EAORC BULLETIN 1,133 – 2 March 2025

CONTENTS

NOTICES

FORMATTED VERSION OF THIS BULLETIN

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

PUBLICATION ALERTS

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

EDITORIAL INTERJECTIONS

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

ACADEMIA.EDU – Touching Language Origins Again

In J. M. Hutson et al (eds.), The Origins of Bone Tool Technologies. Römisch-Germanisches Zentralmuseums (2017).

IAIN DAVIDSON – Touching Language Origins Again: How Worked Bone Shaped Our Understanding

In 1986 Bill Noble and I began to talk to each other about the origins of language. We articulated the importance of bone tools as the best marker of the imposition of form on artefacts. Some people have said that such an indication of mental

representation of form can only follow from the emergence of language. I will review the arguments we produced then and show some of the evidence that strengthened our belief that they were important. I will then put them in the context of the vastly expanded knowledge of the archaeology of modern human behaviour over the last 30 years. Some of the arguments have been ignored, others have been overtaken by new finds, but the theoretical position also raised questions that have not been adequately answered. I will conclude by emphasising the importance of bone tools for understanding that theory and discussing some of the ways in which the theoretical position has moved on. Insights from studying bone tools opened up understanding of modern human cognition but we need more complex models of cognitive evolution.
https://www.academia.edu/34902512/Davidson_I_2017_Touching_language_origins_again_how_worked_bone_shaped_our_understanding_In_J_M_Hutson_A_Garc%C3%ADa_Moreno_E_Noack_E_Turner_A_Villaluenga_and_S_Gaudzinski_Windheuser_Eds_The_Origins_of_Bone_Tool_Technologies_Mainz_R%C3%B6misch_Germanisches_Zentralmuseums

ACADEMIA.EDU – Modern Human Origins and the Evolution of Behavior in the Later Pleistocene

Current Anthropology 46:Supplement, S3-S27 (2005).

HANNA V.A. JAMES & MICHAEL PETRAGLIA – Modern Human Origins and the Evolution of Behavior in the Later Pleistocene Record of South Asia; with Commentaries & Author's Reply

The paper discusses the archaeological and genetic evidence regarding human origins and behaviors during the Later Pleistocene in South Asia. It highlights how ecological diversity in the region influenced hominin adaptations and outlines the population dynamics, including demographic expansions and genetic continuity between India and the Near East. The study also points out the rich archaeological record of South Asia, despite methodological challenges in research, that provides insights into settlement patterns, technological changes, and population history.
https://www.academia.edu/471288/Modern_Human_Origins_and_the_Evolution_of_Behavior_In_the_Later_Pleistocene_Record_of_South_Asia_Commentaries_Authors_Reply

CONFERENCE ALERT – Linguistics Association of Great Britain Annual Conference, 2-5 September 2025

We're excited to announce that submissions for the 2025 Annual Meeting of the Linguistics Association of Great Britain and Northern Ireland are now OPEN!
Location: University of Suffolk
Dates: 2-5 September 2025
Submission Deadline: 14th April 2025
This is your chance to be part of a vibrant gathering of linguistics experts. For details and to submit, visit:
https://easychair.org/cfp/lagb2025
We can't wait to receive your abstracts, and look forward to sharing an inspiring and memorable time with you this September!
https://lagb.org.uk/lagb2025

NEWS

NATURE BRIEFING – Video: The secret language of crows

Researchers have been eavesdropping on unusually close-knit families of carrion crows (corvus corone corone) in Spain, collecting data on hundreds of thousands of different vocalizations. Small microphones recorded a variety of soft calls, far quieter than the familiar 'caws'. The team then used AI to analyse and group the sounds. The researchers aim to better understand how the crows cooperate — and experiment with some human-crow chats.
https://www.nature.com/articles/d41586-025-00539-9

NATURE BRIEFING – Ancient walkers might have pulled carts

Gently curving tracks preserved in New Mexico could be evidence of one of the earliest-known uses of transport technology: handcarts without wheels, called travois. The tracks were found alongside footprints that the same team earlier revealed could be around 22,000 years old — if so, they are the oldest evidence of human settlement in the Americas, setting the date thousands of years earlier than other timelines. Researchers built their own travois and dragged them through sand to reproduce a pattern that they say might indicate "adults pulled the simple, probably improvised travois, while a group of children tagged along to the side and behind".
https://www.msn.com/en-us/travel/news/22-000-year-old-tracks-are-earliest-evidence-of-transport-vehicles/ar-AA1zGrOt

SAPIENS – In Iron Age Britain, Descent Was Matrilineal

New analyses from Iron Age burials reveal that women remained in their natal communities and provided the key to kinship. The findings offer essential clues about gender roles and social structures in ancient Europe.
https://www.sapiens.org/archaeology/iron-age-britain-adna-descent-matrilineal/

SCIENCEADVISER – Marking other minds: How scientists could assess animal consciousness

Bumblebees get a kick out of playing with wooden balls. Bluestreak cleaner wrasse appear to recognize their reflection in a mirror—a cognitive achievement scientists often interpret as a sign of self-awareness. And livestock, often regarded as dumb creatures, are constantly surprising scientists with their intelligence and emotional complexity. Are these animals conscious? The New York Declaration on Animal Consciousness, which was issued in April 2024 and has now been signed by more than 500 experts from around the globe, claims that there is "strong scientific support for attributions of conscious experience" in mammals and birds and "at least a realistic possibility of conscious experience" in fish, amphibians, reptiles, and even some invertebrates. But with no universally accepted theory or definition of consciousness, scientists remain uncertain about its scope in the animal kingdom, and some researchers worry that broad, public declarations on animal consciousness could hinder future research.

Now, in a new essay, the researchers who organized the declaration outline a new approach for understanding animal feelings. The method involves identifying behavioral and anatomical markers of consciousness in humans, such as the ability to experience pain, and searching for those markers in other species. "When humans and other animals perform similar behaviors, and when the best explanation for these behaviors in humans involves conscious experience," the team writes, "then that could be considered evidence—albeit tentative, inconclusive evidence—of conscious experience in other animals, too." Scientists should also use less invasive research methods, the authors argue, and move beyond the narrow focus on pain to develop markers for joy and other emotions.

https://www.science.org/doi/10.1126/science.adp4990

SCIENCEADVISER – Mmmm-hmmmm

Interjections aren't worthless time fillers, linguists say. Instead, they help keep conversations on a roll. "Here is this phenomenon that lives right under our nose, that we barely noticed, that turns out to upend our ideas of what makes complex language even possible in the first place," one said.

https://knowablemagazine.org/content/article/mind/2025/interjections-important-for-conversation-flow

SCIENCE DAILY – Researchers outline new approach for better understanding animal consciousness

A team of researchers has outlined a new approach for better understanding the depths of animal consciousness, a method that may yield new insights into the similarities and differences among living organisms.

https://www.sciencedaily.com/releases/2025/02/250220164349.htm

THE CONVERSATION – Fossil footprints reveal what may be the oldest known handcarts

How people got stuff around before wheels.

https://theconversation.com/fossil-footprints-reveal-what-may-be-the-oldest-known-handcarts-new-research-250438

PUBLICATIONS

Animal Behaviour

PAPERS

CLAUDIA A.F. WASCHER – Vocal communication in corvids: a systematic review

Vocal communication is broadly distributed in a wide range of nonhuman animal species and is hypothesized to play an important role in mate attraction, territory defence, predator avoidance and parental care. Understanding the ecological and social drivers of vocal communication is key to enhancing our understanding of the evolution of social structures, mating systems and group dynamics. We reviewed 130 studies investigating vocal communication in the family of corvids. As oscine passerines, living in complex and flexible social systems and a wide range of ecological systems (e.g. different habitats, trophic niches), corvids present a key model group in advancing our understanding of evolutionary drivers of vocal communication. Here, we outline empirical evidence for vocal learning, ecological adaptation (e.g. calls encoding information about predator type) and social adaptation (e.g. vocalizations for group cohesion and coordination) in corvid vocalizations and behavioural responses of receivers to calls. Only 35 out of 128 (27%) of corvid species have been studied with regards to their vocal communication. While some species, like American crows, common ravens and Eurasian magpies, are well studied, and supporting evidence for vocal learning and ecological as well as social adaptations is available, most corvid species remain poorly studied. We hope our review will inspire future work on previously underinvestigated corvid species, as well as replications of previous research with standardized observational and experimental paradigms, to allow for direct comparison between different corvid species. More broadly, further research systematically investigating social and ecological factors driving variation in vocal communication systems is necessary to further advance our general understanding of animal vocal communication.

https://www.sciencedirect.com/science/article/pii/S0003347224003841

MARIE PADBERG et al with JOHANNA ECKERT – Social attention increases object memory in adult but not younger great apes

Research across primate species showed that social models (e.g. conspecifics) enhance memory (social memory effect, SME). In this preregistered study, we examined the ontogeny of the SME and its cognitive mechanism in great apes from infancy to adulthood (3 months–47 years), and explored both its persistence after a delay and its interaction with attentional measures of arousal (heart rate, HR). Forty-two individuals from four nonhuman great ape species viewed videos of social (hand) and nonsocial (mechanical claw) models constructing a tower, which was subsequently presented next to a novel tower. After 2 days, we showed the familiarized tower again next to a novel tower. Looking longer at the novel tower was interpreted as processing and recognizing the familiar tower (novelty response, NR). Results showed that adults (only) demonstrated higher NR for the tower built by the hand compared to the tower built by the claw when tested immediately, but not after a 2-day delay. We propose that this memory effect may have been driven by enhanced attention towards the social model, as adults demonstrated decreased HR relative to baseline in the social condition and accelerated HR in the nonsocial condition. However, we found no such differentiation in NR and HR in the younger individuals.
https://www.sciencedirect.com/science/article/pii/S0003347225000089

Current Anthropology

PAPERS

MATZ LARSSON & DEAN FALK – Direct Effects of Bipedalism on Early Hominin Fetuses Stimulated Later Musical and Linguistic Evolution

We hypothesize that auditory and motor entrainment evolved in early hominin fetuses in direct response to their mothers' bipedal footsteps and, later, contributed to the evolution of music and language via two related processes. First, selection for bipedalism transformed feet from grasping into weight-bearing organs, which negatively affected infants' ability to cling to their mothers, provoking the emergence of novel affective vocal exchanges between mothers and infants that became building blocks for the emergence of motherese. Second, the derived ability to entrain movements to sound was incorporated during the prehistoric emergence of wide-ranging rhythmic behaviors such as synchronized chanting of nonlexical vocables and coordinated rhythmic clapping and stomping, which became instrumental during the more recent evolution of music. Like the derived ability to keep beat with rhythmic sounds, nascent motherese entailed entrainment of motor behavior (the physical production of pitch, timing, and vocalization rate) with external sources of sound (conversational utterances). If motherese was a precursor for language evolution, as many believe, music and language share phylogenetically derived substrates for auditory and motor entrainment that stemmed directly from bipedalism. If so, bipedalism was more important for serendipitously sculpting advanced cognition in our prehistoric ancestors than previously believed.
https://www.journals.uchicago.edu/doi/abs/10.1086/734554

Current Biology

PAPERS

EDUARDO SAMPAIO, ALEXANDRA K. SCHNELL & PIERO AMODIO – Cognition in multi-species sociality

The natural world is filled with interspecies relationships that extend beyond the more familiar predator–prey dynamics. Indeed, individuals of different species can engage in complex associations to gain — either supplementary or complementary — benefits in various ecological contexts. Supplementary benefits occur, for instance, in mixed flocks or shoals formed by different species of birds or fish with similar appearances. These associations support the formation of larger units, thereby reducing the chances of predation for each individual within the group (dilution effect). In contrast, complementary benefits tend to arise from role specialization of species with different morphologies, sensory adaptations and/or behavioural strategies. These partnerships contribute to the overall fitness of the individuals involved, yet through distinct advantages depending on the specific role played by the partner species. This primer provides a guide to how cognition can influence complex interspecies interactions, exploring both proximate mechanisms (the immediate processes) and ultimate factors (the evolutionary impact) behind these relationships.
https://www.cell.com/current-biology/fulltext/S0960-9822(25)00012-0

LAURA C. MCHENRY et al – Individuality impacts communication success in honey bees

In eusocial insects, individual variation and its influence on emergent outcomes, like communication success between foragers, remain poorly understood1. The honey bee waggle dance is a celebrated communication behavior that conveys to nestmates a distance and direction from the hive to a valuable resource, usually nectar or pollen2. Intriguingly, each forager possesses an individual calibration to communicate the resource's distance3, but the effect of this individuality on recruitment success is unknown. Here we tested whether the magnitude and/or direction of calibration mismatch in dancer–follower dyads affects their ability to communicate. We created fully-marked observation colonies and trained bees to forage from artificial feeders at known distances. Concurrently, we filmed dances inside the colony to identify successful dancer–follower dyads. We then compared the distribution of calibration mismatch values among these successful dyads (n = 30) to a simulated expected distribution based on a null hypothesis of random assortment of calibration values. Surprisingly, mismatch magnitude did not affect recruitment ($p = 0.74$), but mismatch direction did: followers predicted to overshoot the

resource were over-represented among successful dyads compared to the null distribution (p = 0.03). Overall, our data demonstrate that the calibration relationship in dancer–follower dyads, created by individual differences, can shape communication outcomes.
https://www.cell.com/current-biology/abstract/S0960-9822(24)01715-9

STEVEN L. ELMLINGER, JACOB A. LEVY & MICHAEL H. GOLDSTEIN – Immature vocalizations elicit simplified adult speech across multiple languages
Learning to speak takes place during a prolonged period of immaturity, which confers advantages for communicative development. Social partners, required for survival in early development, afford feedback for immature vocalizations like babbling and early speech. Feedback, in the form of changes to the linguistic structure of adult speech in response to infant vocalizations, may guide the earliest stages of language acquisition. In a cross-linguistic study of 1,586 transcripts, spanning 13 languages from 5 language families, we investigated whether caregiver talk was consistently influenced by children's (aged 5–30 months) immature speech. Across languages, we found that most caregivers significantly simplified their linguistic structure in response to children's immature speech, resulting in reduced lexical diversity, shorter utterance lengths, and higher likelihoods of single-word utterances. Children's vocalizations elicited learnable language from caregivers, highlighting a potentially widespread feature of language use that is catalyzed by immature behavior. Thus, altriciality allows for immature speech to be a social tool, creating opportunities for learning during social interaction.
https://www.cell.com/current-biology/abstract/S0960-9822(24)01720-2

eLife

PAPERS

JESSICA E. ROSIEN et al – Food-washing monkeys recognize the law of diminishing returns
Few animals have the cognitive faculties or prehensile abilities needed to eliminate tooth-damaging grit from food surfaces. Some populations of monkeys wash sand from foods when standing water is readily accessible, but this propensity varies within groups for reasons unknown. Spontaneous food-washing emerged recently in a group of long-tailed macaques (Macaca fascicularis) inhabiting Koram Island, Thailand, and it motivated us to explore the factors that drive individual variability. We measured the mineral and physical properties of contaminant sands and conducted a field experiment, eliciting 1,282 food-handling bouts by 42 monkeys. Our results verify two long-standing presumptions, that monkeys have a strong aversion to sand and that removing it is intentional. Reinforcing this result, we found that monkeys clean foods beyond the point of diminishing returns, a suboptimal behavior that varied with social rank. Dominant monkeys abstained from washing, a choice consistent with the impulses of dominant monkeys elsewhere: to prioritize rapid food intake and greater reproductive fitness over the long-term benefits of prolonging tooth function.
https://elifesciences.org/reviewed-preprints/98520

Evolutionary Anthropology

PAPERS

ANDREA B. TAYLOR et al – Jaw-Muscle Structure and Function in Primates: Insights Into Muscle Performance and Feeding-System Behaviors
The jaw-adductor muscles drive the movements and forces associated with primate feeding behaviors such as biting and chewing as well as social signaling behaviors such as wide-mouth canine display. The past several decades have seen a rise in research aimed at the anatomy and physiology of primate chewing muscles to better understand the functional and evolutionary significance of the primate masticatory apparatus. This review summarizes variation in jaw-adductor fiber types and muscle architecture in primates, focusing on physiological, architectural, and behavioral performance variables such as specific tension, fatigue resistance, muscle and bite force, and muscle stretch and gape. Paranthropus and Australopithecus are used as one paleontological example to showcase the importance of these data for addressing paleobiological questions. The high degree of morphological variation related to sex, age, muscle, and species suggests future research should bracket ranges of performance variables rather than focus on single estimates of performance.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.22053

Frontiers in Language Sciences

PAPERS

ALEXIS L. PRACAR et al – The neuroanatomy of Broca's aphasia
Broca's aphasia, a condition characterized by nonfluent speech and difficulty with language production, results from focal brain damage and is most often caused by stroke. Although traditionally linked to lesions in Broca's area (Brodmann areas 44 and 45 in the left inferior frontal gyrus), recent evidence suggests that the neuroanatomy of Broca's aphasia is far more complex, implicating a broader network of cortical and subcortical regions. This study aimed to delineate the specific cortical and white matter features that, when damaged, lead to persistent Broca's aphasia.

39 chronic cases of Broca's aphasia and 41 cases of stroke survivors whose language functions returned to within normal limits (WNL) were included. Lesion analyses and disconnection mapping were conducted using the Brainnetome Atlas and the Lesion Quantification Toolkit (LQT).
Results highlighted the critical role of the left insula, particularly its hypergranular and dorsal granular regions, which showed 99.2% and 93.6% lesion overlap, respectively, in Broca's aphasia cases. These regions, along with portions of the motor cortex and the parietal and temporal lobes, contribute to speech production and language processing. Importantly, the traditionally defined Broca's area showed minimal overlap, challenging the conventional understanding of its role in chronic Broca's aphasia. In addition to cortical regions, white matter tract analysis revealed complete disconnection of key pathways, including the arcuate fasciculus, extreme capsule, and middle longitudinal fasciculus. The corticospinal tract and inferior fronto-occipital fasciculus (IFOF) were also heavily disrupted, suggesting that damage to both cortical areas and their structural connections contributes to the hallmark symptoms of Broca's aphasia.
These findings emphasize the distributed nature of the neural network underlying Broca's aphasia, extending beyond traditional Broca's area to include multiple cortical regions and their associated white matter tracts. The study provides new insights into the structural basis of language impairment, offering a more nuanced understanding of Broca's aphasia.
https://www.frontiersin.org/journals/language-sciences/articles/10.3389/flang.2025.1496209/full

Nature

PAPERS

ESLEM BEN AROUS et al – Humans in Africa's wet tropical forests 150 thousand years ago
Humans emerged across Africa shortly before 300 thousand years ago (ka). Although this pan-African evolutionary process implicates diverse environments in the human story, the role of tropical forests remains poorly understood. Here we report a clear association between late Middle Pleistocene material culture and a wet tropical forest in southern Côte d'Ivoire, a region of present-day rainforest. Twinned optically stimulated luminescence and electron spin resonance dating methods constrain the onset of human occupations at Bété I to around 150 ka, linking them with Homo sapiens. Plant wax biomarker, stable isotope, phytolith and pollen analyses of associated sediments all point to a wet forest environment. The results represent the oldest yet known clear association between humans and this habitat type. The secure attribution of stone tool assemblages with the wet forest environment demonstrates that Africa's forests were not a major ecological barrier for H. sapiens as early as around 150 ka.
https://www.nature.com/articles/s41586-025-08613-y

Nature Communications Biology

PAPERS

MICHAEL G. NELSON & DAVID TALAVERA – Identification of coevolving positions by ancestral reconstruction
Coevolution within proteins occurs when changes in one position affect the selective pressure in another position to preserve the protein structure or function. The identification of coevolving positions within proteins remains contentious, with most methods disregarding the phylogenetic information. Here, we present a time-efficient approach for detecting coevolving pairs, which is almost perfect in terms of precision and specificity. It is based on maximum parsimony-based ancestral reconstruction followed by the identification of pairs with a depletion on separate changes when compared to their number of concurrent changes. Our analysis of a previously characterised biological dataset shows that the coevolving pairs that we identified tend to be close in the protein sequence and structure, slightly less solvent exposed and have a higher mutation rate. We also show how the ancestral reconstruction can be used to detect favourable and unfavourable amino acid combinations. Altogether, we demonstrate how this approach is essential for identifying pairs of positions with weak covariation patterns.
https://www.nature.com/articles/s42003-025-07676-x

Nature Ecology & Evolution

ARTICLES

GANG LI & YANG LIU – Changes in sight and smell in early primate evolution
Whether sensory 'trade-offs' between vision and olfaction existed during diversifications of early primates is still an open question. By combining genomic, molecular and neuroanatomical evidence, these new results support sensory shifts and not just trade-offs during primate evolution.
https://www.nature.com/articles/s41559-025-02658-y

PAPERS

HAI CHI et mul – Genomic and phenotypic evidence support visual and olfactory shifts in primate evolution
Sensory trade-offs between vision and olfaction in the evolution and radiation of primates have long been debated. However, insights have been limited by a lack of sensory gene sequences and accompanying functional predictions. Here we conduct large-scale functional analyses of visual and olfactory receptors and related brain regions across extant primates. Our results reveal a visual shift from ultraviolet to violet colour sensitivity in early haplorrhine primates, followed by

acceleration in the rhodopsin retinal release rates at the origin of anthropoids, both of which are expected to greatly enhance visual acuity under brighter light conditions. Additionally, we find that the sensitivity of olfactory receptors shifted from narrowly to broadly tuned early in anthropoid evolution. In contrast, strepsirrhines appear to have retained sensitive dim-light vision and underwent functional enhancement of narrowly tuned olfactory receptors. Our models indicate that this would have enhanced odorant discrimination and facilitated olfaction-mediated physiology and behaviour. These differences in tuning patterns of olfactory receptors between major primate lineages mirror well-established morphological differences in external anatomy and brain structures, revealing new mechanisms of olfactory adaptation and evolutionary plasticity. Our multisystem analyses reveal patterns of co-evolution in genomic, molecular and neuroanatomical traits that are consistent with a sensory 'reallocation' rather than strict trade-offs.
https://www.nature.com/articles/s41559-025-02651-5

Nature Humanities & Social Sciences Communications

PAPERS

PRAKASH MONDAL – On the relations over representations of linguistic structure and grammars
A familiar and fairly well-known distinction exists between a derivational type of grammar (for example, mainstream Generative Grammar) and a representational type of grammar (Lexical-Functional Grammar, Head-Driven Phrase Structure Grammar, etc.). As far as the derivational type is concerned, the derivational process goes on in an incremental manner through a series of structural alterations involving structural constraints, whereas in the case of the representational type as soon as the linguistic structure is built, it is checked for conformity to certain representational constraints. This paper argues that the two types are not simply mutually exclusive choices for the representation of linguistic structure. Rather, they constitute and also reflect two distinct and yet parallel modes of knowledge representation of language vis-à-vis the abstract (axiomatic) system of language from a metatheoretical perspective. That they are sometimes equivalent in expressing linguistic facts and sometimes divergent in descriptions of other linguistic structures is explained by appealing to the idea that the formal representation of language is bimorphic but not in terms of the same morphism. There exists a morphism instantiating an epimorphism (in the category-theoretic sense) that maps between categories of objects designating linguistic entities and procedures, establishing the divergence, while the case for equivalence can be simply treated as monomorphic (in terms of the category-theoretic notion of monomorphism). Hence, it leads to a split bimorphic representation of language. Then it is shown how divergent psycholinguistic findings on the conflicts between the derivational type of grammar and the representational type can be accommodated by appealing to the present model. Overall, this essentially shows that choices of representation of linguistic structure are partly determined by cognitive constraints/principles and any uncertainty between such choices can be accommodated in the current model that can admit of both entanglement and flipping between choices of representation of linguistic structure.
https://www.nature.com/articles/s41599-025-04543-2

YUEN ONN CHOONG, LEE PENG NG & TECK CHAI LAU – Beyond fairness: exploring organizational citizenship behavior through the lens of self-efficacy and trust in principals
The aim of this study is twofold. First, we investigate the mediating role of trust in principals in the relationship between organizational justice and organizational citizenship behavior (OCB). Second, we examine the moderating effect of self-efficacy between organizational justice and OCB as well as between trust in principals and OCB. A total of 467 teachers participated voluntarily in this survey. Partial least square structural equation modeling was employed to analyze the proposed research model and hypotheses. Based on the results, we discovered that trust in principals significantly mediates the relationship between organizational justice and OCB. Besides, the relationship between trust in principals and OCB is more pronounced among teachers with higher self-efficacy. Conversely, the impact of organizational justice on OCB is more significant among teachers with lower self-efficacy. These key findings have several implications for both practical applications and theoretical considerations, providing valuable insights for stakeholders.
https://www.nature.com/articles/s41599-025-04611-7

Nature Scientific Reports

PAPERS

KIRSTEN H. BLAKEY – Children consider others' need and reputation in costly sharing decisions
Children's sharing decisions are shaped by recipient characteristics such as need and reputation, yet studies often focus on one characteristic at a time. This research examines how combinations of recipient characteristics impact costly sharing decisions among 3- to 9-year-old children (N = 186). Children were informed about the material need (needy or not needy) and reputation (sharing or not sharing) of potential recipients before having the opportunity to share stickers with them. Results indicated that sharing was higher when the recipient was needy and increased more when the recipient had a reputation for sharing. Children shared over half of their stickers with a needy, sharing recipient, and less than half with a not needy, not sharing recipient. Children shared equally with recipients who were needy and not sharing or not needy and sharing, suggesting no preference for either characteristic. To explore the emotional benefits of sharing, children rated their own and the recipient's mood before and after sharing, showing a greater increase in ratings of the recipient's mood when

more resources were shared. These findings suggest that children consider multiple recipient characteristics in their sharing decisions, demonstrating altruism toward those in need and indirectly reciprocating past sharing based on reputation.
https://www.nature.com/articles/s41598-025-91648-y

PeerJ

PAPERS

MEGAN MALHERBE et al – The large mammal fossil fauna of the Cradle of Humankind, South Africa: a review
South Africa's Cradle of Humankind UNESCO World Heritage Site has remained the single richest source of hominin fossils for over ninety years. While its hominin specimens have been the subject of extensive research, the same is not true for its abundant faunal assemblages, despite their value in Plio-Pleistocene palaeoenvironmental reconstructions. Moreover, precise ages and depositional histories have been historically difficult to assess, though advancements in both relative and absolute dating techniques are changing this. This review explores the history of non-hominin large mammal faunal reporting, palaeoenvironmental reconstructions based on these fauna, and dating histories (with a focus on biochronology) at the following eight fossil-bearing sites of the Cradle that have been radiometrically dated with uranium-lead: Bolt's Farm, Cooper's Cave, Drimolen, Haasgat, Hoogland, Malapa, Sterkfontein and Swartkrans. Continued efforts to provide more precise and direct ages for sites using a variety of methods indicate that the bulk of Cradle deposits date to between 3 and 1.4 Ma. We find that, across almost all eight sites, there is little discussion or debate surrounding faunal reports, with some sites described by a single publication. Many of the reports are decades old with little review or reanalysis in the years following, emphasising the need for reviews such as this one. Our analysis of the data indicates that faunal-based paleoenvironmental reconstructions across sites commonly show a trend of wooded landscapes giving way to grasslands. We find that these reconstructions are primarily based on faunal abundance data, despite the availability of many other informative analytical techniques. The findings of this review highlight a need for more extensive and robust faunal reporting, as this will aid in understanding the context of these Cradle sites.
https://peerj.com/articles/18946/

Physics of Life Reviews

PAPERS

CLAUDIA MAZZUCA et al – Words as social tools (WAT): A reprise
The paper presents new evidence collected in the last five years supporting the Words As social Tools proposal on abstract concepts. We discuss findings revolving around three central tenets. First, we show that—like concrete concepts—also abstract concepts evoke sensorimotor experiences, even if to a lower extent, and that they are linked to inner experiences (e.g., interoceptive, proprioceptive, and metacognitive). Second, we present findings suggesting that linguistic and social interaction are crucial for acquiring and using abstract concepts. Specifically, rating and behavioral studies reveal that people tend to feel uncertain about the meaning of abstract concepts. On top of that, with abstract concepts, people rely more on others to ask for information, negotiate conceptual meaning, or outsource their knowledge. We propose that inner speech might contribute both to the monitoring process and the preparation to interact with others. Finally, we illustrate recent studies conducted in our lab highlighting abstract concepts variability across individuals (age, expertise), cultures, and languages.
https://www.sciencedirect.com/science/article/pii/S1571064524001805

COMMENTARIES

CEDRIC BOECKX – Language: A special cognitive gadget: Comment on "Language follows a distinct mode of extra-genomic evolution" by Balthasar Bickel, Anne-Lise Giraud, Klaus Zuberbühler, Carel P. van Schaik
Bickel, Giraud, Zuberbühler, and van Schaik have put forward a series of very important and illuminating claims concerning the nature of this "bio-cultural hybrid" called language, a trait that many view as intimately linked to our human condition. In the spirit of Szathmáry and Maynard Smith's major transitions in evolution, Bickel et al. make a compelling case for viewing language evolution ("the way languages change and diversify") as distinct from both biological evolution and cultural evolution. In doing so, they rightly call for a 'third way' approach, going beyond traditional dichotomies.
https://www.sciencedirect.com/science/article/pii/S1571064524001532

LINDELL BROMHAM – The genotype concept and language evolution: Comment on "Language follows a distinct mode of extra-genomic evolution" by Balthasar Bickel, Anne-Lise Giraud, Klaus Zuberbühler, Carel P. van Schaik
In their paper "Language follows a distinct mode of extra-genomic evolution", Bickel et al. explore similarities and differences between biological, linguistic and cultural evolution, and caution that we must take critical differences into account when applying methods developed in evolutionary biology to language change. In particular, they emphasize the lack of a genotype/phenotype distinction in language evolution which allows deliberate and biased change, through generation and/or adoption of variation in response to environment or need. Language clearly differs in these ways from biology, but what is less clear is the extent to which these differences impact on the application of evolutionary ideas, theories and methods to language data. The arguments put forward by Bickel et al. should therefore prompt an examination of the role of

the concept of the genotype/phenotype distinction in evolutionary theory and the implications for the analysis of language evolution. In evolutionary biology, genotype is used to describe the set of genetic variants carried by an individual, and the sampling of genetic variation to determine relationships, evaluate levels of population genetic variability, or trace population genetic change over time and space. While this practical concept has been applied to linguistics to refer to individual level samples of language variation ("linguatype"), Bickel et al. are concerned with the more conceptual meaning of genotype, which focusses less on documenting individual-level variation and more on understanding its mode of transmission.
https://www.sciencedirect.com/science/article/pii/S1571064524001520

PAUL VERDU – Building a Synthetic Theory of Linguistic Evolution? Comment on "Language follows a distinct mode of extra-genomic evolution" by B. Bickel et al.
In this dense review, Bickel et al. propose and discuss their detailed views of the variety of evolutionary mechanisms that possibly underly the biological emergence of human language and their linguistic diversification into the languages observed today throughout the world, and further parallel these evolutionary trajectories with those of cultural evolution instantiated in technological traits. The authors describe the congruencies and discrepancies they identified among the processes governing the dynamics of changes over time at play in the evolutionary history of all three objects of study; biological, linguistic, and cultural diversities.
https://www.sciencedirect.com/science/article/pii/S1571064524001684

SALIKOKO S. MUFWENE – Languages are Cultural Artifacts and Align with Cultural Evolution: Comment on "Language follows a distinct mode of extra-genomic evolution" by Balthasar Bickel, Anne-Lise Giraud, Klaus Zuberbühler, Carel P. van Schaik
As much as I like Balthasar Bickel et al's thought-provoking lead article, I cannot help voicing my disagreement about the three-way distinction they make between biology, language, and culture, as well as about a few details of their discussion. As I explained in Mufwene, language is one of the multiple domains of culture, which include religion, music, dance, cuisine, arts, sports, and large complex social structures, among many others. The authors seem to have a narrow conception of technology, by contrast with Arthur, according to whom technology it is whatever can be used as a tool to solve a problem or accomplish something else (including providing pleasure). The term applies not only to material cultures, on which Bickel et al. focus, but also non-material and hybrid ones, such as languages. Thus, all the above sample domains that play important roles in our lives are not only parts of human cultures but also technologies to achieve a purpose. For instance, cuisine is technology to make food (more) palatable, in addition to getting rid of toxins that some food items may contain in their raw state. Religion consists of beliefs about the universe in which we live, up to the point of prescribing rituals that putatively keep us in harmony with nature or how to restore the latter when it is broken.
https://www.sciencedirect.com/science/article/pii/S1571064524001714

FRANÇOIS OSIURAK & NICOLAS CLAIDIÈRE – Language is a unique form of communication that transformed human evolution but how unique is linguistic evolution?: Comment on "Language follows a distinct mode of extra-genomic evolution" by B. Bickel et al.
Bickel et al. seek to characterize linguistic evolution—the evolution of languages, rather than the evolution of the language faculty—by comparing it with biological and cultural evolution. To simplify their discussion, given the diversity in both biological and cultural evolution, they focus on the biological evolution of eukaryotes and the cultural evolution of technology. Bickel et al.'s reduction of biological and cultural evolution into prototypical cases can highlight some interesting properties of linguistic evolution, but the authors' over-simplification overlooks important connections between the different fields.
https://www.sciencedirect.com/science/article/pii/S157106452400174X

Original Paper: BALTHASAR BICKEL, ANNE-LISE GIRAUD, KLAUS ZUBERBÜHLER & CAREL P. VAN SCHAIK – Language follows a distinct mode of extra-genomic evolution
[See EAORC Bulletin 1,122.]
https://www.sciencedirect.com/science/article/pii/S1571064524000939

PLoS One

PAPERS

ANNA DEGIOANNI et al – Climate change in Europe between 90 and 50 kyr BP and Neanderthal territorial habitability
After having lived as the dominant human species in Europe for over 200 kyr, Homo neanderthalensis (the Neanderthals) disappeared around 40 kyr BP (Before Present) Higham T (2014). Competition with Homo sapiens, who arrived in Europe around the same time, is often invoked to explain this extinction. Others have argued that climate change may have reduced the living space of this population making its disappearance more rapid. In order to test the climate change hypothesis we modelled the Neanderthals' ecological niches in Europe between 90 and 50 kyr BP through paleoenvironmental reconstructions and Eco-Cultural Niche Modelling. We selected five environmental variables (orographic height, mean annual precipitation, mean temperature of the coldest month, carrying capacity and friction, see below) from climate model

simulations of 5 periods between 90 and 50 kyr BP in Europe. We used Structural Similarity (SSIM) index to compare the probability maps of suitable niches to Neanderthals performed by Maxent. After a strong initial environmental change between the first (P1 = 90 to 83 kyr BP) and second (P2 = 83 to 69 kyr BP) periods, our results show that large areas highly suitable for Neanderthal occupation persisted across Europe. As our results show an increase/stability of the areas suitable to Neanderthals, the question of the cause of the decrease or displacement of the Neanderthal population towards southern Europe after this climatic change remains open.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0308690

Trends in Cognitive Sciences

PAPERS

CHRISTINE NUSSBAUM, SASCHA FRÜHHOLZ & STEFAN R. SCHWEINBERGER – Understanding voice naturalness

The perceived naturalness of a voice is a prominent property emerging from vocal sounds, which affects our interaction with both human and artificial agents. Despite its importance, a systematic understanding of voice naturalness is elusive. This is due to (i) conceptual underspecification, (ii) heterogeneous operationalization, (iii) lack of exchange between research on human and synthetic voices, and (iv) insufficient anchoring in voice perception theory. This review reflects on current insights into voice naturalness by pooling evidence from a wider interdisciplinary literature. Against that backdrop, it offers a concise definition of naturalness and proposes a conceptual framework rooted in both empirical findings and theoretical models. Finally, it identifies gaps in current understanding of voice naturalness and sketches perspectives for empirical progress.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(25)00028-2

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