EAORC BULLETIN 1,128 – 26 January 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.

ACADEMIA.EDU – Lithic analysis in African archaeology: Advances and key themes

Archaeometry 13062 (2025).

DEBORAH I. OLSZEWSKI, AMANUEL BEYIN & JUSTIN PARGETER – Lithic analysis in African archaeology: Advances and key themes

Stone artifacts (lithics) preserve for extended periods; thus they are key evidence for probing the evolution of human technological behaviors. Africa boasts the oldest record of stone artifacts, spanning 3.3 Ma, rare instances of ethnographic stone tool-making, and stone tool archives from diverse ecological settings, making it an anchor for research on the long-term temporal and spatial trends in human evolution. This paper reviews the application of scientific methods for studying African stone artifacts and highlights several popular research themes on the continent, including the origins of flaked stone technology, hunter-gatherer mobility and landscape use, technological variability, function, biocultural evolution, and ancient human cognition. We conclude by outlining some key challenges to future lithic research in Africa.
https://www.academia.edu/127149865/Lithic_analysis_in_African_archaeology_Advances_and_key_themes

ACADEMIA.EDU – The Evolutionary Origins of Language: Validating a New Theory

Lingvistică, Anul XLV:1-2, 403-460 (2023).

V SHALINI & FRANCESCO PERONO CACCIAFOCO – The Evolutionary Origins of Language: Validating a New Theory

Since being developed by August Schleicher in 1853, human languages have commonly been represented in the form of a genealogical tree, with larger branches representing families of languages and further sub-groupings diverging from these in the form of many smaller branches of independent languages. However, much like a tree without roots, the origins of language have yet to be determined, although there have been multiple attempts made to theorize and uncover proof as to what human languages may have evolved from, how they might have done so, and why.
Despite the difficulties in finding evidence to substantiate claims of how language might have developed, there have been no lack of theories proposing the origins of human verbal communication. One example of such a theory is the natural sound source theory which purported that language began as imitations of sounds heard in the natural world, such as sounds made by animals (Bow-Wow theory) or even natural human cries (Pooh-Pooh theory). A similar theory even suggests that rather than imitating sounds, language came about through the imitation of hand gestures by the mouth, in some form of mouth pantomime (Oral Gesture theory), although no explanation is provided on how these hand gestures may have come about in the first place. Proposed theories, of course, have not only focused on the aspect of how language came about but also why. The Social Interaction Source theory, for example, suggested that language might have come about as a way of communication between humans who, as social animals, required a means to coordinate activities such as hunting and gathering (Yo-He-Ho theory). Other theories, however, suggested that rather than working together, the need for language resulted from a need for deceit, presumably for survival in competitive environments (Lying hypothesis). Although these theories were plausible to some extent, they lacked credibility in that they were not only filled with logical loopholes (as enthusiastically pointed out by critics) but also lacked substantial proof.
https://www.academia.edu/111684708/The_Evolutionary_Origins_of_Language_Validating_a_New_Theory

NEWS

GUARDIAN SCIENCE – Signature moves: are we losing the ability to write by hand?

What does it mean to live without handwriting? The skill has deteriorated gradually, and many of us don't notice our own loss until we're asked to handwrite something and find ourselves bumbling as we put pen to paper...

But we lose something when handwriting disappears. We lose measurable cognitive skills, and we also lose the pleasure of using our hands and a writing implement in a process that for thousands of years has allowed humans to make our thoughts visible to one another. We lose the sensory experience of ink and paper and the visual pleasure of the handwritten word. We lose the ability to read the words of the dead.
https://www.theguardian.com/news/2025/jan/21/signature-moves-are-we-losing-the-ability-to-write-by-hand

JOHN TEMPLETON FOUNDATION – The Power of Listening

Storytelling is, at its core, democratic. The practice is available to, and can be exercised, by all. It spans across borders, genders, economies and divides. It has the ability to break down stereotypes. Storytelling, when exercised properly, has a healing balm that can help hold a system – even a whole democracy – together. If the world is held together with molecules, then it is also held together with stories. Much of the innate power of storytelling comes from its corollary – listening. Still, we seldom credit the art of listening as the key to storytelling.
https://www.templeton.org/news/the-power-of-listening

NATURE BRIEFING – Can science prove there's no free will?

There's no such thing as free will, argues neuroscientist and primatologist Robert Sapolsky in his new book, Determined. Not only are we "not captains of our ships", he writes, "our ships never had captains." Sapolsky's goal is humanitarian, writes historian of science Jessica Riskin in her review: "he wants us not to blame anyone for anything they've done, since they had no choice." But Sapolsky's evidence for determinism isn't up to the job, says Riskin. "Science can't prove there's no free will because the question of free will is not a scientific question but a philosophical one."
https://www.nybooks.com/articles/2025/02/13/turtles-all-the-way-up-determined-robert-sapolsky/

SAPIENS – Mapping Human and Neanderthal Genomes

The Human Genome Project first published the modern human genome 20 years ago, and the Neanderthal genome was sequenced a little more than a decade ago. What do these maps mean for our understanding of humanity?
https://www.sapiens.org/biology/human-genome-project-neanderthals/

SCIAM NEWS – How Neandertal DNA May Affect the Way We Think

DNA inherited from Neandertals may influence modern human cognition.
https://www.scientificamerican.com/article/how-neandertal-dna-may-affect-the-way-we-think/

SCIENCEADVISER – Pee with me

Captive chimpanzees often urinate when they see another chimp pee. The researchers that observed the phenomenon dubbed it 'contagious urination,' and suggest it may have a social role.
https://www.cell.com/current-biology/fulltext/S0960-9822(24)01594-X

SCIENCEADVISER – Mirror, mirror, on the wall, who is the most self-aware of them all?

What do human toddlers, Eurasian magpies, and bottlenose dolphins have in common? All of them can recognize their reflection in a mirror, a cognitive achievement scientists interpret as a key sign of self-awareness. Other animals that pass the so-called "mirror test" include chimpanzees, a single Asian elephant, orca whales, and possibly manta rays—although that last one is still up for debate. Bluestreak cleaner wrasse, which are famously smart, are even known to size themselves up in the mirror before deciding to fight other fish.

In the classic mirror self-recognition test (MSR), an animal is anesthetized and marked on a part of the body it can't usually see, such as the forehead. If the animal wakes up, looks in a mirror, and touches or otherwise investigates the mark, this is taken as an indication that it understands the concept of "self" versus "other." But many intelligent animals, including dogs and pigs, fail the test—possibly because the exam just isn't suited for them. Researchers have found that dogs, which rely heavily on their sense of smell, investigate their own odors longer when they have been modified in an "olfactory mirror" test.

In another study, scientists showed that rhesus monkeys could learn to pass the mirror test after being trained with skin-irritating lasers. Once the animals successfully figured out how mirrors worked, they proceeded to do what some humans might do before a first date: They checked their teeth, combed their hair, and—of course—bent over to inspect their genitals and butts.

But while MSR tests are usually conducted on small groups of captive primates, these findings may not hold up in wild settings. In a new study, scientists used lasers to "mark" the faces of wild chacma baboons when they approached mirrors placed near popular water sources—the first time a controlled test of this type has ever been conducted in these animals in the wild. The monkeys appeared to be interested in the mark when the laser was shone on their arms, legs, and hands, with young males showing the greatest enthusiasm. But out of 361 experiments across 112 individuals, only one baboon touched the mark in front of a mirror. The monkeys " certainly enjoyed using the mirrors as a new toy," study author Alecia Carter

explains in a press release, “but throughout our study they didn’t quite understand that the mirror’s reflection represented their own bodies and that the laser mark in the mirror image was, indeed, on themselves.”
Those results, the researchers report in Proceedings of the Royal Society B, suggest that without extensive training monkeys aren’t capable of visual self-recognition. But they also argue that self-awareness isn’t as binary as the mirror test might suggest. Instead of dividing all animals into two distinct categories, where some species are self-aware and the others are not, the study authors suggest a more nuanced perspective: All creatures probably have a basic sense of “self,” but this awareness is deeper and more complex in some species than others.
https://royalsocietypublishing.org/doi/10.1098/rspb.2024.1933

SCIENCEADVISER – Untangling our bloody history

For many, one’s blood type isn’t something to think about unless donating blood or receiving a transfusion. A new study in Scientific Reports sheds light on the origins of our many different blood groups—47 in modern people—and how they compare with blood types in our close evolutionary cousins, the Neanderthals.
Blood types are genetically encoded and are classified according to the immune proteins in a person’s red blood cells. They are thought to have arisen to help combat different pathogen threats. For instance, people with type O blood are more likely to have severe cholera infections, but they are more resistant to severe malaria. Digging into the ancient DNA of dozens of early modern humans (who lived between 46,000 and 16,500 years ago) and Neanderthals (who lived between about 120,000 and 40,000 years ago) throughout Europe and Asia, researchers found that modern humans’ blood types exploded in diversity after leaving Africa. Neanderthals’ blood groups, however, stayed more or less homogenous throughout their existence—probably owing to low levels of genetic diversity across their relatively small population.
Modern humans’ diverse blood types may have helped protect against novel disease threats as they migrated into new environments, the researchers note. These variations might have been part of people’s “ancient [immune] arsenal,” says genetic anthropologist and study author Stéphane Mazières, “but against which pathogen? So far, we don’t know.”
https://www.science.org/content/article/ancient-humans-evolved-new-blood-types-after-leaving-africa

SCIENCE DAILY – Insights into how populations conform or go against the crowd

Cultural traits -- the information, beliefs, behaviors, customs, and practices that shape the character of a population -- are influenced by conformity, the tendency to align with others, or anti-conformity, the choice to deliberately diverge. A new way to model this dynamic interplay could ultimately help explain societal phenomena like political polarization, cultural trends, and the spread of misinformation.
https://www.sciencedaily.com/releases/2025/01/250117171309.htm

SCIENCE DAILY – In chimpanzees, peeing is contagious

A new study has described a phenomenon researchers refer to as 'contagious urinations.' The study in 20 captive chimpanzees living at the Kumamoto Sanctuary in Japan shows that, when one chimp pees, others are more likely to follow.
https://www.sciencedaily.com/releases/2025/01/250120113805.htm

SCIENCE DAILY – Building sentence structure may be language-specific

Do speakers of different languages build sentence structure in the same way? In a neuroimaging study, scientists recorded the brain activity of participants listening to Dutch stories. In contrast to English, sentence processing in Dutch was based on a strategy for predicting what comes next rather than a 'wait-and-see' approach, showing that strategies may differ across languages.
https://www.sciencedaily.com/releases/2025/01/250121162108.htm

SCIENCE DAILY – Wild baboons not capable of visual self-awareness when viewing their own reflection

Wild baboons failed to demonstrate visual self-recognition in a test carried out by anthropologists.
https://www.sciencedaily.com/releases/2025/01/250121210514.htm

SCIENCE DAILY – New evidence pushes back arrival of early hominins in Europe

Research reveals new evidence of early hominin activity in Europe, suggesting that hominins were present on the continent far earlier than previously thought.
https://www.sciencedaily.com/releases/2025/01/250124151229.htm

SCIENCE.ORG NEWS – Ancient humans evolved new blood types after leaving Africa

Genetic study also reveals blood groups modern humans acquired from Neanderthals
https://www.science.org/content/article/ancient-humans-evolved-new-blood-types-after-leaving-africa

THE CONVERSATION – Women were at the centre of iron age Britain

Roman writers found the relative empowerment of Celtic women in British society remarkable. People today shouldn't.
https://theconversation.com/women-were-at-the-centre-of-iron-age-britain-new-find-reminds-us-how-misogyny-has-shaped-our-view-of-the-past-247823

PUBLICATIONS

Biology Letters

PAPERS

NIKOLAOS SMIT & MARTHA M. ROBBINS – Female gorillas form highly stable dominance relationships

Animals commonly form dominance relationships that determine the priority of access to resources and influence fitness. Dominance relationships based on age, immigration order or nepotism (alliances with kin) conventions are usually more stable than those based on intrinsic characteristics such as physical strength. Unlike most mammals, female gorillas disperse from their groups, typically more than once in their lifetimes, disrupting their group tenures and/or any alliances. Thus, we predicted that they form unstable dominance relationships that are not based on conventions. Contrarily, using a 24-year dataset on five groups of both gorilla species, we found that females form strikingly stable dominance relationships, maintained over their whole co-residence in a group (mean dyadic co-residence = 4.8, max = 17.3 years). Specifically, we observed rank reversals in only two out of 92 female dyads, and all other rank improvements resulted from emigration or death of higher-ranking females (passive mobility). These results mirror observations in chimpanzees, suggesting that dominance dynamics might have deep roots in hominid evolution. Our study challenges a hypothesized link between hierarchy instability and dispersal, particularly among animals in which fitness consequences of rank improvement may not be great enough to counterbalance the potentially high costs of challenging higher-ranking individuals.
https://royalsocietypublishing.org/doi/10.1098/rsbl.2024.0556

Cell Genomics

PAPERS

JIAN ZENG – Tracing human trait evolution through integrative genomics and temporal annotations

Natural selection has left distinct genomic signatures on the human genome. Advances in high-throughput sequencing technologies allow us to empirically investigate genomic differences across species and time points. However, discoveries of strong selective sweeps remain rare,2 largely because (1) most human traits are complex, influenced by many variants with small effects,3 and (2) natural selection can adapt a population to an environmental change by subtly altering allele frequencies across many variants.4 These challenges make it difficult to trace the genetic evolution of complex traits.
One approach to identify genomic signatures of natural selection on complex traits is to aggregate trait-association signals within evolutionarily annotated regions. This requires (1) genome-wide association studies (GWASs), which map genetic variants associated with phenotypic variation of traits, and (2) genomic annotations, which provide information about functional roles of genomic regions or highlight sequence differences between species or populations. Statistical approaches to integrate and analyze these datasets include SNP-based heritability enrichment analysis5 and gene set enrichment analysis.6 An annotation is considered significant if SNPs within it, on average, explain a higher proportion of genetic variance than random SNPs in the genome or if there is an overrepresentation of genes associated with the trait (Figure 1). Overall, SNP-based heritability enrichment captures genome-wide signals but may be biased for annotations with small genomic lengths when using stratified linkage disequilibrium score regression (S-LDSC),5 while gene set enrichment focuses only on coding regions but is more robust to the annotation's genomic length.
https://www.cell.com/cell-genomics/fulltext/S2666-979X(25)00023-0

Cell Reports

PAPERS

OLIVER HÄRMSON et al – Multi-level encoding of reward, effort, and choice across the frontal cortex and basal ganglia during cost-benefit decision-making

Adaptive value-guided decision-making requires weighing up the costs and benefits of pursuing an available opportunity. Though neurons across frontal cortical-basal ganglia circuits have been repeatedly shown to represent decision-related parameters, it is unclear whether and how this information is coordinated. To address this question, we performed large-scale single-unit recordings simultaneously across 5 medial/orbital frontal and basal ganglia regions as rats decided whether to pursue varying reward payoffs available at different effort costs. Single neurons encoding combinations of decision variables (reward, effort, and choice) were represented within all recorded regions. Coactive cell assemblies, ensembles of neurons that repeatedly coactivated within short time windows (<25 ms), represented the same decision variables despite the members often having diverse individual coding properties. Together, these findings demonstrate a multi-level encoding structure for cost-benefit computations where individual neurons are coordinated into larger assemblies that can represent task variables independently of their constituent components.
https://www.cell.com/cell-reports/fulltext/S2211-1247(24)01560-2

Current Biology

ARTICLES

KATHELIJNE KOOPS – Animal behavior: Chimpanzee play and the evolutionary roots of cooperation
Social play in adults is considered rare in non-human species. A new study has found that play among adult chimpanzees is common and linked to cooperation and social bond maintenance. The societal function of adult social play may thus have deep evolutionary roots.
https://www.cell.com/current-biology/abstract/S0960-9822(24)01628-2

SINA TAFAZOLI, ADEL ARDALAN & TIMOTHY J. BUSCHMAN – Cognitive neuroscience: How the brain navigates abstract task spaces
Humans and other animals learn the abstract structure of a task and then use this structure to rapidly generalize to new situations. A recent study reveals how the brain builds and uses abstract task representations.
https://www.cell.com/current-biology/abstract/S0960-9822(24)01644-0

PAPERS

ENA ONISHI et al – Socially contagious urination in chimpanzees
The decision to urinate involves a complex combination of both physiological and social considerations. However, the social dimensions of urination remain largely unexplored. More specifically, aligning urination in time (i.e. synchrony) and the triggering of urination by observing similar behavior in others (i.e. social contagion) are thought to occur in humans across different cultures (Figure S1A), and possibly also in non-human animals. However, neither has been scientifically quantified in any species. Contagious urination, like other forms of behavioral and emotional state matching, may have important implications in establishing and maintaining social cohesion, in addition to potential roles in preparation for collective departure (i.e. voiding before long-distance travel) and territorial scent-marking (i.e. coordination of chemosensory signals). Here, we report socially contagious urination in chimpanzees, one of our closest relatives, as measured through all-occurrence recording of 20 captive chimpanzees across >600 hours. Our results suggest that socially contagious urination may be an overlooked, and potentially widespread, facet of social behavior.
https://www.cell.com/current-biology/fulltext/S0960-9822(24)01594-X

eLife

PAPERS

JOSEPH M. BARNBY et al with LONDON PERSONALITY AND MOOD DISORDERS CONSORTIUM – Self-other generalisation shapes social interaction and is disrupted in borderline personality disorder
Generalising information from ourselves to others, and others to ourselves allows for both a dependable source of navigation and adaptability in interpersonal exchange. Disturbances to social development in sensitive periods can cause enduring and distressing damage to lasting healthy relationships. However, identifying the mechanisms of healthy exchange has been difficult. We introduce a theory of self-other generalisation tested with data from a three-phase social value orientation task - the Intentions Game. We involved individuals with (n=50) and without (n=53) a diagnosis of borderline personality disorder and assessed whether self-other information generalisation may explain interpersonal (in)stability. Healthy controls initially used their preferences to predict others and were influenced by their partners, leading to self-other convergence. In contrast, individuals with borderline personality disorder maintained distinct self-other representations, generating a new neutral prior to begin learning. Both groups steadily reduced their updating over time, with healthy participants showing increased sensitivity to update beliefs. Furthermore, we explored theory-driven individual differences underpinning learning. Overall, the findings provide a clear explanation of how self-other generalisation constrains and assists learning, how childhood adversity disrupts this through separation of internalised beliefs and makes clear predictions about the mechanisms of social information integration under uncertainty.
https://elifesciences.org/reviewed-preprints/104008

Evolutionary Anthropology

PAPERS

ISABEL AUGUST et al – Evolution of Human Susceptibility to Alzheimer's Disease: A Review of Hypotheses and Comparative Evidence
Primates rely on memory to navigate both physical and social environments and in humans, loss of memory function leads to devastating consequences. Alzheimer's disease (AD) is a neurodegenerative disease which begins by impacting memory functioning and is ultimately fatal. AD is common across human populations and its prevalence is predicted to rise with increases in the aging population. Despite this, the full AD phenotype has not been observed in any other nonhuman primate species. While a significant amount of research has been devoted to understanding the immediate mechanisms involved in AD pathogenesis in humans, less research has focused on why humans are particularly vulnerable to neurodegenerative diseases like AD. Here we explore hypotheses on the evolution of distinct human susceptibility to AD and place these in the

context of findings from comparative neuroanatomical and molecular studies and discuss recent evidence for evolutionary changes protective against AD in the primate lineage.
https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.22054

Evolutionary Human Sciences

PAPERS

PAUL E. SMALDINO & ALEJANDRO PÉREZ VELILLA – The evolution of similarity-biased social learning

Humans often learn preferentially from ingroup members who share a social identity affiliation, while ignoring or rejecting information when it comes from someone perceived to be from an outgroup. This sort of bias has well-known negative consequences – exacerbating cultural divides, polarization, and conflict – while reducing the information available to learners. Why does it persist? Using evolutionary simulations, we demonstrate that similarity-biased social learning (also called parochial social learning) is adaptive when (1) individual learning is error-prone and (2) sufficient diversity inhibits the efficacy of social learning that ignores identity signals, as long as (3) those signals are sufficiently reliable indicators of adaptive behaviour. We further show that our results are robust to considerations of other social learning strategies, focusing on conformist and pay-off-biased transmission. We conclude by discussing the consequences of our analyses for understanding diversity in the modern world.
https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/evolution-of-similaritybiased-social-learning/615399EDC7A6B8A622B5B52C56C559CE

iScience

PAPERS

YOKO HIGUCHI et al – The role of memory in affirming-the-consequent fallacy

People tend to recognize that a transitive relation remains true even when its order is reversed. This affirming-the-consequent fallacy is thought to be uniquely related to human intelligence. It is generally thought that this fallacy is a byproduct of explicit reasoning at the moment of recognition of the reversed order. Here, we provide evidence suggesting a reconsideration of this account using an implicit memory paradigm, which minimizes the involvement of explicit reasoning. Specifically, we tested a two-stage memory model: 1) when a sequence of events is encoded, the memory of the reversed sequence is formed, resulting in the affirming-the-consequent fallacy, and 2) the memories of the forward and reversed sequences are integrated over time, reinforcing the fallacy. Results of behavioral and functional magnetic resonance imaging experiments were consistent with this memory-based model. Our findings suggest that the affirming-the-consequent fallacy may begin unwittingly when individuals memorize a transitive relation.
https://www.cell.com/iscience/fulltext/S2589-0042(25)00149-X

ALEXANDRE BLUET et al – The technical-reasoning network is recruited when people observe others make or teach how to make tools: An fMRI study

Cumulative technological culture is defined as the increase in efficiency and complexity of tools over generations. The role of social cognitive skills in cultural transmission has been long acknowledged. However, recent accounts emphasized the importance of non-social cognitive skills during the social transmission of technical content with a focus on technical reasoning. Here we contribute to this double process approach by reporting an fMRI study about the neurocognitive origins of social learning. Participants watched videos depicting tool-making episodes in three social-learning conditions: Reverse engineering, Observation and Teaching. Our results showed that the technical-reasoning network, centred around the area PF of the left inferior parietal cortex, was preferentially activated when watching tool-making episodes. Additionally, teaching elicited the right middle temporal gyrus. This study suggests that technical reasoning underpins technological culture, while social cognition enhances learners' technical reasoning by guiding attention to key aspects of the technology.
https://www.cell.com/iscience/fulltext/S2589-0042(25)00130-0

FRANCESCA FERRONI et al – Your space or mine: Trait anxiety affects the peripersonal space plasticity in a social context

Peripersonal space (PPS) is a plastic sector of space surrounding the body whose boundaries are mapped through multisensory integration and shifted by individual motor experiences. To date, nothing is known about PPS plasticity after a social motor interaction, and whether individual traits, such as anxiety, modulate it. Here, participants were instructed to manipulate small objects within their reaching space without tool-use, collaboratively helped by a confederate who employed a tool in her extrapersonal space. Social cooperative motor training shifts PPS's boundaries even if participants' motor actions are confined within their reaching space. Crucially, trait anxiety steers the shift direction: engaging in a cooperative motor interaction with another unfamiliar person expands PPS in low anxiety people, whereas individuals with high anxiety show PPS shrinkage. Our results show that PPS, built from multisensory signals, plastically adapts to social cooperative interactions, to dynamically define self-other body boundaries.
https://www.cell.com/iscience/fulltext/S2589-0042(24)02910-9

Language and Cognition

PAPERS

DEVYANI MAHAJAN & FRANK H. DURGIN – A conceptual replication of an implicit test of grammatical gender effects on inanimate concepts

It has been argued that the incidental and arbitrary use of gender markings for inanimate concepts in language may affect the conceptualization or semantics of those inanimate concepts. The present article sought to replicate the findings of a classic paper that made this argument. Konishi used the potency dimension of the semantic differential method as an implicit measure of perceived gender. He reported that words for inanimate concepts of masculine grammatical gender were rated as higher in potency than words for the same concepts that had feminine grammatical gender. Two preregistered replication studies are reported here. The first was a conceptual replication of Konishi's study that was conducted with 240 bilingual native speakers of either German or Spanish. Included in the study was a follow-up with 120 monolingual native English speakers. This data was used to test whether the grammatical gender in the native languages of German and Spanish speakers affected their sense of the potency of common inanimate categories when tested in a second language (English) in which they were fluent and the nouns had no grammatical gender. A second version of the study was conducted in the native languages of Spanish and German speakers, as a closer attempt at a replication of Konishi's original study. The results of both studies provided evidence against the grammatical-gender hypothesis. Bayesian tests of both studies strongly favored the null hypothesis that there were no grammatical gender effects on implicit measures of perceived potency.
https://www.cambridge.org/core/journals/language-and-cognition/article/conceptual-replication-of-an-implicit-test-of-grammatical-gender-effects-on-inanimate-concepts/3A29B4CC2A45ADAB1B21910E79CB908C

Nature Communications

PAPERS

SABRINA C. CURRAN et al – Hominin presence in Eurasia by at least 1.95 million years ago

The timing of the initial dispersal of hominins into Eurasia is unclear. Current evidence indicates hominins were present at Dmanisi, Georgia by 1.8 million years ago (Ma), but other ephemeral traces of hominins across Eurasia predate Dmanisi. However, no hominin remains have been definitively described from Europe until ~1.4 Ma. Here we present evidence of hominin activity at the site of Grăunceanu, Romania in the form of multiple cut-marked bones. Biostratigraphic and high-resolution U-Pb age estimates suggest Grăunceanu is > 1.95 Ma, making this site one of the best-dated early hominin localities in Europe. Environmental reconstructions based on isotopic analyzes of horse dentition suggest Grăunceanu would have been relatively temperate and seasonal, demonstrating a wide habitat tolerance in even the earliest hominins in Eurasia. Our results, presented along with multiple other lines of evidence, point to a widespread, though perhaps intermittent, presence of hominins across Eurasia by at least 2.0 Ma.
https://www.nature.com/articles/s41467-025-56154-9

Nature Communications Biology

PAPERS

MARINA MELCHIONNA et al – Cortical areas associated to higher cognition drove primate brain evolution

Although intense research effort is seeking to address which brain areas fire and connect to each other to produce complex behaviors in a few living primates, little is known about their evolution, and which brain areas or facets of cognition were favored by natural selection. By developing statistical tools to study the evolution of the brain cortex at the fine scale, we found that rapid cortical expansion in the prefrontal region took place early on during the evolution of primates. In anthropoids, fast-expanding cortical areas extended to the posterior parietal cortex. In Homo, further expansion affected the medial temporal lobe and the posteroinferior region of the parietal lobe. Collectively, the fast-expanding cortical areas in anthropoids are known to form a brain network producing mind reading abilities and other higher-order cognitive functions. These results indicate that pursuing complex cognition drove the evolution of Primate brains.
https://www.nature.com/articles/s42003-025-07505-1

Nature Communications Earth & Environment

PAPERS

IRENE JULIÁN-POSADA et al – Neolithic pastoralism and plant community interactions at high altitudes of the Pyrenees, southern Europe

The Neolithization process introduced remarkable ecological impacts, especially in Mediterranean mountain areas. We generated a comprehensive sedimentary ancient DNA record from the central Pyrenees, spanning 12,200 to 1300 years before present, revealing the earliest continuous presence of sheep (6500 years before present) and cattle (5900 years before present) in alpine southern Europe. This evidence suggests pastoralism nearly concurred with the Neolithic in the Iberian lowlands, challenging prior assumptions of only sporadic occurrence and confirming Neolithic pastoralist use of mountain ecosystems. A notable plant community shift arose at 6000 years before present, with deciduous forests transitioning into diverse open grasslands. This change became pronounced at 4200 years before present, aligning with

continuous presence of domesticates and a regional cooling climate, suggesting a synergistic relationship between past climate change and human-induced plant community alteration. These findings highlight complex interactions between climate, human activities, and landscape dynamics during the Neolithic in Mediterranean mountains.
https://www.nature.com/articles/s43247-025-02023-8

Nature Humanities & Social Sciences Communications

PAPERS

XENIA SCHMALZ et al – Let's talk about language—and its role for replicability

Science strives towards a credible and comprehensive understanding of the world around us. Across disciplines within the social and behavioural sciences (and beyond), limitations in the implementation of the scientific approach have been identified in recent studies, showing low replicability of many results. This is an issue for knowledge accumulation, theory-building, and evidence-based decision and policy making. Researchers have proposed several solutions to address these issues, focusing mainly on improving statistical methods, data quality, and transparency. However, relatively little attention has been paid to another key aspect that affects replicability: language. Across fields, language plays a central role in all steps of the research cycle and is a critical communication tool among researchers. Neglecting its role may reduce replicability and limit our understanding of theoretically interesting differences and similarities across languages. After identifying these challenges, we provide some recommendations and an outlook on how replicability challenges related to language may be addressed.
https://www.nature.com/articles/s41599-025-04381-2

Nature Scientific Reports

PAPERS

STÉPHANE MAZIÈRES et al – Rapid change in red cell blood group systems after the main Out of Africa of Homo sapiens

Despite the advances in paleogenomics, red cell blood group systems in ancient human populations remain scarcely known. Pioneer attempts showed that Neandertal and Denisova, two archaic hominid populations inhabiting Eurasia, expressed blood groups currently found in sub-Saharans and a rare "rhesus", part of which is found in Oceanians. Herein we fully pictured the blood group genetic diversity of 22 Homo sapiens and 14 Neandertals from Eurasia living between 120,000 and 20,000 years before present (yBP). From the ABO, Rh, Kell, Duffy, Kidd, MNS, Diego, H, secretor and Indian systems, we noted that the blood group allele diversity in the Neandertals remained unchanged since 120,000 yBP, while H. sapiens conquered Eurasia with blood group alleles presently exclusive to non-African populations, suggesting they may have differentiated right after the Out of Africa, between 70,000 and 45,000 yBP. Notably, Ust'Ishim possessed unknown alleles that may illustrate the lost genetic heritage of the early Eurasians. Lastly, Neandertals shared a unique Rh haplotype from which we updated the current RHD phylogeny. The contribution of this study is twofold. It enlightens the expansion patterns of H sapiens and recalls the anthropological effectiveness of genetic polymorphisms currently being surveyed for transfusion safety and pregnancy monitoring.
https://www.nature.com/articles/s41598-024-83023-0

Neuron

PAPERS

JUNCHOL PARK et al – Conjoint specification of action by neocortex and striatum

The interplay between two major forebrain structures—cortex and subcortical striatum—is critical for flexible, goal-directed action. Traditionally, it has been proposed that striatum is critical for selecting what type of action is initiated, while the primary motor cortex is involved in specifying the continuous parameters of an upcoming/ongoing movement. Recent data indicate that striatum may also be involved in specification. These alternatives have been difficult to reconcile because comparing very distinct actions, as is often done, makes essentially indistinguishable predictions. Here, we develop quantitative models to reveal a somewhat paradoxical insight: only comparing neural activity across similar actions makes strongly distinguishing predictions. We thus developed a novel reach-to-pull task in which mice reliably selected between two similar but distinct reach targets and pull forces. Simultaneous cortical and subcortical recordings were uniquely consistent with a model in which cortex and striatum jointly specify continuous parameters governing movement execution.
https://www.cell.com/neuron/fulltext/S0896-6273(24)00922-X

New Scientist

NEWS

Celtic tribe's DNA points to female empowerment in pre-Roman Britain

Genetic evidence from Iron Age Britain shows that women tended to stay within their ancestral communities, suggesting that social networks revolved around women.
https://www.newscientist.com/article/2464091-celtic-tribes-dna-points-to-female-empowerment-in-pre-roman-britain/

ARTICLES

MICHAEL MARSHALL – Why did hominins like us evolve at all?
Animal life on Earth existed for over half a billion years before hominins hit the scene – a complex combination of environmental changes, innovations in technology and competition may have led to us
https://www.newscientist.com/article/2430910-why-did-hominins-like-us-evolve-at-all/

MICHAEL MARSHALL – Did rock art spread from one place or was it invented many times?
Rock art is a truly global phenomenon, with discoveries of cave paintings and etchings on every continent that ancient humans inhabited – but how many times was it invented over human history?
https://www.newscientist.com/article/2435467-did-rock-art-spread-from-one-place-or-was-it-invented-many-times/

PLoS Biology

PAPERS

CAS W. COOPMANS et al with PETER HAGOORT – Language-specific neural dynamics extend syntax into the time domain
Studies of perception have long shown that the brain adds information to its sensory analysis of the physical environment. A touchstone example for humans is language use: to comprehend a physical signal like speech, the brain must add linguistic knowledge, including syntax. Yet, syntactic rules and representations are widely assumed to be atemporal (i.e., abstract and not bound by time), so they must be translated into time-varying signals for speech comprehension and production. Here, we test 3 different models of the temporal spell-out of syntactic structure against brain activity of people listening to Dutch stories: an integratory bottom-up parser, a predictive top-down parser, and a mildly predictive left-corner parser. These models build exactly the same structure but differ in when syntactic information is added by the brain—this difference is captured in the (temporal distribution of the) complexity metric "incremental node count." Using temporal response function models with both acoustic and information-theoretic control predictors, node counts were regressed against source-reconstructed delta-band activity acquired with magnetoencephalography. Neural dynamics in left frontal and temporal regions most strongly reflect node counts derived by the top-down method, which postulates syntax early in time, suggesting that predictive structure building is an important component of Dutch sentence comprehension. The absence of strong effects of the left-corner model further suggests that its mildly predictive strategy does not represent Dutch language comprehension well, in contrast to what has been found for English. Understanding when the brain projects its knowledge of syntax onto speech, and whether this is done in language-specific ways, will inform and constrain the development of mechanistic models of syntactic structure building in the brain.
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3002968

PLoS One

PAPERS

KATI JÄRVINEN et al – Investigating the moments of "aha" and "hmm" through acoustic analysis of voice and speech in pre-service physics teacher education–A novel method for identifying significant learning moments
The aim of the study was to find whether certain meaningful moments in the learning process are noticeable through features of voice and how acoustic voice analyses can be utilized in learning research. The material consisted of recordings of nine university students as they were completing tasks concerning direct electric circuits as part of their course of teacher education in physics. Prosodic features of voice—fundamental frequency (F0), sound pressure level (SPL), acoustic voice quality measured by LTAS, and pausing—were investigated. The results showed that instances of confusion and understanding were manifested in acoustic parameters. F0 was significant in characterizing the both kind of learning instances. Confusion had lower SPL and alpha ratio, indicating that voice quality was softer than in understanding. Degree of voice pauses was lower in understanding, suggesting less hesitation or need for clarification for understanding compared to confusion. Voice research adds to the research of learning as speaker´s voice is affected by the different instances in the process of learning. This research approach can be used for identification of important instances of learning and directing these instances to closer analysis of content or interaction to further understand the learning processes. Therefore, this study is a novel contribution to the study of learning as it adds acoustic voice and speech analyses to the discipline.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0314344

KRISTENA COOKSEY et al with CRICKETTE SANZ – The extent of western lowland gorilla social relationships within and between groups
The nature of western lowland gorilla social relationships within and between groups is largely understudied, partly due to the challenges of monitoring associations between individuals who live in neighboring groups. In this study, we examined the social relationships of four western lowland gorilla groups in the Ndoki landscape of northern Republic of Congo. To do so, we compiled all-occurrence social interaction and silverback nearest neighbor social networks from data collected during daily group follows conducted over several years. We observed a total of 5,923 dyadic all-occurrence social interactions

(1,350 ± 489 per group, 138 intergroup interactions) and 54,989 dyadic silverback nearest neighbor associations (13,747 ± 3,963 observations per group, 105 nearest neighbor observations of intergroup partners during group scans). For all groups, we found that males were more social than females, younger individuals were more social than older gorillas, and slightly greater rates of social behaviors were observed during periods of higher fruit availability. While there was a considerable amount of interindividual variation in social behavior, the network of social interactions demonstrated a large extent of social relationships within and between groups. Additionally, we performed simulated network removals to assess the impact on social dynamics. Across all groups and the total population, the removal of blackback and immature individuals markedly decreased the number of intra- and intergroup relationships (>60% decrease). The documented extent of western lowland gorilla social relationships has direct implications for the conservation of species with multi-level social dynamics. Gaining clarity on the ways in which western lowland gorilla groups naturally occur in the wild, not only provides a greater understanding for their conservation, but also offers insights for managing their social dynamics within captive environments.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0316598

Proceedings of the Royal Society B

PAPERS

MARLEN FRÖHLICH, CEDRIC BOECKX & CLAUDIO TENNIE – The role of exploration and exploitation in primate communication

The concepts of social learning and exploration have been central to debates in comparative cognition research. While their roles in the origins of human cumulative culture on the one hand and creativity on the other have been highlighted, the two concepts have mostly been studied separately. In this article, we examine the relationship between adopting similar or different behaviours within a group, focusing on how exploration and exploitation shape primate communication systems. Using a comparative approach, we discuss how similarity and differentiation of communicative behaviour can be viewed as two endpoints on a continuum, impacting both individual- and group-level behavioural variation. While group-level variation is evident in some ape behaviours (e.g. foraging traditions), individual variation in communicative behaviour appears to outweigh group-level differences, making a widespread communicative culture in apes unlikely. Drawing parallels to language acquisition in human infants, we propose that ape communication follows an exploration–exploitation trajectory, with initial exploration gradually giving way to focused exploitation of genetically predisposed and/or individually developed communicative repertoires. By integrating the individual and social learning processes underlying communicative behaviour, we can gain a deeper understanding of how exploration–exploitation tensions shape communication systems across species.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2024.1665

ESA A. AHMAD et al – Wild recognition: conducting the mark test for mirror self-recognition on wild baboons

The distribution of self-awareness across species is important to understand, not only as a matter of scientific interest but also because of its implications for the ethical standing of non-human animals. The prevailing methodology for determining self-awareness is to test for visual self-recognition using mirror-image stimulation and a 'mark test'. However, most studies have involved very small sample sizes, omitted a control condition and been conducted on captive animals. Here, we designed and implemented the first controlled mark test in a wild setting, conducting the mark test using a laser pointer on a large (n = 51 individuals, 135 mark tests) sample of wild chacma baboons (Papio ursinus) in situ. Control tests showed that baboons were interested in the mark, but this interest decreased with age, and was greater in males and towards green (cf. red) marks. However, as predicted, subjects showed no evidence of visual self-recognition, which, given the control, cannot be attributed to a lack of motivation in the mark. Our study proposes a novel, controlled mark test in situ and contributes to the evidence that, without extensive training, non-hominid primates are not capable of full visual self-recognition.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2024.1933

LAURENCE R. GESQUIERE et al – Energetic costs of social dominance in wild male baboons

In vertebrates, glucocorticoids can be upregulated in response to both psychosocial and energetic stressors, making it difficult to identify the cause of elevated glucocorticoid concentrations when both types of stressors are present. This problem has been particularly challenging in studies of social dominance rank in wild animals. In contrast to glucocorticoids, thyroid hormone concentrations are largely unaffected by psychosocial stressors and therefore offer a better estimate of energetic challenges. Here, we measured faecal metabolites of both triiodothyronine (mT3) and glucocorticoids (fGC) in wild baboons and assessed how these hormonal profiles vary with male dominance rank. We found that alpha males have lower mT3 and higher fGC than males of other ranks, indicating sustained energetic costs of alpha status. By contrast, low-ranking males have higher mT3 but similar fGC concentrations than non-alpha high-ranking males, reflecting their lower exposure to energetic stressors but greater vulnerability to psychosocial stressors than higher-ranking males. We also found that mate-guarding of fertile females, a behaviour expressed at higher rates by alpha males, partly explains the energetic costs of high social status. These findings offer evidence of the different types of costs experienced by low- and high-ranking animals.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2024.1790

EDWIN DICKINSON et al – Ecomorphological correlates of grasping forces in strepsirrhine primates
Powerful digital grasping is essential for primates navigating arboreal environments and is often regarded as a defining characteristic of the order. However, in vivo data on primate grip strength are limited. In this study, we collected grasping data from the hands and feet of eleven strepsirrhine species to assess how ecomorphological variables—such as autopodial shape, laterality, body mass and locomotor mode—influence grasping performance. Additionally, we derived anatomical estimates of grip force from cadaveric material to determine whether in vivo and ex vivo grip strength measurements follow similar scaling relationships and how they correlate. Results show that both in vivo and anatomical grip strength scale positively with body mass, though anatomical measures may overestimate in vivo performance. Species with wider autopodia tend to exhibit higher grip forces, and forelimb grip forces exceed those of the hindlimbs. No lateralization in grip strength was observed. While strepsirrhine grip forces relative to their body weight are comparable to those of other primates and slightly exceed those of humans, they are not exceptional compared to other arboreal mammals or birds, suggesting that claims of extraordinary primate grasping abilities require further investigation.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2024.2190

Royal Society Open Science

PAPERS

JUSTIN MIKELL & DEREK POWELL – Illusory implications: incidental exposure to ideas can induce beliefs
Numerous psychological findings have shown that incidental exposure to ideas makes those ideas seem more true, a finding commonly referred to as the 'illusory truth' effect. Under many accounts of the illusory truth effect, initial exposure to a statement provides a metacognitive feeling of 'fluency' or familiarity that, upon subsequent exposure, leads people to infer that the statement is more likely to be true. However, genuine beliefs do not only affect truth judgements about individual statements, they also imply other beliefs and drive decision-making. Here, we consider whether exposure to 'premise' statements affects people's truth ratings for novel 'implied' statements, a pattern of findings we call the 'illusory implication' effect. We argue these effects would constitute evidence for genuine belief change from incidental exposure and identify a handful of existing findings that offer preliminary support for this claim. Building upon these, we conduct three new preregistered experiments to further test this hypothesis, finding additional evidence that exposure to 'premise' statements affected participants' truth ratings for novel 'implied' statements, including for considerably more distant implications than those previously explored. Our findings suggest that the effects of incidental exposure reach further than previously thought, with potentially consequential implications for concerns around mis- and dis-information.
https://royalsocietypublishing.org/doi/10.1098/rsos.240716

Trends in Cognitive Sciences

PAPERS

MAXI BECKER & ROBERTO CABEZA – The neural basis of the insight memory advantage
Creative problem solving and memory are inherently intertwined: memory accesses existing knowledge while creativity enhances it. Recent studies show that insights often accompanying creative solutions enhance long-term memory. This insight memory advantage (IMA) is explained by the 'insight as prediction error (PE)' hypothesis which states that insights arise from PEs updating predictive solution models and thereby enhancing memory. Neurally, the hippocampus initially detects PEs and then, together with the medial prefrontal cortex (mPFC), integrates and updates these expectations facilitating efficient memory encoding and retrieval. Dopamine (DA) mediates reward PEs and long-term potentiation (LTP) in the hippocampus, while noradrenaline (NE) enhances arousal and attention impacting the amygdala, the salience network, and hippocampal plasticity. These neurobiological mechanisms likely underpin IMA and have significant implications for educational practices and problem-solving strategies.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00001-4

Trends in Neurosciences

PAPERS

JONAS OBLESER – Metacognition in the listening brain
How do you know you have heard right? Metacognition, the ability to assess and monitor one's own cognitive state, is key to understanding human communication in complex environments. However, the foundational role of metacognition in hearing and communication is only beginning to be explored, and the neuroscience behind it is an emerging field: how does confidence express in neural dynamics of the listening brain? What is known about auditory metaperceptual alterations as a hallmark phenomenon in psychosis, dementia, or hearing loss? Building on Bayesian ideas of auditory perception and auditory neuroscience, 'meta-listening' offers a framework for more comprehensive research into how metacognition in humans and non-humans shapes the listening brain.
https://www.cell.com/trends/neurosciences/fulltext/S0166-2236(24)00251-0

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.