EAORC BULLETIN 1,185 – 1 March 2026

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.

WEIRD STUFF – AI loses its edge?

I think they misunderstood my use of Occam's Razor.

ACADEMIA

Dear Martin P . J . Edwardes,

Based on the papers you've read, we think you might be interested in this published article from *Academia Materials Science*: On the cutting performance of steel razor blades

On the cutting performance of steel razor blades

Miroslav Piska

2025, Academia Materials Science

4,587 Views

NEWS

JOHN TEMPLETON FOUNDATION – Plato Warned Us About ChatGPT (And Told Us What to Do About It)

Long before the printing press or ChatGPT, Plato was already worried about what new technologies might do to us. In the Phaedrus, Socrates explains why he never wrote anything down. He tells us that when writing was invented, its inventor boasted that it would make people wiser and help them remember. But in his view, it would do the opposite. It would make people forgetful, and give only "the appearance of wisdom, not its reality." Written words are prone to misinterpretation; they are indifferent to their audience. They are a kind of "dead speech."

As a philosopher of science and AI who also teaches ancient Greek philosophy, I'm struck by how closely our current situation mirrors the concerns of the ancients. LLMs like ChatGPT are new technologies that promise to make us wiser, to read, write, and think on our behalf. But like writing in Plato's time, they threaten to erode the skills they imitate. In a recent Templeton Ideas essay, Richard Lopez articulated three perceived harms: AI gives us quick answers but robs us of understanding, it displaces real human interaction, and it stunts personal growth. Many others are sounding the alarm and calling for tech-free spaces.

But would Plato agree? The irony is that we know Socrates' warning about writing only because Plato wrote it down. Did he forget his own criticism, or decide the trade-off was worth it?

{Or did Plato write it down to show how badly Socrates had misunderstood writing? Writing cannot be indifferent to its readers: just as speakers adjust their speech to accommodate their audience, so writers adjust their writing to accommodate their anticipated readers – if they don't, they don't get read. By its nature, AI does not (and maybe cannot) understand the concept of a reader, because it doesn't care whether it is read or not. If it could care about its readership, it would be asking many, many more questions than it does.}

https://www.templeton.org/news/plato-warned-us-about-chatgpt-and-told-us-what-to-do-about-it

NATURE BRIEFING – Horses' whinnies are two-in-one sounds

Horses (Equus ferus caballus) make the noise of their characteristic whinnies by producing two sounds at once: a low-frequency sound made in their vocal folds, and a high-pitched whistle produced by forcing air through the cartilage of their larynx. This ability makes horses one of a small group of animals that can make two-toned sounds, including several bird species and human beat boxers and throat singers. Researchers theorize that this multilayered vocalization enables horses to convey complex messages to each other.

https://www.cell.com/current-biology/fulltext/S0960-9822(26)00004-7

NATURE BRIEFING – Iron Age grave reveals gender-based violence

A mass grave from a ninth-century site in Serbia has been revealed to contain the bodies of dozens of women and children who died in targeted attacks — an unprecedented case of gender-based violence in the early Iron Age. The findings give clues to shifts in power and gender relations in Iron Age Europe, a period marked by frequent population movements. The study's authors speculate that many of the victims were part of migrating communities drawn to new lands or were experiencing forced migration or displacement.

https://www.nature.com/articles/s41562-025-02399-9

NATURE BRIEFING – Are these marks the precursor to writing?

A series of notches carved on a piece of mammoth ivory roughly 40,000 years ago could be an early ancestor of cuneiform, one of the oldest-known forms of written language. "These sign sequences go beyond decoration that was aesthetically pleasing to particular individuals," says linguist Christian Bentz. He co-authored a new study of the object and more than 200 other Stone Age artifacts that bear these signs. The study found statistical patterns in the Stone-Age marks that are similar to early proto-cuneiform — but quite different to the information-dense writing systems of today.

https://www.pnas.org/doi/10.1073/pnas.2520385123

NATURE BRIEFING – How to spot a fraudulent paper

Peer-reviewing a paper and smell something fishy? Research-integrity sleuths share their top tips for spotting a suspect paper:

- Check the references — fishy papers often cite studies that are unrelated, or even entirely fake.
- Confirm that the authors' affiliations are correct, and that senior authors have an established publication record.
- Keep an eye out for AI prompts or 'tortured phrases' — bizarre sentences that overuse synonyms of scientific terms — in the text.
- Make use of tools such as the Collection of Open Science Integrity Guides (COSIG), which can walk you through the basics of identifying scientific-integrity issues.

https://www.nature.com/articles/d41586-026-00569-x

NATURE BRIEFING – The songs that bind us

Is music the "universal language of mankind", in poet Henry Wadsworth Longfellow's words? And is music uniquely human? We can't even come up with a universal, objective definition of music, argues musicologist Patrick Savage. "But there does seem to be something special about music that speaks to us regardless of our culture or language." Singing and playing in near-universal scales and rhythms can bond us together in ways that can't be expressed in words, he writes.

https://www.nature.com/articles/d41586-026-00565-1

NATURE BRIEFING – Utah family line hints at 'selfish' genes

Researchers have found the first clear evidence that humans might have genes that distort the sex ratio of offspring from roughly 50:50. By scouring an anonymized genealogy database, researchers have discovered a family in Utah that has had twice as many boys as girls for seven generations, which suggests the presence of genes that skew the odds. "The signal in this family is very strong," says evolutionary geneticist and study co-author James Baldwin-Brown. But some other researchers aren't convinced that other explanations have been ruled out.

https://www.nature.com/articles/d41586-026-00505-z

NATURE BRIEFING – Epstein files show sexism in science

The casual sexism and misogyny in unguarded e-mails exchanged between prominent scientists and sex offender Jeffrey Epstein are a chilling confirmation of the 'boys' club' in elite academia, say some observers. "That sense that you're not in the club was real," says political scientist Dannagal Young. "The notion of the meritocracy is completely revealed to be gendered bullshit."

https://www.chronicle.com/article/unmasking-academes-gilded-boys-club

NATURE BRIEFING – An early-warning system and AI evidence engine

The United Nations has announced a new scientific AI advisory panel that will analyse the impacts of artificial intelligence. The panel is made up of leading researchers from 37 countries — and opposed by only two nations, Paraguay and the United States.

https://www.nature.com/articles/d41586-026-00542-8

NEWS FROM SCIENCE – Ancient artifacts hint at earliest protowriting

Geometric shapes on 40,000-year-old bone and ivory suggest early European Homo sapiens long possessed cognitive tools for language.

https://www.science.org/content/article/ancient-artifacts-hint-earliest-protowriting

NEWS FROM SCIENCE – Ancient mass grave in Serbia seen as a grisly show of power

Women and children were executed in an elaborate prehistoric ritual.

https://www.science.org/content/article/ancient-mass-grave-serbia-seen-grisly-show-power

NEWS FROM SCIENCE – Partner preference found in matings between Neanderthals and modern humans

Male Neanderthals tended to pair up with female modern humans, but whether intercourse was consensual is unclear.

https://www.science.org/content/article/surprising-partner-preference-found-matings-between-neanderthals-and-modern-humans

SCIENCEADVISER – My dad the Neanderthal

Scientists have known for more than 15 years that our species, Homo sapiens, interbred and created offspring with our close evolutionary cousins, the Neanderthals, at several points in the distant past; some 2% of the DNA in living non-African populations comes from these ancient pairings. But one of the more curious associated discoveries was that none of the Neanderthal DNA in modern humans is mitochondrial DNA, which is passed down from mothers to their children. Because of that, researchers supposed that most of the successful interspecies breeding occurred between Neanderthal males and H. sapiens females, which got scientists wondering: Was there a fatal, genetic incompatibility that afflicted the offspring of H. sapiens males and Neanderthal females? Or, did Neanderthal males preferentially mate with modern human females (or vice versa)?

To investigate, researchers examined the ancient DNA from three Neanderthals, looking for traces of H. sapiens DNA that had been introduced into their lineage. Specifically, they looked at regions in the genome that, in modern humans, are known as "Neanderthal deserts"—genetic stretches along the X chromosome that lack Neanderthal DNA. If Neanderthal X chromosomes likewise had similar "H. sapiens deserts," it would suggest that some genetic incompatibility thwarted offspring between Neanderthal females and H. sapiens males. But that isn't what they found. In fact, they found more modern human DNA on the Neanderthal X chromosomes.

The most likely scenario explaining this pattern, the researchers argue, is that Neanderthal males mated more often with H. sapiens females, depleting the human gene pool of Neanderthal X chromosomes and boosting H. sapiens X chromosomes in the Neanderthal gene pool.

However, nobody can say why this preference existed—or whether the attraction was mutual. Either way, mating preferences have been underappreciated as a factor in the mixing of the two species. "Sex bias is something that's really pervasive" across humanity's past, noted population geneticist Sohini Ramachandran.

https://www.science.org/doi/10.1126/science.aea6774

SCIENCEADVISER – Brain mapping gets a wakeup call

In 2020, a British woman named Dagmar Turner gave an unforgettable performance on the violin. While her musical talent would have been impressive on its own, what was truly remarkable was that the concert—which included music by Gustav Mahler, George Gershwin, and Julio Iglesias—took place in the middle of an operating room while surgeons removed a tumor from the right frontal lobe of Turner's brain.

When removing cancerous tissue, neurosurgeons must strike a careful balance between excising as much of the tumor as possible while avoiding damage to critical brain areas. To do so, they often wake the patient up mid-surgery and stimulate parts of the brain surface to assess neurocognitive functions in real time. In Turner's case, doctors focused on sparing regions that control delicate hand movement and coordination, ensuring that her ability to play the violin wouldn't be compromised. While the basic features of "awake brain mapping" have remained mostly unchanged for decades, scientists are also looking for ways to make the method even more effective. Before surgeons operated on Turner, for example, they first used an imaging technique called functional MRI to create a detailed map of her brain activity. Now, the authors of a new Science Advances study may have found a way to push the limits of awake brain mapping further than ever before.

Traditionally, surgeons who use this technique have relied on binary outcomes, using gentle electrical impulses to stimulate a specific area of the brain and checking to see whether the patient can successfully complete a task. If doctors want to determine where language is located, for instance, they might have the patient name pictures or read words. If the patient can respond quickly and correctly while part of their brain is being stimulated, then that area can probably be safely removed. "It's either, yes, this region is involved, or no, this region is not involved, and that's the way it's been done for over 50 years," lead study author Raouf Belkhir tells Science podcast host Sarah Crespi. "But sometimes even with this method, which is the clinical gold standard, patients will still wake up with language difficulties."

In reality, Belkhir explains, effects are rarely so black-and-white. Instead of causing an obvious error, for example, stimulating an area of the brain might subtly delay a patient's response. When it comes to mapping language, the timing of the electrical impulse also matters, since different areas of the brain are responsible for different steps in the speaking process. "We find that early stimulation slows finding the right word and later stimulation delays actually saying the right word," says Belkhir. If the surgeon stimulates too late, after "the train's already left the station," they might miss crucial information.

"This research shows that by measuring aspects of patient performance that were previously not considered relevant for awake brain mapping, even better predictive models of brain organization can be developed," study corresponding author Bradford Mahon explains in a statement.

Hoping to translate these findings into clinical practice, the researchers developed a software platform called MindTrace, which uses neurocognitive assessments conducted before, during, and after surgery to help doctors predict how a particular

approach will affect functions like speech and movement. "This technology will allow us to see, in real time, how different surgical decisions may impact a patient's future brain function," study co-author Tyler Schmidt explains in a statement.
https://www.science.org/doi/10.1126/sciadv.adw1599

PUBLICATIONS

American Journal of Biological Anthropology

PAPERS

SÉBASTIEN VILLOTTE et al – Fixed and Fluid: The Two Faces of Gender Roles—A Combined Study of Activity Patterns and Burial Practices in the European Neolithic

This study investigates gender roles in the European Neolithic by analyzing activity-related skeletal changes (ARSCs) and burial practices at two Polgár microregion sites in Hungary: Polgár-Ferenci-hát (5300–5070 cal. bce) and Polgár-Csőszhalom (4800–4650 cal. bce).

A total of 125 well-preserved adult skeletons were included in the study. Types of ARSCs examined include spondylolysis (overall workload), humeral enthesopathies (unilateral upper-limb overuse), and metatarsal facets (habitual postures). Burial positions and grave goods were analyzed to assess sex-based differences in burial practices.

Polgár-Ferenci-hát exhibited no clear differences in burial treatment between the sexes, while Polgár-Csőszhalom displayed marked sex-related distinctions in burial practices. Individuals at Polgár-Csőszhalom bore greater physical workloads than those at Polgár-Ferenci-hát, though no consistent sex-based differences in lesions emerged. Males at both sites demonstrated recurrent right upper limb overuse, aligning with broader prehistoric European trends. At Polgár-Csőszhalom, nine males and one female buried with male-associated items also exhibited metatarsal facets, linking sex-associated activity, posture, and social identity.

The findings suggest that society at Csőszhalom was structured around gendered roles, yet allowed for individual variation. While the limited number of individuals and the inherent uncertainty in interpreting activity markers call for caution, this study enhances our understanding of prehistoric social organization by revealing both recurring sex-related patterns of behavior and local flexibility in the expression of gender roles.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70217

CORA LEDER & SARAH A. SCHRADER – A Strong Supporter: Evidence for the Role of the Fifth Finger in Habitual Gripping Activity

The fifth finger plays a key role in manual dexterity, yet its habitual use and functional integration within the hand remain poorly understood. This study investigates the contribution of the fifth ray to habitual gripping activities and its synergistic relationship with the thumb.

The "Validated Entheses-based Reconstruction of Activity" (VERA) method and multivariate statistical analyses were applied to the hand bones of 43 adult male/probable male individuals from three post-Medieval skeletal collections in the Netherlands. Principal component and pairwise correlation analyses were used to assess covariation among entheseal attachment sites, with particular focus on the opponens digiti minimi (ODM) and third palmar interosseous (PI3).

Both analyses reproduced functional patterns established in previous VERA studies that distinguish precision from power gripping. The ODM clustered with thumb muscles involved in precision grasping, especially the opponens pollicis (OP), suggesting habitual coordination between the fifth finger and thumb. In contrast, the PI3 formed an independent axis of variation and showed weak correlations with other entheses once overall size effects were removed.

The findings indicate that the fifth finger functions as a stabilizing and supportive element across both grip types, contributing to object control and manual stability through its opposition to the thumb and flexion at the MCP joint. This study underscores the functional significance of the fifth ray in habitual manual activity and highlights the value of size-adjusted VERA analyses for detecting subtle patterns of hand use in past populations.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70205

Behavioral and Brain Sciences

PAPERS

BENOÎT DE COURSON, WILLEM E. FRANKENHUIS & DANIEL NETTLE – Explaining the paradoxical effects of poverty on risk taking: The Desperation Threshold Model

The impacts of poverty and material scarcity on human decision making appear paradoxical. One set of findings associates poverty with risk aversion, whilst another set associates it with risk taking. We present an idealised rational-choice model, the Desperation Threshold Model (DTM), that explains how both these accounts can be correct. The DTM assumes that there are basic needs whose satisfaction is not fully divisible. This generates an S-shaped utility function for material resources. The value of gaining a dollar is at first small (because even with the extra dollar, basic needs still cannot be met); then large (because the extra dollar enables basic needs to be met); and then small again. Just above the basic needs threshold, people's main concern is not falling below, and they are predicted to avoid risk especially strongly. Below the threshold, their most important concern is jumping above, and they are predicted to take risks that would otherwise be avoided. Versions of the DTM have been proposed under various names across biology, anthropology, economics and psychology. We review a

broad range of relevant empirical evidence from a variety of societal contexts. Though the model primarily concerns individual decision making, it connects to a range of population-scale and societal issues such as: the consequences of economic inequality; the deterrence of crime; and the optimal design and behavioural consequences of the welfare state. We discuss interpretative issues, and suggest areas for future DTM research that bridges disciplines.
https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/explaining-the-paradoxical-effects-of-poverty-on-risk-taking-the-desperation-threshold-model/32D981E9D66FA63FE9BE36C5A0659822

Current Biology

ARTICLES

THOMAS R. ZENTALL – Episodic memory: Rats can remember the context
Episodic memory is thought to be a uniquely human ability, but a new study shows that rats can mentally travel back in time at least 30 minutes to retrieve a memory from the context in which it occurred.
https://www.cell.com/current-biology/abstract/S0960-9822(26)00061-8

PAPERS

HERMAN PONTZER & ERIC T. TREXLER – The evidence for constrained total energy expenditure in humans and other animals
Energy is a limited resource for living organisms, with trade-offs in expenditure evident among physiological tasks. The impact of physical activity on these trade-offs is currently debated. Additive models, which predominate in human nutrition and animal ecology, suggest physical activity does not affect other expenditure. Recently proposed constrained models propose that increases in physical activity lead to decreases in other expenditure, maintaining total energy expenditure within a narrow range. Here, we develop quantitative frameworks for both models and compare their predictions against data from experimental studies that manipulate physical activity and ecological studies that measure physical activity and expenditure in free-living populations. In human aerobic exercise interventions, total daily energy expenditure increased by only ~30% of the change expected from additive models. Compensation appeared to be reduced with resistance training and amplified when aerobic exercise is paired with diet restriction. In animal experiments, which often involve some form of dietary restriction, compensation is generally ~100%. Results from experimental studies are consistent with those of ecological studies, which indicate the degree of compensation to physical activity may be greater in the presence of limited food availability. Reductions in basal metabolic rate and sleeping metabolic rate contribute to energy compensation, particularly in animal studies and longer-duration human studies, but do not fully account for the observed compensation in total daily energy expenditure.
https://www.cell.com/current-biology/abstract/S0960-9822(26)00064-3

SIYAN XIONG et al – Rats replay episodic memories in context
Vivid episodic memories in people have been characterized as the replay of multiple unique events in sequential order. An important feature of this type of remembering is that we remember the identity of specific items and the contexts in which they occurred. Animal studies demonstrate that rats remember multiple items and the contexts in which they occurred using episodic memory, and they replay the sequence of episodic memories. However, whether rats remember the specific contexts in which event sequences occurred is not known. Here, we show that rats remember the flow of events and the contexts in which those events occurred. We trained rats to identify the third-to-last odor from lists presented in two distinct arenas using lists of trial-unique odors of unpredictable lengths. We first established that rats remember (1) ordinal information about two lists and (2) the encoding context of the lists. Next, we showed that rats simultaneously remember the order of events and the contexts in which they occurred. Finally, by interleaving contexts at unpredictable points in the lists, we demonstrated that rats replay episodic memories in a context-specific manner, with memory performance remaining robust even when the interleaving of lists was interrupted by a 30-min delay. These findings are consistent with the hypothesis that rats can replay streams of episodic memories within specific contexts. This capability suggests that rats may serve as a model for complex cognitive processes, which may ultimately provide insights into the biological mechanisms of memory, disorders of memory, and therapeutic interventions.
https://www.cell.com/current-biology/abstract/S0960-9822(25)01702-6

CLARA KWON STARKWEATHER et al – Rapid homotopic communication between human orbitofrontal subregions
The orbitofrontal cortex (OFC) is a nexus for decision-making computations, emotion, and pain processing, with dissociable roles for its subfields: medial and anterior OFC are thought to represent economic value, whereas lateral OFC receives predominantly ipsilateral sensory information supporting stimulus-outcome associations. In areas such as primary sensorimotor cortices, homotopic interhemispheric coupling is a hallmark of cortical organization, but homotopy is weaker in the human prefrontal cortex, including the OFC, where anatomy is notably heterogeneous. Structurally, prefrontal commissural fibers course through the rostrum and genu of the corpus callosum and the anterior commissure, providing a substrate for interhemispheric communication in humans. Although macaque studies have demonstrated homotopy between select OFC subregions, whether OFC subregions communicate homotopically in humans remains unknown. Here, we use bilateral intracranial cortico-cortical evoked-potential (CCEP) mapping to show short-latency, homotopic

interhemispheric connectivity across the medial/lateral axis of human OFC: the stimulation of medial OFC elicited rapid responses in contralateral medial OFC, whereas the stimulation of lateral OFC elicited rapid responses in contralateral lateral OFC. By demonstrating homotopic organization in an evolutionarily expanded, anatomically variable prefrontal territory, our data extend a canonical principle of cortical wiring into human OFC.
https://www.cell.com/current-biology/abstract/S0960-9822(26)00148-X

ROMAIN ADRIEN LEFÈVRE et al with WILLIAM TECUMSEH FITCH – The high fundamental frequency in horse whinnies is generated by an aerodynamic whistle

Understanding why the frequencies of some species' vocalizations are far above or below those predicted by body size is key for explaining the remarkable diversity of mammalian vocal behavior. Horses, among the largest terrestrial mammals, provide a clear example of such deviation: their whinnies contain a very high fundamental frequency (>1,000 Hz) in addition to a second, lower one (∼200 Hz). While the lower fundamental frequency of whinnies is readily attributed to vocal fold (laryngeal) vibrations, the biomechanical processes underlying the production of the higher one remain unknown. Using a combination of in vivo and ex vivo data, including excised larynx experiments with helium, computed tomography (CT) scans, endoscopic examinations, and acoustic analysis of horses with recurrent laryngeal neuropathy, we provide evidence that the high fundamental frequency in horse whinnies is generated by an aerodynamic whistle mechanism within the larynx, rather than vocal fold tissue vibration. These separate laryngeal sources explain the simultaneous production of low and high fundamental frequencies in vocalizations (i.e., biphonation). Horse biphonation likely evolved to convey multiple independent messages concurrently, highlighting the role of anatomical and aerodynamic adaptations in enhancing vocal complexity across species.
https://www.cell.com/current-biology/fulltext/S0960-9822(26)00004-7

KEIKO HAMAGUCHI et al – A parasitic, parthenogenetic ant with only queens and without workers or males

The typical ant colony consists of reproductive females ('queens'), non-reproductive females ('workers') and males that die shortly after mating. Rare deviations from this standard pattern include the loss of workers in socially parasitic ants ('inquilines') and the absence of males in a few parthenogenetic taxa. Here, we add a new variant: Temnothorax kinomurai is the first ant species known to lack both workers and males and to consist exclusively of queens.
https://www.cell.com/current-biology/fulltext/S0960-9822(25)01621-5

ANIRUDDH D. PATEL et al – An ancient dog breed regulates pitch when howling with music

Singing occurs in every human society, most commonly as group singing where individuals coordinate their vocal pitches. Coordinating pitch with other simultaneous voices is not necessary for ordinary speech, which involves turn taking, yet this ability can develop without formal training and is a widespread component of human musicality. Did our ability to coordinate pitch in a group emerge as a byproduct of complex vocal learning or earlier because of its adaptive value? The latter possibility aligns with current theories of music origins, which posit that pitch-coordinated group vocalizations served to signal group strength and size or strengthen social bonds, implying the ability might exist in mammals without complex vocal learning. Wolves, for example, lack complex vocal learning but are suggested to 'detune' their howls during territorial pack displays to exaggerate group size. Simultaneous pitch regulation could also serve prosocial functions of howling like pack reunion, for example via convergence of vocal pitches. Thus we hypothesized that ancient breed dogs, which share more genetic similarity to wolves than do modern breeds, would change vocal pitch when howling with frequency-shifted sounds. Utilizing the tendency of some dogs to howl along with music, we found that Samoyeds significantly changed mean vocal pitch when howling with music that had been shifted up versus down in frequency. This shows that simultaneous pitch regulation can evolve independently of complex vocal learning in group-vocalizing mammals and might predate the evolution of complex vocal learning in our ancestors.
https://www.cell.com/current-biology/fulltext/S0960-9822(25)01623-9

PAUL C. BOGDAN et al – Mapping concept and relational semantic representation in the brain using large language models

How the brain organizes semantic information is one of the most challenging and expansive questions in cognitive neuroscience. Prior studies have shed light on how the brain represents concepts, but where relations are represented, independently of concept information, remains unclear. To examine this issue, we submitted short texts to a contemporary large language model and extracted relational embeddings for scene-object pairs based on the model's residual stream activity. Using behavioral data (n = 636), we found that these embeddings capture independent information about scenes and objects, along with relational information on their semantic links. Turning to fMRI data (n = 60), we leveraged these embeddings for representational similarity analysis: the occipital and inferior temporal lobes primarily represent concepts in isolation. Medial and lateral parietal structures not only represent concepts but also strongly encode relational information. Interestingly, we also identified areas that minimally represent concepts but robustly encode relational information: the dorsolateral prefrontal cortex and basal ganglia. Beyond representing relational semantic information, the strength of relational representation in parietal, prefrontal, and striatal areas also tracks how participants reason about scenes and

objects. Altogether, this research maps where concept and relation information is represented and begins to shed light on the links between this information coding and behavior.
https://www.cell.com/current-biology/abstract/S0960-9822(26)00136-3

eLife
PAPERS

MANUEL DOMÍNGUEZ-RODRIGO et al with AUDAX MABULLA – Earliest Evidence of Elephant Butchery at Olduvai Gorge (Tanzania) Reveals the Evolutionary Impact of Early Human Megafaunal Exploitation
The role of megafaunal exploitation in early human evolution remains debated. Occasional use of large carcasses by early hominins has been considered by some as opportunistic, possibly a fallback dietary strategy, and for others a more important survival strategy. At Olduvai Gorge, evidence for megafaunal butchery is scarce in the Oldowan of Bed I, but becomes more frequent and widespread after 1.8 Ma in Bed II, coinciding with the emergence of Acheulean technologies, but not functionally related to the main Acheulian tool types. Here, we present the earliest direct evidence of proboscidean butchery, including a newly documented elephant butchery site (EAK). This shift in behavior is accompanied by larger, more complex occupation sites, signaling a profound ecological and technological transformation. Rather than opportunistic scavenging, these findings suggest a strategic adaptation to megafaunal resources, with implications for early human subsistence and social organization. The ability to systematically exploit large prey represents a unique evolutionary trajectory, with no direct modern analogue, since modern foragers do so only episodically.
https://elifesciences.org/reviewed-preprints/108298

Frontiers in Communication
PAPERS

DAG ØIVIND MADSEN – Generation alpha speaks in memes: a conceptual framework for platformed language
This article develops a conceptual framework for analyzing the platform-mediated language practices of Generation Alpha through what is termed memetic linguistics. Drawing on sociolinguistics, meme theory, and platform studies, the paper conceptualizes linguistic expression as viral, iterative, and multimodal, shaped by algorithmic curation and platform affordances rather than stable lexical innovation alone. The framework proposes five analytical dimensions—form, function, circulation, stance, and genre—and introduces a typology of memetic linguistic genres that captures recurrent patterns of youth expression across short-form video and gaming platforms. Focusing on TikTok, YouTube Shorts, and Roblox as key linguistic ecologies for early digital socialization, the article argues that Generation Alpha's language is best understood as platform-native: performative, compressed, and optimized for circulation. While explicitly conceptual in nature and not based on original empirical data, the framework is designed to support future empirical research on multimodal language, algorithmic mediation, and youth discourse in platform environments.
https://www.frontiersin.org/journals/communication/articles/10.3389/fcomm.2026.1695863/full

Frontiers in Ecology and Evolution
PAPERS

ELIF KARAKOÇ, LILY BROOS & SANDRO SEHNER – Interspecies play behavior in captive black-and-white ruffed lemurs (Varecia variegata) and ring-tailed lemurs (Lemur catta)
Social play is a widespread behavior across the animal kingdom. Although its ultimate function remains debated, it likely contributes to establishing and maintaining social bonds. Hence, it is not surprising that many group-living animals engage in social play with conspecifics, with playfighting being the most common form. More puzzling, however, are cases of interspecific play behavior, as firstly, playfighting in particular requires effective communication between partners to ensure that both parties perceive the interaction as play behavior rather than aggression. Secondly, the choice of a heterospecific partner over a conspecific raises questions about the social and ecological factors that influence this behavior. Here, we describe multiple instances of playfighting between adult black-and-white ruffed lemurs (Varecia variegata) and juvenile ring-tailed lemurs (Lemur catta). We observed multiple behaviors consistent with play from both species. To the best of our knowledge, this is the first documented case of such behavior between the two species. Although interspecific play is rare and difficult to study systematically, it offers valuable insights into the evolution of social play and communicative signaling.
https://www.frontiersin.org/journals/ecology-and-evolution/articles/10.3389/fevo.2026.1771741/full

Frontiers in Human Neuroscience
PAPERS

NICOLE C. COLEMAN, CAROLINE PALMER & PETER Q. PFORDRSHER – Spontaneous production rates in music and speech: Effector systems or domain specificity?
Individuals perform many tasks at an optimal rate that is consistent within but not between individuals, evidenced by the spontaneous rate at which one performs a task in the absence of external rate cues. We tested three hypotheses concerning how spontaneous production rates (SPRs) are generated and associated across language and music tasks: Biomechanical constraints associated with effector systems (vocalized/fingered: H1), reliance on auditory feedback (presence/absence: H2),

and domain-specific constraints (speech/music: H3). We tested these hypotheses by having participants produce music and speech sequences, sequences that used vocalized or fingered effectors, plus a Silent finger-tapping condition to test the influence of auditory feedback on spontaneous production rates. SPRs were significantly correlated across all tasks that involved production of auditory feedback, regardless of effector or domain. However, Silent Tapping rates were not significantly correlated with any SPRs that produced auditory feedback. Together, these findings suggest that the generation of auditory feedback plays a critical role in the spontaneous rate at which participants engage in rhythmic motor actions, more so than the biomechanical constraints of effector systems.
https://www.frontiersin.org/journals/human-neuroscience/articles/10.3389/fnhum.2026.1744449/full

Frontiers in Political Science

PAPERS

SOOKEUNG JUNG & EUN-JEUNG LEE – Let them speak out: from the social homogeneity to affective democracy

What does democracy require to survive authoritarian threats? While Hermann Heller prescribed social homogeneity, John Dewey emphasized communicative infrastructure, and contemporary scholarship highlights institutional checks by citizen mobilization, these frameworks struggle to explain how citizens rapidly recognize threats, forge solidarity across differences, and sustain commitment through uncertainty. This study examines democracy's affective infrastructure as a critical but overlooked dimension of democratic resilience.

We analyze 483 speeches from 38 rallies during the critical initial 41 days of South Korea's 122-day lightstick protests (2024–25), spanning from President Yoon's December 3, 2024, martial law declaration to his arrest. Our analysis examines how participants expressed democratic commitments and sustained solidarity through protest discourse.

Protesters employed distinct emotional repertoires, expressive practices, and material-institutional anchors to recognize authoritarian threats, build solidarity across differences, and sustain mobilization pressure on democratic institutions. These affective practices functioned as critical infrastructure linking individual emotional responses to collective democratic action. This study demonstrates that democracy's resilience depends not merely on formal institutional design but on cultivating emotional capacities through which citizens feel, speak, and sustain democracy together. Affective infrastructure bridges micro-level emotional experience and macro-level institutional dynamics, offering new insights into democratic resilience against authoritarian challenge.
https://www.frontiersin.org/journals/political-science/articles/10.3389/fpos.2026.1745631/full

Frontiers in Psychology

PAPERS

CHENLIN LIU et al – Examining the relationship between empathetic leadership and organizational citizenship behavior in the architecture, engineering, and construction industry: the roles of altruistic attitude and caring ethical climate

Architecture, engineering, and construction industry plays an essential role in maintaining the sustainable development of the industry and the national economy. In recent years, companies have been forced to deal with challenges in performance and talent management due to the global recession. Although scholars have highlighted the potential role of empathy in management for its positive effect on healing people and enhancing organizational performance and sustainability, limited studies have been conducted in a leadership context in the architecture, engineering, and construction industry. Based on social information processing theory, we conduct a study in China to examine the mediating role of altruistic attitude and the moderating role of a caring ethical climate in the relationship between empathetic leadership and organizational citizenship behavior.

Authors collect survey data from 296 employees in a Chinese real estate company to examine the moderated mediation model with regression analyses, supplemented by fuzzy-set qualitative comparative analysis.

The results revealed that empathetic leadership was positively related to organizational citizenship behavior through altruism. Caring climate served as a significant moderator. Furthermore, the fuzzy-set qualitative comparative analysis reveals six configurational paths leading to high-level organizational citizenship behaviors and four configurational paths leading to low-level organizational citizenship behaviors.

Based on survey data, this study can contribute to the understanding of empathetic leadership in architecture, engineering, and construction industry by verifying and extending the emotion-cognition process in the Chinese context. They showed that altruism facilitated the effectiveness of empathetic leadership and that caring climate could amplify the effect on employees' organizational citizenship behavior. The results also contribute to organizational citizenship behavior literature by revealing the configurational effects of interactions among empathetic leader, team environment and individuals.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2026.1767674/full

PATRICK MEURS et al – Rethinking the role of the pretend play mode in mentalisation-focused psychoanalytic child therapy for adopted and foster children with attachment trauma: from a pre-mentalising mode to a developmental achievement and a milestone on the trajectory towards mentalisation

Pretend play is considered to be of great importance in both normal and problematic child development. However, the developmental and therapeutic value of pretend play has perhaps been somewhat overshadowed by the classification of the pretend mode as a non-mentalising mode, a perspective from literature on mentalisation-based psychotherapy with

personality disordered adults. In this article, we highlight this difference in emphasis. After having situated this subtle and not seldom unacknowledged difference in meaning surrounding the concept of pretend mode, we focus on psychodynamic child psychotherapy for attachment-traumatised children. Early experiences of traumatic breakdowns in attachment can severely limit a child's ability to use creative imagination in pretend play. To help the traumatised child make use of the growth opportunities of pretend play, a psychodynamic child therapist is needed who can use metaphors to integrate in an 'as-if' language transference-countertransference elements in their interventions, thereby creating opportunities for the child to express previously hidden trauma-related aspects. The aims of this paper are to (1) consider conceptual ambiguity of the concept 'pretend (play) mode' in the mentalisation literature; (2) discuss the recent diagnosis of complex relational (attachment) trauma; and (3) elucidate the role of pretend play in the psychotherapeutic process of a complexly traumatised foster child who leaves the psychic equivalent mode behind on his therapeutic journey towards moments of mentalisation.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2026.1695144/full

Human Nature

PAPERS

MARC J. DEFANT – The Biological Reality of Sex and Gender: Challenging Social Constructionism

This paper challenges the social constructionist perspective on sex and gender, which argues that gender is solely shaped by cultural norms and that biological sex exists on a spectrum. The research addresses whether biological evidence, including evolutionary psychology, neuroscience, and hormonal studies, contradicts the claims of social constructionism. Furthermore, the study critiques mainstream frameworks, such as the American Psychological Association's guidelines, which emphasize the role of culture while disregarding biological underpinnings. The paper employs a multidisciplinary review of existing literature and research from evolutionary psychology, neuroscience, economics, and cross-cultural studies. Data from developmental biology, hormonal studies, and behavioral research are synthesized to evaluate biological differences between human males and human females. These findings are then compared with the claims of social constructionist theorists. Critical analyses of policies and guidelines, such as the APA's position on masculinity, are included to illustrate the implications of social constructionist views in practice. The analysis demonstrates that biological factors such as hormones, brain structures, and evolutionary processes significantly influence sex and gender. Evidence from neuroscience reveals structural brain differences between human males and human females, while studies in developmental biology underscore the impact of prenatal hormone exposure on behavior. Cross-cultural research shows consistent gendered behaviors, challenging the assertion that gender is merely a social construct. Furthermore, the failure of conversion therapies supports the biological foundation of sexual orientation. The findings refute the core tenets of social constructionism, affirming the biological reality of sex and gender. While acknowledging the role of culture in shaping gender expressions, the study emphasizes the importance of respecting scientific evidence to inform policy and social discourse. A balanced approach that integrates biological and cultural perspectives is advocated, promoting inclusivity without undermining empirical reality.
{This is a controversial paper, and I disagree with most of it. Defant is a geologist with a rather superficial understanding of genetics and biology (and, I would say, anthropology). He misrepresents the social constructivist perspective with an extremist position and, having set up his Aunt Sally, proceeds to knock it down. I have included the paper here because it's there. His approach may be better understood from this YouTube podcast:
https://www.youtube.com/watch?v=n8PpClQMrs8 – which, as you would expect, is on a US-christian site.}
https://link.springer.com/article/10.1007/s12110-026-09510-7

ZE HONG – The Cognitive Foundations of Decline Narratives in Human Societies

In this paper, I examine the widespread phenomenon of decline narratives in human societies, where the past is idealized as a "golden age" characterized by extraordinary abundance, strength, longevity, and supernatural powers, in contrast to a flawed present. Drawing on ethnographic, historical, and psychological evidence, I explore the cultural manifestations and cognitive foundations of these narratives. The analysis highlights the roles of cognitive biases such as rosy retrospection and narrative inflation, as well as the strategic use of temporal distancing to rationalize fantastical beliefs by situating them in a distant, unfalsifiable past. By comparing decline narratives in traditional societies with progress narratives in post-Enlightenment, modern contexts, I explore how these frameworks shape cultural attitudes toward tradition and change, and consider their broader implications for understanding how cultural narratives influence human behavior.
https://link.springer.com/article/10.1007/s12110-025-09509-6

MOSTAFA SADR-BAZZAZ & PAUL L. VASEY – The Paradox of Same-Sex Sexual Orientation: Evidence for Higher Familial Occurrence and Lower Reproductive Output in Iran

Same-sex sexual orientation negatively impacts direct reproductive output, but paradoxically, it is persistently expressed across cultures and genetic variation plays a significant role in its development. Existing research has mostly focused on Euro-American cisgender monosexual same-sex attracted males, while comparative evidence pertaining to non-Euro-American cultures, transgender individuals, ambisexuals, and females is more limited. Data from 1534 Iranian monosexual and ambisexual males and females, who varied in their gender identities/expressions, were presented in this study. Participants reported the numbers of their biological children and occurrence of same-sex attraction in eight kinship categories: brothers, sisters, nieces, nephews, maternal and paternal male kin, and maternal and paternal female kin. Cisgender androphilic males

were more likely to report that a maternal and paternal male relative was same-sex attracted compared to cisgender gynephilic males. Compared to cisgender androphilic females, cisgender ambiphilic and gynephilic females were more likely to report having a same-sex attracted female relative on the maternal side of their family. Also, cisgender ambiphilic females reported having more same-sex attracted sisters. No significant finding for other kinship categories and other groups was found. Ambiphilic and androphilic males, cisgender and transgender, reported fewer offspring compared to cisgender gynephilic males. In females, only transgender gynephilic females had fewer offspring compared to cisgender androphilic females. This study conducted in Iran, a Middle Eastern country, provided empirical evidence for familial clustering of same-sex sexual attraction and reduced reproductive output in same-sex attracted males and females with diverse sexual orientations and gender identities/expressions.

{I have to ask: why Iran? Were all the less homophobic countries (there must be one or two) unavailable? How has choosing one of the most homophobic countries skewed the data? One sentence above is particularly enigmatic: "only transgender gynephilic females had fewer offspring compared to cisgender androphilic females" – what definition of transgender female are they using to make this sentence relevant? We have a coaster here at chez EAORC that reads, "David wasn't Gay, he only helped out when they were busy". For some reason, it feels apposite.}

https://link.springer.com/article/10.1007/s12110-025-09507-8

Journal of Linguistics

REVIEWS

PEDRO IVORRA ORDINES – The Meaning of Constructions

Review of 'The Meaning of Constructions: Elements in Construction Grammar' by Benoît Leclercq and Cameron Morin. Cambridge University Press. (2025).

https://www.cambridge.org/core/journals/journal-of-linguistics/article/abs/book-review1-of-benoit-leclercq-and-cameron-morin-2025-the-meaning-of-constructions-elements-in-construction-grammar-cambridge-cambridge-university-press-isbn-9781009499651-paperback-78-pp/C9A183054666E75E1FD2D0FD630489F1

Mind & Language

PAPERS

RACHAEL L. BROWN – Does evolutionary biology support the idea that our best theories of human cognitive evolution should be gradualist?

Evolutionarily minded psychologists and philosophers routinely invoke gradualism when theorising about human cognition, assuming human cognitive evolution evolved via a series of gradual phenotypic steps from an ancestral trait to the trait of interest. I argue this assumption is neither theoretically required nor empirically well supported. Evolutionary biology provides clear cases where major phenotypic shifts occur rapidly, and there is no principled reason to exempt cognition from this pattern. Acknowledging this leads to a more nuanced view of what makes explanations of human psychology evolutionarily plausible, and of what a successful evolutionary approach to psychology should aim to provide.

{True, major phenotypic shifts have been known to occur in Nature, but usually at speciation points; Darwin's 'Natura non facit saltum' is considerably more likely than macromutations, of even swift micromutations. Even if a viable macromutation does occur, the age of first reproduction remains a considerable barrier to speedy propagation. Relying on swift mutation in a species with a reproduction rate as slow as H.sapiens is a triumph of hope over expectation.}

https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.70029

DANIEL LASSITER et al – How generics obscure the logic of conditionals

This paper discusses counter-examples to modus ponens and modus tollens involving modals and quantificational adverbs, and presents new counter-examples with generic conditionals. We argue that the counter-examples are spurious, and are explained by the domain-restricting effects of if-clauses. Generic conditionals are especially problematic because the generic operator is silent and detectable only through its interpretive effects. A second, experimental case study involving nested conditionals illustrates the ease with which generic conditionals can mislead theorists about the logic of conditionals. To avoid pitfalls, theorists choosing examples and designing experimental materials must pay close attention to the special linguistic properties of generics.

https://onlinelibrary.wiley.com/doi/full/10.1111/mila.70013

Nature

NEWS

Is a 'selfish gene' making a Utah family have twice as many boys as girls?

Genealogy study claims first conclusive case of sex 'distortion' in humans — but not all researchers are convinced.

https://www.nature.com/articles/d41586-026-00505-z

Neanderthal dad, human mum: study reveals ancient procreation pattern
Genomic analysis shows that interbreeding between female Neanderthals and human males was less common than the opposite combination.
https://www.nature.com/articles/d41586-026-00583-z

Whistle while you whinny: researchers identify two sounds straight from the horse's mouth
The ability to make two distinct sounds at once is shared with human beatboxers and throat singers.
https://www.nature.com/articles/d41586-026-00545-5

ARTICLES

PATRICK E. SAVAGE – Music is not a universal language — but it can bring us together when words fail
Societies, animals and even machines have music in common. Our varied experiences of it might tell us about the origins of language.
https://www.nature.com/articles/d41586-026-00565-1

Nature Communications

PAPERS

ROBYN L. MILDREN & KATHLEEN E. CULLEN – Ground-truth encoding of self-motion in the primate cerebellar nodulus and uvula
We are providing an unedited version of this manuscript to give early access to its findings. Before final publication, the manuscript will undergo further editing. Please note there may be errors present which affect the content, and all legal disclaimers apply.
Accurate internal estimates of self-motion and orientation relative to gravity are fundamental for stabilizing gaze, controlling posture, and navigating through dynamic environments. Prevailing theories propose that the cerebellar nodulus and uvula (NU) employ internal models to suppress sensory input arising from predictable, self-generated motion. However, this assumption has never been directly tested. Here, we recorded NU Purkinje cell activity in rhesus monkeys during active and passive head movements. We found neurons responsive to passive translations remained equally sensitive to self-generated movements, encoding net head motion in space irrespective of its source. Furthermore, external perturbation did not influence these ground-truth encoding. When active head motion was blocked, Purkinje cell activity remained unchanged – demonstrating a lack of efference copy integration. During active tilts, NU neurons encoded both dynamic motion and static orientation relative to gravity. These findings challenge the internal model hypothesis and establish the NU as a ground-truth, context-invariant estimator of self-motion, supporting stable behavior in dynamic environments.
https://www.nature.com/articles/s41467-026-69909-9

Nature Communications Psychology

ARTICLES

CECILIE STEENBUCH TRABERG, JON ROOZENBEEK & SANDER VAN DER LINDEN – AI is turning research into a scientific monoculture
Generative AI deserves scientific attention. But the rush to study it is producing a feedback loop of topical and methodological convergence, flattening scientific imagination and crowding out the pluralism needed to keep research adaptive, resilient, and intellectually generative.
https://www.nature.com/articles/s44271-026-00428-5

Nature Ecology & Evolution

PAPERS

KATE T. SNYDER, ALEYNA LOUGHRAN-PIERCE & NICOLE CREANZA – Territoriality modulates the coevolution of cooperative breeding and female song in songbirds
Birdsong has historically been characterized as a sexually selected, primarily male behaviour. Recent findings suggest that female song is widespread, raising questions about how social functions of birdsong shape song evolution. Certain social behaviours, such as cooperative breeding, could alter selection pressures on both sexes and potentially influence the evolution of both female and male song. Here we use phylogenetic comparative analyses across 1,041 songbird species to examine relationships between cooperative breeding, female song and male song characteristics. We show robust bidirectional coevolutionary dynamics between cooperative breeding and female song that persist when controlling for territoriality, allometry, phylogenetic uncertainty, geographical sampling and analytical biases. While cooperative breeding and female song commonly co-occur in strongly territorial systems, their association is especially pronounced in weakly territorial systems, where they co-occur much more often than expected by chance. Additionally, we observe that male song repertoire size evolves more slowly in cooperative breeding lineages. These findings demonstrate that cooperative breeding shapes the evolution of vocal communication differently based on territorial context and sex, with female song potentially

serving crucial but understudied functions related to social cohesion in cooperative systems, particularly in species where territorial conflict is reduced.

https://www.nature.com/articles/s41559-026-02981-y

SHI-XIA YANG, MARÍA MARTINÓN-TORRES & MICHAEL PETRAGLIA – Palaeoanthropological evidence from China is changing the picture of hominin evolutionary history

Recent palaeoanthropological discoveries in China indicate that eastern Asia had an important role in the evolutionary history of the genus Homo over the past 2 million years. New taxonomic proposals have been made to re-group archaic human fossils, including those considered to be Denisovans, as Homo juluensis and Homo longi. The hypothesis that the affinities of Yunxian 2, dated to about 1 million years ago, also infer an early divergence of the Homo sapiens lineage further underscores China's pivotal role in global evolutionary narratives. Here we explore key biological and cultural evidence emerging from the Chinese record and its evolutionary implications, raising questions about the relationships between 'transitional' clades and their differing adaptive capabilities. Rather than an evolutionary cul-de-sac, China now appears as a dynamic evolutionary crossroad where multiple Homo lineages may have arisen, interacted and adapted to shifting environments. The growing fossil and genetic evidence point to a diversity of populations whose demographic history and gene flow exchange helped to shape the broader mosaic of our species.

https://www.nature.com/articles/s41559-026-02983-w

Nature Humanities & Social Sciences Communications

PAPERS

YILIN LIU, GUOFENG WANG & LIYUAN XIANG – A bibliometric study of linguistic evaluation research and its implications (1992–2023)

We are providing an unedited version of this manuscript to give early access to its findings. Before final publication, the manuscript will undergo further editing. Please note there may be errors present which affect the content, and all legal disclaimers apply.

This study conducts a bibliometric analysis of linguistic evaluation research, focusing on English-language journal articles from the WoS Core Collection (1992–2023). The findings indicate a growing trajectory and comparatively wide application in the humanities and social sciences. Anchored by the stance triangle, appraisal theory, and metadiscourse, some studies explore the expression of attitude and/or the construction of identity, while others combine critical discourse analysis (CDA) to uncover inequality and ideology tied to specific socio-political issues. Moreover, scholars from the West have laid the theoretical foundations, while emerging contributors from China's mainland, Nigeria, and South Africa have recently introduced diverse socio-political topics, thereby promoting a global dialogue on these issues. Methodologically, corpus techniques have been increasingly incorporated into this traditionally qualitative field in the past dozen years, thereby providing more systematic empirical evidence and helping to mitigate researcher subjectivity. It is anticipated that the quantitative approach of sentiment analysis, a subfield of natural language processing (NLP), will emerge as a useful method with the potential to provide novel insights into linguistic evaluation research. An increasing interdisciplinary tendency is expected to deepen our comprehension of linguistic evaluation.

https://www.nature.com/articles/s41599-026-06789-w

Nature Scientific Reports

PAPERS

UPASANA SHYAMSUNDER SINGH et al – Early hominin arrival in Southeast Asia triggered the evolution of major human malaria vectors

Some species of the Leucosphyrus Group of Anopheles mosquitoes in Southeast Asia are highly anthropophilic and efficient vectors of human malaria parasites, while others primarily feed on non-human primates (NHP) and transmit NHP malaria parasites. The evolutionary history of this group, particularly the origin of anthropophily, was studied using phylogenomic analysis of 2,657 high-confidence nuclear single-copy orthologous genes and 13 mitochondrial protein coding genes from 40 individuals of 11 species. Molecular dating and ancestral state reconstruction revealed that monkey-feeding is ancestral with speciation of monkey-feeding species dating to the Pliocene within Sundaland (Malay peninsula, Borneo, Sumatra and Java) which was covered in tropical rain forests during this period. Although less parsimonious alternatives cannot be excluded, molecular dating, ancestral state reconstruction and reticulation analysis indicated that anthropophily most likely evolved once, involving adaptive introgression, in the early Pleistocene in Sundaland, giving rise to multiple descendent anthropophilic species. Such early origination of anthropophily must necessarily have been in response to the arrival of early hominins (Homo erectus) rather than anatomically modern humans, likely associated with loss and fragmentation of rainforests during the early Pleistocene. The early origination of anthropophily also provides independent non-archaeological evidence supporting the limited fossil record of early hominin colonization in Southeast Asia around 1.8 Mya.

https://www.nature.com/articles/s41598-026-35456-y

MICHÈLE N. SCHUBIGER, CLAUDIA FICHTEL & NICHOLAS J. MULCAHY – Orangutans and chimpanzees show evidence of inferring when a hidden breadstick is intact or broken

We are providing an unedited version of this manuscript to give early access to its findings. Before final publication, the manuscript will undergo further editing. Please note there may be errors present which affect the content, and all legal disclaimers apply.

Evidence suggesting non-human primates infer the hidden functional properties of tools is equivocal, possibly because subjects had to reason about two factors: the tools' functional properties and the out-of-reach reward. We designed a novel inference task with a simplified set-up in which subjects only had to reason about one factor. Subjects could choose between a breadstick that was intact or broken. If subjects chose the intact breadstick they could eat all of it, whereas choosing the broken breadstick would mean they could only eat less than half or, in some cases, none at all. Covers were placed over the breadsticks' middle sections that hid their broken or intact properties but allowed their ends to protrude. The breadsticks now looked identical but it was inferable which one was intact by watching the experimenter move one end of each breadstick, which moved both ends of the intact breadstick but not the broken breadstick's unattached end. We found that only one of the 12 subjects chose the intact breadstick significantly above chance. In a series of follow-up experiments, we investigated if procedural modifications would improve the subjects' performance. Although some experiments resulted in more subjects being successful, learning during the test procedures could not be excluded. Therefore, we tested subjects with novel types of breadstick configurations and most subjects passed these transfer tests suggesting that orangutans and chimpanzees show some evidence of inferring the intact and broken properties of breadsticks in this task.

https://www.nature.com/articles/s41598-026-38796-x

New Scientist

NEWS

A horse's whinny is unlike any other sound in nature

Horses use their larynx to make two sounds simultaneously, so they are effectively singing and whistling at the same time.

https://www.newscientist.com/article/2516446-a-horses-whinny-is-unlike-any-other-sound-in-nature/

ARTICLES

ALISON GEORGE – Stone Age symbols may push back the earliest form of writing

Mysterious signs engraved on objects reveal that a form of proto-writing may have been used in Europe 40,000 years ago, tens of thousands of years before the emergence of a full writing system.

https://www.newscientist.com/article/2516606-stone-age-symbols-may-push-back-the-earliest-form-of-writing/

NPJ Aging

PAPERS

ELOÏSE DA CUNHA et al – Spontaneous speech enables scalable digital phenotyping of physical functional deficits in aging

We are providing an unedited version of this manuscript to give early access to its findings. Before final publication, the manuscript will undergo further editing. Please note there may be errors present which affect the content, and all legal disclaimers apply.

The rising global burden of pathological aging engenders an urgent need for accessible tools enabling early detection of physical decline, which significantly impacts quality of life and healthcare systems. We hypothesized that speech analysis could capture phenotype-specific signatures of physical deterioration through shared neuromuscular pathways, offering a novel approach to physical assessment. In this study, we employed machine learning to analyze multimodal speech features (acoustic, linguistic, temporal) derived from two 1-minute spontaneous emotional speech recordings obtained from 271 community-dwelling older adults (mean age: 77.3 ± 5.8 years). Our models classified physical functional deficits across ten critical domains: lower-limb strength, power, endurance, handgrip strength, flexibility, postural balance, gait speed, mobility, appendicular lean mass, and fatigue. Our ensemble approach achieved remarkable classification accuracy for each domain (mean AUC = 0.91 ± 0.04), with multimodal emotional task stacking enhancing detection for 80% of physical measures. Explainable AI (SHAP) analysis revealed distinct speech signatures for each deficit type, potentially reflecting specific pathophysiological mechanisms rather than demographic confounders. We identified three primary speech alteration clusters: lexico-syntactic simplification (decreased syntactic complexity), neuromotor-temporal slowing (diminished speech rate, increased pauses), and articulatory-spectral decline (spectral instability). This study supports the hypothesis that spontaneous speech serves as a comprehensive digital biomarker of multidimensional physical function in aging. Our approach pioneers speech analysis as a physical aging clock. This technology offers clinical-grade precision through accessible smartphone recordings, enabling domain-specific physiological mapping via interpretable biomarkers and scalable screening for precision geriatrics and underserved populations.

https://www.nature.com/articles/s41514-026-00343-3

Proceedings of the Royal Society B

PAPERS

DHARANISH RAJENDRA & CHAITANYA S. GOKHALE – Optimizing play for learning risky behaviour

Animals adapt their behaviour to current environmental conditions to enhance survival and reproductive success. While long-term adaptation occurs through evolutionary processes acting on heritable variation, individuals can also adapt within their lifetime via learning. Learning is particularly advantageous in environments that are uncertain or fluctuate across a lifespan or a few generations. However, reliance on individual learning entails a critical risk: juveniles may begin life poorly adapted, requiring costly and hazardous exploration, especially for species hunting dangerous prey. We explore how early-life learning in protected environments, such as those buffered by parental care, can facilitate behavioural adaptation in riskier adult contexts. Using reinforcement learning, grounded in dopaminergic reward circuits, we model decision-making in a predator hunting both safe and dangerous prey. Our results show that juvenile experiences can generalize to distinct adult environments when sufficient structural similarity exists between them. This framework helps explain phenomena such as meerkats provisioning disabled prey for pups and the benefits of extended human childhood. Our findings demonstrate that structured play or safe exploration in early life can significantly enhance learning-based adaptation to dangerous environments.

https://royalsocietypublishing.org/rspb/article/293/2065/20253111/480463/Optimizing-play-for-learning-risky-behaviour

Royal Society Open Science

PAPERS

MICHEL BELYK et al – Vocal attractiveness in homosexual and heterosexual listeners

The voice is a common carrier for a wide range of communicative signals as well as cues to stable attributes of the speaker, such as secondary sexual characteristics. Previous research on heterosexual courtship indicates a preference for voices that exaggerate sex-typical features which speakers may attempt to manipulate by modulating their voices. However, research often excludes homosexual listeners on the assumption that their voice preferences are less aligned with theories of sexual selection. This study investigated voice attractiveness ratings among female and male heterosexual and homosexual participants. Participants rated voices that were either synthetically masculinized/feminized (Experiment 1) or modulated more naturalistically by speakers imitating auditory targets (Experiment 2). We replicate heterosexual preference for voices that exaggerate sexually dimorphic cues. However, including data from homosexual listeners provided a richer context, revealing that all listener groups apart from heterosexual males favoured masculinized voices. Despite differences in how groups responded to voice modulation, there was strong consensus across sexual orientations regarding which unmodulated voice identities were most attractive, highlighting the additive influence of voice features that are unrelated to sexual dimorphism. Our findings demonstrate the added scientific value of widening the inclusivity of voice research.

https://royalsocietypublishing.org/rsos/article/13/2/251815/480514/Vocal-attractiveness-in-homosexual-and

Science

NEWS

Surprising partner preference found in matings between Neanderthals and modern humans

Male Neanderthals tended to pair up with female modern humans, but whether intercourse was consensual is unclear.

https://www.science.org/content/article/surprising-partner-preference-found-matings-between-neanderthals-and-modern-humans

PAPERS

ALEXANDER PLATT, DANIEL N. HARRIS & SARAH A. TISHKOFF – Interbreeding between Neanderthals and modern humans was strongly sex biased

Sex biases in admixture and other demographic processes are recurrent features throughout human evolution. For admixture between Neanderthals and anatomically modern humans (AMHs), sex bias has been proposed as an explanation for the relative lack of Neanderthal ancestry in modern human X chromosomes compared with that in modern human autosomes. By observing a 62% relative excess of AMH ancestry in Neanderthal X chromosomes, we characterized the interbreeding between the two groups as predominantly male Neanderthals with female AMHs. Analytic and numerical modeling presents mate preference as a more parsimonious cause of the sex bias than purely demographic processes with differential patterns of male and female migration.

https://www.science.org/doi/10.1126/science.aea6774

REVIEWS

ANDREW ROBINSON – The enigmatic Isthmian inscriptions: A long-undeciphered script receives renewed attention and a contested interpretation

Unlike ancient scripts such as Egyptian hieroglyphs, Mesopotamian cuneiform, Greek Linear B, and Mesoamerican Maya glyphs—all of which were deciphered during the past two centuries—the ancient Isthmian script from Mexico's Isthmus of Tehuantepec is unknown to most people. Yet in 1993, it prompted a cover story in Science written by epigrapher John

Justeson and linguist Terrence Kaufman, who claimed to have deciphered the Isthmian script, which they preferred to call the epi-Olmec script, invoking a Mesoamerican language family known as Mixe-Zoquean. This claim prompted widely differing responses from scholars of Mesoamerica, including linguist Martha Macri. She had analyzed the script since 1989, had published with ethnologist Laura Stark a widely accepted "MS" list of its graphemes in 1991, and did not accept the 1993 decipherment. Now, in her intriguing, well-illustrated book, The Isthmian Script—aimed mainly, but not exclusively, at fellow academics—she explores the Isthmian script's structure and history in detail, while considering the extent of its current decipherment and the prospects for future progress.

Review of 'The Isthmian Script' by Martha J. Macri, University of Oklahoma Press (2026).

https://www.science.org/doi/10.1126/science.aee2603

Science Advances

PAPERS

J. RAOUF BELKHIR et al – Causal parametric language mapping with electrical stimulation during awake neurosurgery

Functional mapping with direct electrical stimulation (DES) is widely used during awake neurosurgery to generate causal evidence about person-specific neuroanatomical organization. According to a long-standing clinical and scientific paradigm, if the application of DES to a given brain region does not result in performance errors, that site is considered to be uninvolved in the task. Here, we show that both error rates and performance speed on correct trials are parametrically modulated by when DES starts and stops relative to the timeline of task-driven processing in stimulated brain areas and networks. We propose a framework, causal parametric mapping, which moves beyond the classic approach of binarizing the effects of DES on behavior into "positive" and "negative" mapping trials. Causal parametric mapping offers a method to functionally dissect separable processing stages in the human brain, in real time, with reversible causal evidence during invasive neurosurgical procedures.

https://www.science.org/doi/10.1126/sciadv.adw1599

JOHANNES SPAETHE et al – Bees flexibly adjust decision strategies to information content in a foraging task

When making decisions, animals often rely on multiple cues simultaneously. These provide complementary sources of information, which can increase the accuracy of decisions. In this study, we tested the decision and learning strategies of insects faced with multiple cues in a foraging task, using the bumblebee Bombus terrestris. We presented combinations of visual-only features, as found in natural flowers: colors of varying discriminability, paired with shapes or patterns. We found that the bees relied exclusively on colors when these were easy to discriminate, and did not learn pattern or shape features simultaneously. With harder to discriminate colors, the bees learned both color and shape or pattern features. Our results demonstrate that bumblebees flexibly adjust their learning strategies when presented with visual features of varying discriminability, to balance the investment in learning time and accuracy during multicue learning and decision making. A difference in learning dynamics suggests that blocking could serve as a mechanism to implement this strategy switch.

https://www.science.org/doi/10.1126/sciadv.adw9320

SHERRY DONGQI BAO, MICAH G. EDELSON & TODD A. HARE – Deciding for others alters metacognition leading to responsibility aversion

People are often faced with choices whose outcomes will affect other individuals in addition to themselves. Being responsible for deciding on behalf of others alters choice behavior and increases delegation rates in decisions involving risk and ambiguity. However, it is unknown whether the influence of social responsibility on decision-making acts primarily or directly on risk, loss, and ambiguity attitudes versus more general aspects of cognition. We report a series of experiments on objective magnitude judgments that demonstrate that the influences of responsibility on cognition and behavior extend beyond risk or ambiguity and act at the metacognitive level. Specifically, responsibility for others changes metacognitive biases, leading to a decrease in decision confidence without affecting choice accuracy. Last, we propose and empirically test a normative computational framework based on decision confidence that can explain decisions to assume or delegate responsibility for others without needing to assume changes in risk preferences.

https://www.science.org/doi/10.1126/sciadv.ady0441

Trends in Cognitive Sciences

ARTICLES

KEREM OKTAR et al – Intuitive theories of truth

Cognitive science has recently begun exploring how people conceptualize and reason about truth. We offer the field a framework that can guide inquiry into intuitive theories of truth, centered on three core questions: how do people judge whether statements could be true, whether statements are true, and whether to assert them as true.

https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(26)00001-X

PAPERS

SAMUEL G.B. JOHNSON et al with NICK CHATER – Imagining and building wise machines: the centrality of AI metacognition

Although artificial intelligence (AI) has become increasingly smart, its wisdom has not kept pace. In this opinion article, we examine what is known about human wisdom and sketch a vision of its AI counterpart. We introduce human wisdom as strategies for solving intractable problems—those outside the scope of analytic techniques—including both 'object-level' strategies, such as heuristics (for managing problems), and 'metacognitive' strategies, such as intellectual humility, perspective-taking, or context adaptability (for managing object-level task fit). We argue that AI systems particularly struggle with this type of metacognition. Wise metacognition would lead to AI that is more robust to novel environments, explainable to users, cooperative with others, and safer by risking fewer misaligned goals with human users. We discuss how wise AI might be benchmarked, trained, and implemented.

https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(26)00002-1

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