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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.

LECTURE ALERT – UCL Linguistics Seminar Series

Both seminars will take place in Room G15, Chandler House, and are free and open to all.
Wednesday 18 November, 4:00–5:30 pm
Ambre Salis (Imperial College London): The study of compositional syntax in Parids: a comparative perspective
This talk will review current research on the communication systems of tits and chickadees, with a particular focus on evidence for non-trivial compositionality in birds' calls and what comparative research across the Paridae family can tell us about the origins and meaning of these vocal sequences.
Wednesday 25 November, 3:00–4:30 pm
Jutta Mueller (University of Vienna): Talking Minds: Probing our Inner Speech from Multiple Perspectives
Drawing on behavioural and neurophysiological studies, this seminar will explore individual differences in inner speech and their implications for visual perception, semantic cognition, working memory, and intrinsic brain connectivity.

NEWS

CELLPRESS NEWS – fMRI imaging shows dogs can distinguish between human fear and sadness

Scientists have long known that dogs are remarkably good at interpreting our laughs, frowns, and tears, but the biology behind this ability has remained largely unexplored. In a study published in the Cell Press journal iScience on August 7, 2026 and covered in The Washington Post, People, The Guardian, and more, researchers peered inside the brains of dogs as they viewed images of various human expressions. The brain scans revealed that dogs process smiles in a unique brain region and, for the first time, provided evidence that dogs can distinguish between negative facial expressions, including anger, sadness, and fear.
https://www.cell.com/news-do/pr-dogs-distinguish-fear-sadness

NATURE BRIEFING – The portrait of a Denisovan

A low, sloping forehead, a massive brow ridge, rectangle-like eye sockets, flat cheeks, and a moderately elevated bridge of the nose were probably the hallmark features of Denisovans — a mysterious ancient-human species. Using fossilized skull fragments, teeth and jaws, researchers identified some visual features that would have set Denisovans apart from other early-human species, such as the flattened, elongated skull shape. A knowledge of these unique features could help researchers classify other fossils that couldn't previously be identified as Denisovan.
https://www.nature.com/articles/d41586-026-03360-0

SCIENCEADVISER – The sound of sadness

To your brain, a sad face sounds sad, too. At least, in recent experiments, when people looked at emotive faces, parts of their brains' voice-processing centers also activated. "The brain is doing more than adding two inputs together," explained one expert. "Emotion recognition, in other words, seems to depend on a multisensory network that integrates what we see and hear."
https://www.jneurosci.org/content/early/2026/10/08/JNEUROSCI.0366-26.2026

SCIENCEADVISER – That 'bird brain' can think twice as fast as you

Corvids, including crows and ravens, certainly give a whole new meaning to the term "bird brain." These quick-witted creatures have passed all sorts of cognitive tests with flying colors, from self-recognition to word discrimination. And now, they've not only matched non-human primates in a test of speedy smarts, they've bested them—and us.
To determine just how fast carrion crows think, researchers had the animals report on the movement of dots on a screen. The birds had to peck one target if the dots moved left or right, and another if they moved up or down. On average, the crows gave their answer in about 235 milliseconds. That's roughly twice as fast as rhesus macaques and humans performing similar tasks, and despite their snap decision-making, their choices remained accurate. Their brains are simply " in the fast lane," lead investigator Andreas Nieder told The Transmitter.
The key to their speed is structural, animal cognition researchers Michael Colombo and Oriane Poutrain-Sorel explained in a related Perspective. "Although small, the avian brain has a disproportionally large number of neurons," which are tightly packed together. "Higher neuronal densities result in shorter distances between neurons, which leads to faster conduction times and a higher speed of information processing."
https://www.science.org/doi/10.1126/science.aem0341

OTHER NEWS – REUTERS – Bones from Iraqi cave hint at violence and compassion in Neanderthals

"We see evidence of two contrasting facets of human nature — care and violence — juxtaposed in the same individual." The remains of a Neanderthal person showed healed facial injuries that probably would have required care from others — but eventually, they died after apparently being stabbed with a spear.
https://www.reuters.com/science/bones-iraqi-cave-hint-violence-compassion-neanderthals-2026-10-15/

PUBLICATIONS

Academia Neuroscience and Brain Research

PAPERS

RAFFAELE GRIMALDI – Socially embedded predictive construction: a model of emotional experience

The dominant view in affective neuroscience has long held that discrete emotional states are universal, biologically fixed, and implemented in dedicated neural circuits. This 'basic emotions' framework faces accumulating challenges from neuroimaging meta-analyses, cross-cultural research, and studies of individual variability, while an alternative account—the theory of constructed emotion—holds that emotional experiences are generated by integrating interoceptive predictions, prior conceptual knowledge, and cultural and linguistic context. This Perspective makes three contributions. First, it distinguishes the following three explananda that the debate routinely conflates: rapid, largely subcortically mediated emotional reactions and expressive behaviour; the conscious experience of feeling; and the linguistic categorisation of that experience. Much of the apparent inconsistency of the neuroimaging literature follows from treating these as one phenomenon. Second, it reports that the evidence is genuinely mixed: univariate analyses do not identify consistent and specific regional signatures for discrete emotional categories, whereas multivariate analyses frequently decode such categories from distributed activity, and cross-culturally recurrent facial behaviour has been reported at scale. A constructionist account is argued to accommodate the context-sensitivity, cultural variability and language-dependence of affective neural representation more economically than a dedicated-circuit account, without claiming that the basic-emotions programme has been refuted. Third, it proposes the Socially Embedded Predictive Construction (SEPC) model: a stratification of a single generative model into allostatic-interoceptive, conceptual-linguistic and socio-cultural levels that differ in represented content and temporal horizon rather than in kind. For each level the model specifies candidate substrates, measurable indicators, selective manipulations and falsification criteria, together with three study designs that would test it and the results that would falsify

it. Recognising emotion as constructed across stratified predictive levels supports a view of the brain as a socially embedded organ whose affective states are shaped by, though not exhausted by, language and culture.
https://www.academia.edu/3071-4087/2/4/10.20935/AcadNeurosci8594

American Journal of Primatology

PAPERS

ELISA DEMURU et al – A Ticklish Affair: Tickling Impacts Play Features in Bonobos

Heavy tickling has been reported only in humans and great apes. Because it requires complex socio-emotional/cognitive skills, it can be a model for investigating intersubjectivity origins. We examined how tickling influences the temporal, structural, and communicative organization of bonobo social play. We gathered video data from a bonobo group housed at La Vallée des Singes (France) over 3 months. By analysing 215 dyadic play sessions (27 dyads), we found that at the temporal level sessions containing tickling lasted longer than those without. Tickling reduced the total duration of pauses, although its effect on pause occurrence depended on object presence. A subset of 45 sessions (11 dyads) underwent detailed frame-by-frame analysis. Within this subset, tickling was associated with lower play asymmetry, reduced behavioral diversity, lower evenness, and less repetition, indicating more balanced, focused, yet non-repetitive interactions. Within the same subset, at the communicative level, tickling did not affect play-face reciprocity or rapid facial mimicry but was associated with reduced mutual gaze. Overall, tickling modified multiple features of bonobo play by sustaining engagement, shortening pauses, and promoting balanced behavioral participation. The selective reduction in mutual gaze, despite unchanged facial reciprocity and mimicry, suggests that coordination during tickling relies more strongly on tactile exchanges than sustained face-to-face visual orientation. By demonstrating how a specific tactile component of social play contributes to the maintenance, coordination, and sensory organization of playful interactions, these findings support tickling as a natural model for investigating the evolutionary foundations of intersubjective multimodal processes predating the human-Pan split.
https://onlinelibrary.wiley.com/doi/10.1002/ajp.70216

Biology Letters

PAPERS

DAAN W. LAMÉRIS et al with ERICA A. CARTMILL – Play vocalizations induce affective bias in reward learning and memory in orangutans

Affective biases, or shifts in learning and decision-making driven by affective states, are central to human cognition. Studies in rodents have shown that pharmacological and stress manipulations alter reward valuation, but how positive social signals shape these processes remains poorly understood. Here, we adapted the affective bias test, a translational rodent assay of affective biases in depression and antidepressant therapy, to ask whether positive social signals influence reward valuation in orangutans (Pongo spp.). We first validated the task by manipulating reward magnitude during learning and found that participants showed a significant preference for substrates previously associated with higher reward value, confirming sensitivity to reward valuation. We then tested whether play vocalizations influence reward valuation by presenting either conspecific play vocalizations or control sounds before learning reward–substrate associations, with identical reward values. In subsequent preference tests, orangutans showed a significant choice bias for substrates previously associated with play vocalization recordings. These findings demonstrate that orangutans experience positive affective states when hearing conspecific play vocalizations, as indicated by affective biases in reward valuation and memory.
https://royalsocietypublishing.org/rsbl/article/22/10/20260404/483688/Play-vocalizations-induce-affective-bias-in-reward

Constructions and Frames

PAPERS

MARTIN HILPERT – How do Construction Grammar and Dependency Grammar fit together?

This short paper reviews differences and points of convergence between Construction Grammar and Dependency Grammar, with the aim of fostering a dialogue between the two frameworks. Steps towards such a dialogue have already been taken with regard to Word Grammar, and dependency-based concepts such as the catena have been discussed against the background of constructional approaches. Furthermore, the compatibility of the two frameworks has been suggested in recent psycholinguistic work. To contextualize these issues, this paper discusses four points of divergence between Construction Grammar and Dependency Grammar, namely, the assumption of phrasal constructions vs. dependency structure, the place of meaning, the autonomy of the language system, and the treatment of idiosyncratic syntactic constraints.
https://www.jbe-platform.com/content/journals/10.1075/cf.26016.hil

Current Biology

PAPERS

ANDREJ BICANSKI – A vector navigation and inference architecture can construct universal cognitive maps for abstract reasoning

The idea of cognitive maps in the hippocampal formation has its origins in decades of spatial cognition research. However, increasing evidence points to cognitive maps also supporting non-spatial tasks. It appears that the hippocampal-entorhinal system can map any combination of systematically varying stimulus dimensions onto the same neural manifolds that support spatial representations—grid cells. Here, I propose a model that shows how extant spatial navigation architectures can iteratively construct universal cognitive maps via non-local inference. The model exhibits noise tolerance congruent with behavior, and the mapping process accommodates discontinuous stimulus spaces. It is also shown that the model can support several types of abstract reasoning, including analogy-making, subspace construction, and perspective taking. Importantly, these capabilities are supported by the same computational modules that are used to build a map. Neural-level implementations for several model components are proposed, and it is shown how the (abstract) 1D attributes that are to be combined on a map can be isolated upstream of entorhinal cortex. The combination of mechanisms at play thus suggests how spatial navigation architectures can function as domain-general substrates of cognition.
https://www.cell.com/current-biology/fulltext/S0960-9822(26)01115-2

GOTTFRIED HOHMANN et al – Females shape hunting of vertebrates in wild bonobos

Hunting and meat consumption are widely considered key drivers of human evolution, and hypotheses about their origins draw on comparisons with our closest living relatives, chimpanzees and bonobos. These comparisons typically set up a behavioral dichotomy in which chimpanzees are characterized by cooperative hunting of arboreal primates by male-dominated parties, whereas bonobo hunts are thought to involve the opportunistic targeting of terrestrial ungulates, primarily by individual females. Observations from two habituated bonobo communities at LuiKotale covering 10 years challenge this dichotomy. LuiKotale bonobos hunted both terrestrial ungulates (42%) and arboreal primates (43% of vertebrate prey), with red colobus monkeys comprising the majority of primate prey (77%). Males and females hunted arboreal primates at similar rates, and females accounted for most non-primate captures. Female age affected the hunting frequency of primates and ungulates, with the former being biased to younger and the latter to older females. The prominent role of female bonobos in hunting supports predictions that relate hunting activity to intersexual dominance relations rather than risk aversion, with the dominant sex being more active. Comparing data from neighboring communities revealed differences and suggests that social and environmental parameters affect prey choice by each community in different ways. Together, these findings challenge the assumption that chimpanzee-like, male-biased hunting represents the ancestral condition. They highlight the contribution of females to obtaining vertebrate prey, call for a reassessment of the role of females in hunting and meat sharing, and by extension, the framing of models of early hominin subsistence and social organization.
https://www.cell.com/current-biology/fulltext/S0960-9822(26)01325-4

eLife

PAPERS

XUAN WEN et al – Inhibitory Control, Shifting, and Working Memory Updating Domains form Cognitive Phenotypes in Non-human Primates

Executive functions comprise at least four major subdomains: Inhibitory Control, Updating, Shifting, and Working Memory. Cognitive abilities in these subdomains are partially separable and partially unified in a common cognitive control factor in humans, but how these functions are organized in the nonhuman primate (NHP) is largely unknown. Here, we used a multi-task assessment approach and found that NHPs show within single sessions reliable cognitive markers of Inhibitory Control in an antisaccade task, (ii) Updating abilities in a multidimensional continuous updating task, (iii) Working Memory in a delayed matching task, and (iv) Shifting abilities in a feature-based rule learning task. First, we found that subjects' performance fell into three separable cognitive phenotypes with unique strengths and weaknesses across cognitive subdomains. Second, beyond individual tasks cognitive metrics gave rise to four latent cognitive factors separating abilities for shifting/learning and working memory updating, and distinguishing abilities in inhibitory control of exogeneous versus endogenous interference. These results document four separable latent cognitive factors underlying executive control performance in this NHP sample, with inter-subject differences of these factors forming cognitive phenotypes.
https://elifesciences.org/reviewed-preprints/112500

HAYA AKKAD et al – Theta phase and theta-gamma coupling organise the spoken language network

Speech production requires rapid coordination of conceptual and lexical processes across distributed cortical networks, yet the neurophysiological mechanisms enabling this coordination remain poorly understood. Oscillatory coupling has emerged as a candidate mechanism for coordinating neural activity across spatial scales. Here, we used whole-head magnetoencephalography during overt picture naming to test how phase and phase-amplitude coupling organise neural dynamics preceding articulation. We show that theta (4-8 Hz) phase coupling increases within two functionally distinct

networks: a ventral occipito-temporal network supporting object recognition and a medial fronto-temporal network supporting semantic-lexical retrieval. These networks converged in the right fusiform gyrus beyond chance levels, identifying a candidate integration hub. In parallel, whole-brain analysis of theta-gamma (4-8 Hz, 40-100 Hz) phase-amplitude coupling revealed selective increases in the left inferior frontal and fusiform gyri during picture naming relative to control. Mixed-effects modelling further showed that coupling in the left fusiform correlates with trial-level response times during naming but not control trials. Together, these findings reveal the oscillatory mechanisms that implement known functional specialisation in the spoken language network; theta phase coupling coordinates distributed recognition and retrieval streams, while theta–gamma coupling modulates local computations within core word production nodes. By defining an oscillatory framework for real-time speech production, this work advances mechanistic understanding of the spoken language network and identifies frequency- and region-specific targets for neuromodulation of language production disorders.
https://elifesciences.org/reviewed-preprints/111845

Evolutionary Anthropology

PAPERS

KYLE C.M. SMITH – Why Anthropologists Should Study Dogs
While primates have traditionally been a focus of evolutionary anthropologists, the domestic dog represents a valuable complementary model due to its long shared evolutionary history with humans. The advantages of studying dogs are particularly evident in four key areas: (1) analyzing evolutionary adaptations, (2) understanding humanity's past, (3) examining humanity's cultural diversity, and (4) assessing factors that influence human health. Dogs have convergently evolved social cognition and local adaptations (including altitude adaptations and the ability to digest starches and lactose) that parallel those of humans, making them valuable models for testing evolutionary hypotheses. The global spread of dogs also illuminates human population histories, and isotopic analyses of dog remains can be proxies for human dietary data when sampling human remains is infeasible or inappropriate. Dogs' near-universal presence across human societies and exposure to the same real-world environments further make them uniquely powerful models for studying cultural variation and health.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.70050

REVIEWS

CHRISTOPHER LYNN - Losing Sleep, Becoming Human
Review of 'The Sleepless Ape: The Story of Sleep in Human Evolution' by David R. Samson, Princeton University Press (2026).
https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.70052

Gesture

PAPERS

FEDERICA AMICI & KATJA LIEBAL – Mapping variation in orangutan gestural communication using multilayer social networks
Gestures are a fundamental component of primate communication. Here, we used social network analyses to assess how similarities in socio-demographic and contextual profiles (proximity, kinship, age similarity, sex combination, contextual similarity) related to patterns of gestural communication (repertoire similarity, gestural frequency and responsiveness), at the individual, dyadic and group levels. We recorded gestures in two captive groups of Sumatran orangutans (Pongo abelii) (N = 16). Principal component analyses revealed two main dimensions explaining variance in gestural profiles, reflecting spatial proximity, contextual similarity and partially kinship and sex combination. At the dyadic level, spatial proximity predicted higher gestural frequency, whereas communities were mainly described by kinship, age and contextual similarity. These findings suggest that while spatial proximity and contextual similarity consistently shaped gestural communication at the individual level, demographic variables became more influential at the community level, where gestural communities may rather reflect enduring demographic and contextual characteristics.
https://www.jbe-platform.com/content/journals/10.1075/gest.25032.ami

iScience

PAPERS

NICOLA BINETTI et al – Perceptual lengthening of visual time throughout learning of hand-reaching actions
Timing is intimately woven into human cognition and behavior, yet the dynamic interplay between timing and action remains poorly understood, particularly during goal-directed action learning. Using combined behavioral, electroencephalographic, and modeling approaches, we investigated how perceptual time changes as participants gained experience in a goal-directed reaching task requiring different degrees of action planning. Participants judged brief visual durations while preparing hand movements toward visual targets. Subjective time expanded during action preparation, which gradually increased across trials mirroring gradual improvements in action readiness. Representational similarity analysis revealed dissociable neural responses linking action and timing: action planning influenced time encoding during timed stimulus presentation, whereas

broader motor engagement shaped subsequent time decoding following stimulus presentation. These findings extend previous accounts of action-dependent changes in perceived time, showing that the interaction is dynamic, evolving with changes in action readiness, and is mediated by dissociable neural responses during time encoding and decoding stages.
https://www.cell.com/iscience/fulltext/S2589-0042(26)03376-6

MAIA AUSTIN & LAURA J. MAY-COLLADO – Communicative diversity scales with social network structure in bottlenose dolphins
Social relationships can shape the demands placed on animal communication, but different dimensions of social organization may affect signal repertoires in different ways. We investigated whether variation in social network structure covaried with whistle repertoire organization in wild common bottlenose dolphins (Tursiops truncatus). We combined photo-identification and concurrent acoustic recordings across two field seasons, quantified group social topology and bond-strength structure, and characterized whistle repertoires using Hill diversity and continuous acoustic-distance metrics. Elastic-net models showed that groups with higher clustering coefficients had lower repertoire diversity, whereas mean and variable bond strength were associated with acoustic-distance structure. These relationships persisted after accounting for predominant behavioral state and group size. Our findings indicate that social cohesion and relationship heterogeneity correspond to distinct dimensions of communicative organization, supporting a multidimensional view of social and vocal complexity in fission-fusion societies.
https://www.cell.com/iscience/fulltext/S2589-0042(26)03337-7

Journal of Neuroscience

PAPERS

STEFANIA MATTIONI et al – Representation of emotional expressions across the face and voice brain networks
Recognizing emotions from faces and voices is fundamental to successful social interaction, yet how the brain represents emotional information across sensory systems remains unclear. Here, we systematically mapped the contribution of individually-defined face- and voice-selective cortical regions in 24 human participants of either sex to unimodal and crossmodal emotion expressions. Using multivariate pattern classification, we show that emotional expressions are robustly decodable from the dominant sensory modality across all individually defined face- and voice-selective areas, and that these representations cannot be accounted for by low- and mid-level stimulus properties alone. Strikingly, emotional information from the non-dominant modality—vocal expressions within face networks and facial expressions within voice networks—was also represented throughout the network, with the exception of the occipital face areas. Crossmodal decoding further revealed a shared neural code for facial and vocal emotions in the temporal voice areas, posterior superior temporal sulcus, and precentral gyrus, indicating that these regions contain emotion representations that generalize across sensory modalities. Furthermore, in most face- and voice-selective regions, audiovisual emotional expressions could be distinguished from representations elicited by the dominant unimodal modality, indicating that bimodal signals are not simply represented as their strongest sensory component. Together, these findings reveal that emotion representations are distributed broadly across face- and voice-selective regions and identify temporo-frontal regions as key sites supporting modality-independent emotion representations.
https://www.jneurosci.org/content/early/2026/10/08/JNEUROSCI.0366-26.2026

Journal of the Royal Society Interface

PAPERS

LITONG FAN et al – The complementary roles of conformity and Q-learning in the prisoner's dilemma with punishment
Punishment has been demonstrated to be an effective mechanism for promoting cooperation, both theoretically and experimentally. However, most previous studies have focused on a single update rule, which fails to reflect the diversity of real societies arising from cognitive heterogeneity. Therefore, this paper investigates the evolutionary dynamics of the prisoner's dilemma with punishment by incorporating Q-learning and conformity update rules. These two rules capture two typical types of individuals commonly observed in real societies: profit-seeking explorers and conservative conformists. We show that an appropriate mixture of the two update rules promotes cooperation through complementary roles: conformity forms clusters to protect cooperation, while Q-learning drives cooperators' expansion with the help of punishment. This complementarity weakens when conformists dominate. Moreover, we demonstrate that our results are robust across different network structures and punishment parameters. Our findings demonstrate that an appropriate mixture of Q-learning and conformity update rules maximizes the effectiveness of punishment in promoting cooperation.
https://royalsocietypublishing.org/rsif/article/23/243/20260124/483814/The-complementary-roles-of-conformity-and-Q

Kinguistics

ARTICLES

ERIC SYCAMORE – The History of Handwriting
Handwriting – whilst still commonplace – is slowly disappearing from our modern lives, with typing becoming an ever-larger part. Whether it be on a physical keyboard, a touchscreen, or through voice dictation, technology slowly shifts us from even needing to handwrite. And this – in my incredibly biased opinion as a hobbyist calligrapher – isn't a good thing.
https://kinguistics.uk/2026-2027/the-history-of-handwriting/

MIT Press Direct

PAPERS

NATALIA MOROZOVA et al – Children Learn to Signal Shifts in Joint Tasks Earlier Than Continuations
Coordinating joint actions requires participants to maintain moment-to-moment alignment as they progress through multiple tasks towards a shared goal. This creates the coordination problem of negotiating whether participants intend to continue to the next step in a task (i.e., make a horizontal transition) or shift to the next task (i.e., make a vertical transition). Language plays a central role in resolving this problem by enabling participants to distinguish horizontal and vertical transitions with specialised coordination markers (words like yeah, uh-huh, okay). Coordination markers constitute an important component of procedural coordination in adults; however, little is known about how children acquire the ability to use them. Here, we addressed this gap by investigating (1) how 4–8 year-old children speaking Swiss French and Vietnamese deploy coordination markers in peer interactions and (2) how the acquisition of these markers relates to the development of perspective-taking skills. In an experiment, we tested how N = 266 children and N = 158 adults from Switzerland and Vietnam navigated the joint task of LEGO model construction in visible (no barrier) and hidden (separated with a barrier) conditions. Our findings show that children acquire the ability to signal vertical transitions and the linguistic markers associated with them earlier than horizontal transitions. From early to middle childhood, there is a notable increase in both the frequency and diversity of coordination markers produced by children; however, their productivity remains limited compared to adults. Besides age, the acquisition of coordination markers is linked to the development of perspective-taking abilities, which enable children to flexibly adapt their use of coordination markers in response to changes in mutual visibility. Our study highlights how emerging socio-cognitive capacities support the acquisition of coordinating conventions across two typologically diverse languages.
https://direct.mit.edu/opmi/article/doi/10.1162/OPMI.a.401/139562/Children-Learn-to-Signal-Shifts-in-Joint-Tasks

Nature

ARTICLES

ANIL K. SETH, NED BLOCK & GIULIO TONONI – Three reasons why AI is not conscious and perhaps never will be
Large language models can mimic thought and feeling with uncanny skill. But evidence from neuroscience suggests that intelligence alone is not enough for subjective experience.
https://www.nature.com/articles/d41586-026-03313-7

RACHEL FIELDHOUSE – This is what the mysterious Denisovans looked like
Archaeologists identified skull fragments from China as belonging to this group of ancient human relatives.
https://www.nature.com/articles/d41586-026-03360-0

PAPERS

SONG XING et al – The proteome of Middle Pleistocene Xujiayao and common Denisovan morphology
The taxonomy and phylogeny of late Middle Pleistocene hominins in East Asia remain highly debated1. Xujiayao, a key representative assemblage with many fossils and a clear stratigraphy dating to around 199–138 thousand years ago, has been extensively studied, but its evolutionary position remains uncertain. Here, to clarify this, we analysed Xujiayao material through both palaeoproteomic analysis and morphological comparisons with other East Asian late Middle Pleistocene archaic Homo. Proteomic analysis of two specimens identified 18 endogenous proteins, and the Denisova-specific COL1A2-996 R>K mutation strongly supported their affiliation with the Denisovan lineage. Extended analysis identifies a set of shared morphological traits between Denisovan fossils (Xujiayao and Harbin) and other East Asian late Middle Pleistocene archaic Homo (such as Jinniushan, Dali and Hualongdong), indicating that they all belong to the Denisovan lineage. This analysis provides a comprehensive view of Denisovan features, showing both traits reminiscent of Homo erectus (such as a thick cranial vault) and those characteristic of modern humans (for example, a strongly arched temporal squama). They also share features with late Neanderthals, such as the structure of the temporal labyrinth and the presence of a suprainiac fossa. Notably, Denisovans are distinctive, with a low cranial profile with near-parallel lateral walls, a massive supraorbital torus, a flat zygomaxillary region and weak prognathism.
https://www.nature.com/articles/s41586-026-11132-z

Nature Communications

PAPERS

LIANG ZHOU et al with MICHAEL D. PETRAGLIA – Arabian hydroclimate and hominin population dynamics over the last 500,000 years

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Despite the discovery of a rich Palaeolithic archaeological record in Arabia over the last decade, the environmental context of hominin occupations and dispersals remains poorly understood owing to the paucity of Pleistocene palaeoenvironmental records. Here we show a multi-proxy, high-resolution dust record from the western equatorial Indian Ocean spanning the last 500,000 years, which enables evaluation of the influence of orbital-scale hydrological variations on hominin populations in Arabia. The dust evidence reinforces the view that hominin presence in Arabia was driven by enhanced monsoon precipitation during so-called Green Arabia periods. These results, coupled with hunter-gatherer demographic data, point to marked hominin population expansions during prolonged wetter periods. Hominin occupation, however, was not linked exclusively to traditional humid periods. Brief phases of high-intensity rainfall within some glacial periods, manifested by transient high dust contents associated with enhanced terrestrial moisture availability and increased supply of wind-erodible particles, also favoured hominin expansions.

https://www.nature.com/articles/s41467-026-78983-y

Nature Communications Biology

PAPERS

HIDEKI AMANO et al – Anatomical differences in the brain organization between Australopithecus and early Homo based on computational neuroanatomy

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Encephalization is a hallmark of human evolution, but how regional brain morphology changed during early hominin evolution remains unclear. Here, we show regional brain morphological differences between sampled Australopithecus and early Homo specimens. Using computed tomography and endocranial casts, we generated brain models for Australopithecus africanus, Homo habilis, and Homo ergaster using an anatomically homogeneous cross-species interpolation technique. Our reconstructions suggest that the posterior cerebellum was enlarged in early Homo compared with the sampled A. africanus specimens. In contrast, relative frontal lobe volume remains largely unchanged among the sampled fossils. We also identify enlargement of temporoparietal regions that, in modern humans, are associated with functions including social communication and tool use. By integrating fossil endocranial morphology with comparative neuroanatomical information from extant primates, the present approach provides a quantitative framework for generating and testing hypotheses about regional brain evolution in extinct hominins.

https://www.nature.com/articles/s42003-026-11212-w

Nature Computational Science

ARTICLES

ELIAS FERNÁNDEZ DOMINGOS – Dynamic networks can promote pro-sociality

Structure coefficients provide a unified way to identify dynamic network structures that promote cooperation, altruism, fairness and trust.

https://www.nature.com/articles/s43588-026-01069-8

Nature Neuroscience

PAPERS

JUN NI et al – An amygdala-mediated simulation-to-decision cascade aligns interbrain dynamics to solve social dilemmas

Mutual cooperation (MC) requires independent decision-makers to coordinate under uncertainty about each other's intentions. Using simultaneous intracranial electroencephalography from epilepsy–patient dyads playing a real-time iterated prisoner's dilemma, we identified neurocognitive mechanisms that enable interacting brains to align during mutual cooperation. Amygdala interbrain representational alignment (IBRA), similarity in fine-grained neural spectral patterns across partners, emerged selectively during MC and predicted trial-by-trial outcomes. Early θ-suppression-characterized IBRA reflected rapid, history-sensitive alignment, whereas later IBRA, characterized by low-frequency suppression and γ increases, supported coordinated commitment and action. Furthermore, mutual cooperation relied on an amygdala-mediated, simulation-to-decision cascade, operationalized here as a model-based prospective estimate of partner cooperation that guided self-choice. Amygdala low-frequency suppression tracked this prospective estimate of partner cooperation and θ–γ coupling linked this partner estimate to self-decision processes. Conditional cooperators strategically relied on partner

tracking, whereas unconditional cooperators leveraged dispositional tolerance of uncertainty to transition into anticipatory neural alignment. These findings reveal the neural interdependency underpinning MC, redefining cooperation not as isolated decision-making but as a dynamic, interbrain, cognitive alignment.
https://www.nature.com/articles/s41593-026-02473-z

Nature Scientific Reports

PAPERS

HENDRIK POTT et al – Robotic-assisted knee arthroplasty methods provide insight into Homo neanderthalensis gait and the evolutionary origins of modern human knee variation

Lower-limb alignment is central to human bipedal locomotion and a key determinant of joint kinematics and osteoarthritis risk in modern clinical practice. However, its significance in hominins, and therefore its evolutionary implications, remain poorly understood. Advances in robotic-assisted total knee arthroplasty (TKA) provide highly precise measurements of lower-limb alignment, joint morphology and soft-tissue balance that can elucidate these understudied aspects of hominin functional morphology. Here, we perform a proof-of-concept robotic-assisted TKA on an anatomically accurate model of the Spy II Neandertal. Using a robotic-assistance system, we registered bony morphology and replicated soft-tissue laxity extrapolated from a modern patient with a comparable alignment phenotype. We confirmed a pronounced constitutional varus alignment, classifying Spy II as a CPAK type I knee. This phenotype resembles that of modern athletes engaged in significant weight-bearing sports or intense physical activity during growth. The demonstration of constitutional varus in a hominin fossil thus suggests a deep evolutionary origin for this alignment pattern in modern humans, contextualizing normal knee variation and supporting an individualized alignment approach to modern TKA.
https://www.nature.com/articles/s41598-026-77544-z

AIDEN FORD et al – Matrilineal social rank is associated with patterns of attention to social scenes in male infant rhesus macaques

Visual attention to others in our immediate environments serves as an adaptive mechanism for early learning across primate species. This study leverages longitudinal eye-tracking data from male infant rhesus macaques collected at up to 14 timepoints from birth to six months to chart visual attention patterns to social videos of unknown conspecifics or mother-infant dyads in a group setting. The distribution of oculomotor movements that index the extent of infant attention to the video stimuli – fixations, saccades, and inattention, i.e., data lost to offscreen looks or movement – stayed constant during this developmental period. Attention to different body areas – mouth, head and body - showed subtle and progressive changes from birth to six months, except for attention to the eyes of conspecifics, which showed two distinct periods of significant increase. The matrilineal social rank of the infant was also investigated as a social factor related to patterns of attention. Rank was significantly associated with the percent of time infants spent making saccades, such that low-ranking infants spent more viewing time making saccades than their high-ranking peers. This association was established by five weeks of age. Collectively, these results provide insight into processes of social attention related to social status in rhesus macaques during infancy.
https://www.nature.com/articles/s41598-026-61421-w

New Scientist

ARTICLES

BENJAMIN TAUB – Archaeologists are uncovering the meaning of a unique rock art site

Excavations in the Côa valley in Portugal, the world's largest site of Palaeolithic open-air rock art, are yielding clues about how engravings of animals were seen by prehistoric hunter-gatherers.
https://www.newscientist.com/article/2593633-archaeologists-are-uncovering-the-meaning-of-a-unique-rock-art-site/

JAMES WOODFORD – Neanderthal skeleton found with horrific injuries

A 75,000-year-old skeleton offers a glimpse into the violent world in which Neanderthals lived, but also offers hints that they cared for one another.
https://www.newscientist.com/article/2593548-neanderthal-skeleton-found-with-horrific-injuries/

Open Access Government

ARTICLES

MAGNUS S MAGNUSSON – Artificial social pattern intelligence: When the society, not the brain, is the thinking object

What artificial intelligence would look like if it were modelled not on networks of neurons but on networks of brains – the human T-societies that may be the most complex thinking objects in the known Universe.

We are used to hearing that the human brain is the most complex object in the known Universe. But a modern mass society is a network of millions of such brains, continuously interacting, and is arguably an object of vastly greater complexity. Both are thinking objects. They differ by an organisational level – and so far, only one of them has been used as a model for artificial intelligence.

https://www.openaccessgovernment.org/article/artificial-social-pattern-intelligence-when-the-society-not-the-brain-is-the-thinking-object/214719/

PLoS Biology

PAPERS

DANIELA VALÉRIO et al with STANISLAS DEHAENE – A cortical semantic map integrates fractions and integers in the human brain

How does the human brain represent the meaning of abstract symbols? Some theories postulate the existence of semantic spaces where concepts occupy positions that reflect their conceptual relationships. In the number domain, psychological evidence suggests that integers are represented along a mental number line which, with education, integrates higher-level number concepts such as fractions. To test this hypothesis, we recorded whole-brain 7T fMRI responses to integer and fraction symbols during an active magnitude comparison task designed to engage magnitude processing. Consistent with predictions, we found both behavioral and neural numerical distance effects. Activation vectors in intraparietal, inferior temporal, prefrontal, hippocampal, and parahippocampal cortices formed a two-dimensional semantic space organized by numerical magnitude and domain (fractions versus integers). Gaussian fits revealed a topographic map of numerical preferences in the anterior inferior parietal cortex, common to both domains. Our results suggest that, when educated adults engage in an explicit magnitude comparison task, their brain can construct an ordered representation that integrates fractions and integers, with a topographic organization in the anterior IPS/IPL.
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3003820

PLoS One

PAPERS

CONNOR PROUDFOOT et al – The complex, graded vocal repertoire of the social Rüppell's vulture

The evolutionary origins of complex communication remain contentious, with social, ecological, and environmental factors proposed as selective drivers. The Social Complexity Hypothesis for Communicative Complexity (SCHCC) predicts that the cognitive demands of navigating socially intricate groups favour the evolution of complex communication. Although several studies provide support for the SCHCC, its empirical basis remains limited and inconsistent, as evidence is drawn predominantly from a small number of well-studied taxa (primarily primates), often neglects species' complete vocal repertoires, and employs inconsistent approaches for assessing social and vocal complexity. This narrow focus limits its generalisability across animals, underscoring the need to characterise the full communicative complexity of additional model species to expand its evolutionary relevance. Vultures, with their varied social structures, provide a unique system to test this hypothesis, yet foundational work on communication in this guild is limited. Here, we present the first quantitative analysis of the vocal repertoire of the critically endangered, highly social Rüppell's vulture, based on 2,500 calls recorded from two captive populations (35 individuals) across diverse social contexts. Using a fuzzy clustering approach, we reveal a repertoire far more complex than previously assumed, comprising multiple discrete and graded call types, with gradations likely conveying additional information. Calls serve diverse functions, including mediating parent-offspring interactions, manipulating conspecifics, and resolving conflicts. The Rüppell's vulture repertoire exceeds the average call repertoire size observed across birds and is likely an adaptation to this species' social life. Our results further establish vultures as a promising model for studying the vocal evolution and provide a framework for comparative analyses that can illuminate the selective pressures shaping complex communication.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0360246

PNAS

ARTICLES

MICHAEL S.A. GRAZIANO – Understanding consciousness (biological and artificial) as a society of self-schemas

This article argues that human cognition is more than the performance of functions such as memory, decision-making, and attention. The brain also builds schematic models of those cognitive functions and uses those models to monitor, predict, and partially control them. When you introspect, your understanding of who you are and what is happening inside of you is derived from those schematic, sometimes inaccurate, but generally useful models, rather than from the actual cognitive functions that are represented by those models. The proposal expands the previously proposed attention schema theory to a more general schema theory, in which the mind as we know it introspectively is a society of interacting self-schemas. The article focuses on five self-schemas including the attention schema (which is proposed to give us our intuitions about a conscious mind that takes possession of items in a vivid manner), a decision schema (which generates simplified, sometimes confabulated accounts of the decision-making process and gives us our intuitive understanding of agency and will), emotion schemas (which create complex interpretations of the physiological state of the body and provide us with our understanding of emotional experience), the body schema (which provides our understanding of who we are as physical beings), and personas (which give us our understanding of our emotional, social, and moral character, and act as a framework to guide our behavior). The article includes a discussion of how consciousness in a machine requires a similar suite of self-schemas used for similar functional purposes and may already be partially present.

https://www.pnas.org/doi/abs/10.1073/pnas.2628598123

GAYATRI MISHRA – Ecology is not yet ready for AI—and why that matters
Artificial intelligence (AI) is rapidly becoming integral to ecological research. Deep learning models can, for example, identify species from camera trap images, including large mammals such as deer, elephants, and carnivores, and often achieve accuracies exceeding 90% while dramatically reducing the time required for manual annotation. Neural networks can sift satellite imagery to detect forest cover change and classify vegetation types across large spatial scales, enabling biodiversity monitoring at resolutions and speeds that were previously unattainable.
https://www.pnas.org/doi/10.1073/pnas.2533976123

COMMENTARIES

GEORGE ROFF – Ecology must shape AI before AI reshapes ecology
Mishra argues that ecology is not yet ready for AI. The concern is well placed: Ecological inference is context-dependent, datasets are sparse and biased, and models that perform well statistically can fail biologically. Yet the assessment is incomplete. The question is not only whether ecologists are ready for AI, but whether ecology can afford to remain outside its development. Recent reviews describe AI as transforming ecological monitoring, prediction, classification, and management, while also identifying familiar barriers: data quality, interpretability, computational demand, and ecological generalization.
https://www.pnas.org/doi/full/10.1073/pnas.2619925123

GAYATRI MISHRA – Reply to Roff: Ecological readiness must evolve with AI
I thank Roff for extending the discussion on AI in ecology and agree that ecologists should actively shape how AI develops and is used. The growing use of AI in automated monitoring, remote sensing, species identification, and other data-intensive applications demonstrates its value across parts of ecology. My argument that ecology is “not yet ready” for AI, however, was not a call to delay its use or remain outside its development. Rather, it questioned whether the scientific and institutional practices surrounding rapidly expanding AI applications are developing quickly enough to ensure that computationally convincing outputs remain ecologically meaningful.
https://www.pnas.org/doi/full/10.1073/pnas.2627861123

Proceedings of the Royal Society B

PAPERS

ZAHRA HAGHIGHI et al with FRANCESCO D'ERRICO & CHRISTOPHER HENSHILWOOD – Palaeoproteomic investigation of archaeological sediments associated with ochre use in the Middle Stone Age of southern Africa
The African Middle Stone Age (MSA) represents the cultural and technological context associated with the emergence of Homo sapiens and the development of complex cognition. In this setting, ochre use is considered a multifaceted proxy for modern behaviour, allowing inferences about technical and symbolic aspects of Homo sapiens. Powdered ochre is reported in multiple southern African ethnographic and archaeological contexts alongside various organic materials, some of which are protein-based. Yet, the recovery of proteinaceous residues is rare in the MSA. Since proteins can offer insights into their tissue and species of origin, identifying proteins in association with ochre may help to infer its function. At Klipdrift Shelter (South Africa), the 60 000-year-old Howiesons Poort layers contain a laterally continuous, ochre-rich sediment surface, possibly over 1 m long, 40 cm wide, and up to 1 cm thick. We used palaeoproteomics to identify proteinaceous traces from this feature. Our analysis identified type I collagen confidently matching common eland (Taurotragus oryx) in two samples. Together with the feature's highly complex nature, these findings suggest the deliberate mixing of eland-derived proteins with ochre powder. Our results confirm that palaeoproteomics can be a reliable tool for reconstructing the protein component of the early human material culture.
https://royalsocietypublishing.org/rspb/article/293/2081/20253300/483782/Palaeoproteomic-investigation-of-archaeological

LUCAS MOLLEMAN et al – Contagion and escalation of rule violations Open Access
Human societies rely on rules to coordinate behaviour, sustain cooperation and maintain social order. Yet compliance can be fragile when rules are weakly enforced and individuals observe others violating them. Prior research shows that rule violations and other antisocial behaviours can spread through social influence, but less is known about how the severity of violations shapes these dynamics. In many real-world settings, rule-breaking occurs in degrees, from minor infractions to major violations, and individuals may not only imitate others but sometimes exceed the violations they observe. Here, we combine simulations and a behavioural experiment (n = 750) to study how the magnitude of observed rule violations shapes subsequent violations, and how this can generate escalation dynamics. Our simulations show that when individuals occasionally escalate beyond observed violations, even rare escalation can trigger a rapid shift from widespread compliance to collective rule-breaking. In our pre-registered experiment, observing major violations strongly increased rule-breaking, especially when committed by socially close others. Observing minor violations prompted many participants to follow suit

and a minority to escalate beyond the violations they observed. Parameterizing the simulations with these behavioural responses shows that such escalators can disproportionately undermine collective compliance. These results highlight how asymmetric responses to rule violations and rare escalatory behaviour can transform small deviations into large-scale breakdowns of rule compliance.
https://royalsocietypublishing.org/rspb/article/293/2081/20261940/483769/Contagion-and-escalation-of-rule

Royal Society Open Science

PAPERS

ANGELLE ANTOUN et al – Can monkeys and apes use sequence order to resolve perceptual ambiguity? A lack of evidence in two rhesus macaques and one language trained bonobo

In human language, word order impacts how words are categorized and understood (as nouns, verbs etc.). We have demonstrated that this effect extends to non-linguistic stimuli, suggesting that the impact of sequence order on stimulus categorization is a domain-general, rather than language-specific cognitive process. Here, we ask if this process is evolutionarily conserved in other non-human primates. We developed a non-linguistic experiment and tested rhesus macaques (Macaca mulatta) and bonobos (Pan paniscus). Participants first learned to categorize shapes (as rounded, squared or pointed). We next assessed how they categorized ambiguous morph shapes by combining exemplars from each category. We provided sequential information by training the animals to select shapes in a specified order: rounded, then squared and then pointed. Finally, we assessed whether presentation in specific positions in this learned sequence would impact subsequent categorization of ambiguous morph shapes. In humans, an ambiguous morph was more likely to be categorized as the shape it replaced in a sequence. Non-human primates, however, showed no such effect, categorizing stimuli independent of their position in a sequence. This suggests that the tendency to infer category membership from sequence order is not shared across primates, and may have evolved more recently in the human lineage.
https://royalsocietypublishing.org/rsos/article/13/10/260293/483690/Can-monkeys-and-apes-use-sequence-order-to-resolve

KELLY R. MANNION et al – Variation in cultural attitude, knowledge and individual motivational factors impact engagement and tool use in a field experiment in wild chimpanzees

Cultural traditions shape how animals approach ecological problems. Over the last two decades, Ugandan chimpanzees (Pan troglodytes schweinfurthii) have engaged with the honey-trap experiment, an apparatus mimicking a beehive, while relying on their cultural knowledge. Here, we compared the behaviour of three Ugandan chimpanzee communities in the experiment, adding a previously untested community, the Mwera South chimpanzees of Bugoma Forest. First, we tested whether communities varied in their engagement with the experiment and investigated whether differences lay in individual or community-based characteristics. Second, we analysed individual variation within the same culture, particularly focusing on the new data coming from Bugoma Forest. We found that only the Kanyawara chimpanzees of Kibale Forest displayed a dedicated instrumental method, stick use, realized in their cultural knowledge and expressed by most members of the community, congruent with the largest engagement with the resource and suggestive of a general positive cultural attitude towards honey. By contrast, the two other communities appeared to lack a cultural attitude towards honey, with no attached tool technique overall. Nevertheless, there were also large inter-individual differences. Notably, Bugoma chimpanzees displayed undescribed behavioural flexibility, using a range of tool behaviours, including both stick and leaf tool use, a pattern never documented before. Cultural attitudes toward resources thus constitute an additional layer to culture in addition to instrumental knowledge and coexist with individual motivational traits in influencing the realization of cultural behaviour.
https://royalsocietypublishing.org/rsos/article/13/10/261322/483692/Variation-in-cultural-attitude-knowledge-and

Science

NEWS

Exclusive: Archaeology megafirm abruptly shuts down

Chronicle Heritage was largest U.S. cultural resources management company.
https://www.science.org/content/article/exclusive-archaeology-megafirm-abruptly-shuts-down

ARTICLES

MICHAEL COLOMBO & ORIANE POUTRAIN-SOREL – The cognitive power of the avian brain: Carrion crows make decisions faster than monkeys and humans

Once regarded primarily as creatures of instinct and simple learning, birds are revealing cognitive abilities that rival and sometimes surpass those of primates. Even the pigeon, an animal not typically associated with high cognitive skills, can distinguish between images of cancerous and healthy cells, represent the concepts of same and different, perform numerical discriminations, and tell the difference between words and nonwords in ways that resemble aspects of human reading. Corvids (crows, ravens, scrub jays, and rooks) show even more impressive abilities, such as self-recognition, tool use, problem solving, episodic memory, theory of mind, and planning for future events, at levels that often exceed similar abilities in

primates. On page 445 in this issue, Schmidbauer and Nieder report that carrion crows can make ultrafast and accurate decisions. These findings add to the growing appreciation of the abilities of the avian mind.
https://www.science.org/doi/10.1126/science.aem0341

PAPERS

PHILIPP SCHMIDBAUER & ANDREAS NIEDER – Ultrarapid decision-making in an avian brain
Perceptual decision-making is well studied in mammals, but its operation in other vertebrates remains unclear. We show that carrion crows (Corvus corone) make deliberate decisions in a classic visual motion discrimination task with unprecedented speed, reporting choices in approximately 235 milliseconds on average, which is roughly twice as fast as has been observed in monkeys or humans and without sacrificing accuracy. Recordings from the pallial endbrain reveal that direction-selective neurons encode the upcoming choice as early as about 70 milliseconds after stimulus onset and about 170 milliseconds before the response, with ramping activity scaling with sensory evidence and converging at response onset. These findings highlight the extraordinary efficiency of avian decision-making circuitry, possibly shaped by evolutionary pressures for rapid visuomotor control.
https://www.science.org/doi/10.1126/science.aed6459

Science Advances

PAPERS

PATRICIA GERDES et al – Retroviral insertions contributed to the divergence of human and chimpanzee brains
Over the past 5 to 7 million years, humans and chimpanzees have diverged in brain size, structure, and cognition despite high conservation of protein-coding genes. However, retroviral infections within host genomes have introduced numerous species-specific regulatory elements. Chimpanzees harbor lineage-specific PTERV1 endogenous retroviruses that are absent in humans, but their role in brain evolution has remained unclear. We performed an epigenomic analysis of PTERV1 insertions in chimpanzee neural organoids and found they are heavily DNA methylated, forming over 150 species-specific heterochromatin domains with the potential to influence gene regulation. We identified a chimpanzee-specific insertion on chromosome 19 that silences the long noncoding RNA LINC00662 through DNA methylation spreading. CRISPR-mediated deletion of this PTERV1 restored LINC00662 expression in chimpanzee induced pluripotent stem cells. We show that LINC00662, a human-specific transcript expressed during brain development, plays a role in neuronal maturation, axon outgrowth, and neural organoid development. These findings reveal a mechanism by which endogenous retroviral insertions contributed to human-chimpanzee brain divergence.
https://www.science.org/doi/10.1126/sciadv.aeg5791

Trends in Cognitive Sciences

PAPERS

STELLA F. LOURENCO – Selection-for-prediction: rethinking early cognitive development
For decades, core knowledge accounts have proposed that early cognition is organized by innate, domain-specific conceptual or concept-like representations of objects, physical events, number, and agents. I propose a different starting point: infants' behaviors may arise from domain-general attentional priors—evolutionarily shaped selection biases—interacting with perceptual mechanisms that organize information and support perceptual prediction, rather than from abstract, postperceptual representations. Attentional priors favor ecologically consequential information, including continuity, contact, and synchrony. When such information is disrupted, perceptual prediction error—rather than conceptual contradiction—may produce violation-of-expectation effects. Grounded in constraints on visual input and neural processing, this framework accounts for early successes and systematic failures, suggesting that development begins with perceptual-attentional mechanisms that shape selection, organization, prediction, and learning.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(26)00233-0

COMMENTARIES

HIROKI FUJITA – Evidence supports constituency-based syntax, movement, and unpronounced elements
Original paper in EAORC Bulletin 1,192.
Gibson advocates dependency grammar, contrasting it with constituency-based accounts that posit movement and phonologically null (unpronounced) syntactic elements. Dependency grammar represents sentence structure through word-to-word relations, whereas constituency-based accounts represent sentence structure by grouping words into larger hierarchical constituents. Movement accounts for cases in which a constituent appears in one position but is interpreted in another. For example, in 'Who did you call?', 'Who' appears sentence-initially but is interpreted as the object of 'call'; this is analysed as movement from the object position to the sentence-initial position.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(26)00183-X

EDWARD GIBSON – Dependency grammar remains the simplest theory of grammar: a reply to Fujita

In the original article, I claimed that dependency grammar is the simplest theory of grammar. All theories of grammar have rules for connecting words together to make larger units. In dependency grammar, these connections are directly between words. In phrase structure grammars, there is slightly more structure than in dependency grammar, consisting of nonterminal categories for the connected elements, such as the noun phrase and the verb phrase. I argued that these two alternatives are somewhat interchangeable. In transformational grammars, there are additional rules such that phrases or words can 'move' elsewhere within the structure of the sentence, leaving behind traces of their original position. I argued that transformational rules add unnecessary complexity to a grammar and hence are unneeded.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(26)00232-9

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