ever-increasing complexity, with humans then forming shared agencies coordinated via linguistic communication.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00184-6

DAVID SCHULTNER, LUCAS MOLLEMAN & BJÖRN LINDSTRÖM – Reward is enough for social learning
Adaptive behaviour relies on selective social learning, yet the mechanisms underlying this capacity remain debated. A new account demonstrates that key strategies can emerge through reward-based learning of social features, explaining the widely observed flexibility of social learning and illuminating the cognitive basis of cultural evolution.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00158-5

WEI GAO – A hierarchical model of early brain functional network development
Functional brain networks emerge prenatally, grow interactively during the first years of life, and optimize both within-network topology and between-network interactions as individuals age. This review summarizes research that has characterized this process over the past two decades, and aims to link functional network growth with emerging behaviors, thereby developing a more holistic understanding of the developing brain and behavior from a functional network perspective. This synthesis suggests that the development of the brain's functional networks follows an overlapping hierarchy, progressing from primary sensory/motor to socioemotional-centered development and finally to higher-order cognitive/executive control networks. Risk-related alterations, resilience factors, treatment effects, and novel therapeutic opportunities are also discussed to encourage the consideration of future imaging-assisted methods for identifying risks and interventions.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00080-4

CHRISTIN SCHULZE et al – A timeline of cognitive costs in decision-making
Recent research from economics, psychology, cognitive science, computer science, and marketing is increasingly interested in the idea that people face cognitive costs when making decisions. Reviewing and synthesizing this research, we develop a framework of cognitive costs that organizes concepts along a temporal dimension and maps out when costs occur in the decision-making process and how they impact decisions. Our unifying framework broadens the scope of research on cognitive costs to a wider timeline of cognitive processing. We identify implications and recommendations emerging from our framework for intervening on behavior to tackle some of the most pressing issues of our day, from improving health and saving decisions to mitigating the consequences of climate change.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00083-X

LILIAN A. WEBER et al – The interoceptive origin of reinforcement learning
Rewards play a crucial role in sculpting all motivated behavior. Traditionally, research on reinforcement learning has centered on how rewards guide learning and decision-making. Here, we examine the origins of rewards themselves. Specifically, we discuss that the critical signal sustaining reinforcement for food is generated internally and subliminally during the process of digestion. As such, a shift in our understanding of primary rewards as an immediate sensory gratification to a state-dependent evaluation of an action's impact on vital physiological processes is called for. We integrate this perspective into a revised reinforcement learning framework that recognizes the subliminal nature of biological rewards and their dependency on internal states and goals.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00120-2

HELENA MITON & JOSHUA C. JACKSON – Complex technology requires cultural innovations for distributing cognition
Over the last decade, new research has shown how human collectives can develop technologies that no single individual could discover on their own. However, this research often overlooks how technology can become so complex that individuals cannot operate it on their own. At this level of technological complexity, distributing cognition is a necessary process for

reducing cognitive load on individuals. Yet distributing cognition also imposes coordination costs as technological systems become larger and the individuals in these systems become more specialized. We describe a sprawling set of cultural innovations that facilitate cognitive distribution by reducing cognitive load, reducing coordination costs, or doing both. Preliminary evidence suggests that these cultural innovations co-evolve with technological complexity.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00212-8

COMMENTARIES

JOHAN LIND & ANNA JON-AND – No model-based learning with a sequence bottleneck: response to Jacobs et al.
We thank Jacobs, Persson, and Gärdenfors for their reply to our proposed sequence bottleneck, in which they contend that there is overwhelming evidence for model-based learning in animals. If true, this would reduce the scope of our suggested sequence bottleneck. However, our interpretation of the literature on animal cognition differs significantly from theirs. This raises the question: how can two readings of the same literature be so different?
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00235-9
ORIGINAL COMMENTARY: IVO JACOBS, TOMAS PERSSON & PETER GÄRDENFORS – Model-based animal cognition slips through the sequence bottleneck [EAORC Bulletin 1,150]
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00155-X
ORIGINAL PAPER: JOHAN LIND & ANNA JON-AND – A sequence bottleneck for animal intelligence and language? [EAORC Bulletin 1,117]
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(24)00269-9

SEPEHR RAZAVI et al – Pseudo-approaches lead to pseudo-explanations: reply to Corlett et al.
Corlett et al. criticise a 'social turn' in delusions research according to which paranoia is a result of a dysfunction in social cognition. Instead, they propose that, despite appearances, paranoia is solely the result of alterations to domain-general responses to uncertainty. We appreciate the effort to find a parsimonious explanation, and we agree that domain-general processes play an important role in understanding delusions. However, we reject the characterisation of previous work by us and others and question whether the dichotomies set up by Corlett et al. are helpful.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00233-5
ORIGINAL PAPER: PHILIP CORLETT et al – Pseudosocial cognition and paranoia [EAORC Bulletin 1,148]
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00146-9

SUBSCRIBE to the EAORC Bulletin

If you would like to subscribe to this free weekly newsletter, please contact martin.edwardes@btopenworld.com.

UNSUBSCRIBE from the EAORC Bulletin

Send an email to martin.edwardes@btopenworld.com with the subject "EAORC unsubscribe".

PRODUCED BY AND FOR THE EAORC EMAIL GROUP

EAORC is a fee-free academic internet news service and has no commercial sponsorship or other commercial interests.
EAORC website information is at http://martinedwardes.me.uk/eaorc/
If you have received this bulletin, and are unhappy about receiving it, please contact martin.edwardes@btopenworld.com.