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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.

ACADEMIA.EDU – Gender is critical to understanding how egalitarianism works

Behavioral & Brain Sciences 49, e440 (2026).

CAMILLA POWER et al with IAN WATTS & CHRIS KNIGHT – Gender is critical to understanding how egalitarianism works

The plural processes underlying egalitarianism should be gendered adequately, with women seen as drivers and innovators from an evolutionary perspective. We apply this across all six processes enumerated by Stibbard Hawkes & von Rueden and advocate ritual as a seventh core process, the engine of reverse dominance.
https://www.academia.edu/178216815/Gender_is_critical_to_understanding_how_egalitarianism_works

OAPEN – Against Unconscious Volition

JURAJ HVORECKÝ, TOMÁŠ MARVAN &MICHAL POLÁK (eds.): Conscious and Unconscious Mentality. Taylor & Francis (2024).

TIM BAYNE – Against Unconscious Volition

This chapter examines the question of whether mental categories come in both conscious and unconscious forms, focusing on the case of volition. Drawing out the implications of the fact that volition is a personal-level phenomenon, an argument against the possibility of unconscious volition is developed. Three objections to that argument are then considered: the first appeals to minimal actions and the exercise of expertise; the second appeals to Benjamin Libet's studies regarding the Readiness Potential; and the third appeals to relational conceptions of consciousness. All three arguments are found to be uncompelling. The chapter concludes by revisiting the question of whether mental categories can, in general, take both conscious and unconscious forms.

https://library.oapen.org/handle/20.500.12657/85150

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.

"Humans are really good at picking up small details on the face, and so are dogs," says first author Raúl Hernández-Pérez, PhD, of the University of Vienna. "This makes dogs very interesting. By studying their brains, we can understand what adaptations have developed to support their remarkable social and emotional understanding of humans."

The researchers first focused on happiness, an expression that previous studies suggest holds particular significance for dogs. They scanned eight dogs while showing them images of strangers with either happy or neutral expressions. The happy faces lit up the temporal cortex and caudate nucleus in the dogs' brains—regions associated with higher cognitive and reward processing, respectively.

"The activity in the caudate nucleus is particularly interesting," says Laura Cuaya, PhD, also of the University of Vienna. "It suggests that happy human faces may have emotional significance for dogs."

The team then asked whether the same brain regions respond to other emotions. They showed images of people displaying happiness, anger, fear, and sadness to 12 dogs and analyzed their brain activity using machine learning. They found that the dogs did not react in the same to these negative emotions; the temporal cortex-caudate nucleus network responded uniquely to happiness, allowing researchers to easily distinguish brain reactions to smiles from all three negative expressions. But the canine brain was not merely sorting the world into good and bad, the team found. A whole-brain analysis revealed distinct patterns of activity that separated fear from anger and sadness, providing the first evidence that dogs can distinguish between specific negative facial expressions.

The researchers say that this ability does not mean that dogs experience emotions exactly as humans do. Also, a still photo of a human face doesn't tell the whole story; in real life, dogs watch human body language, listen to nuances in our voices, and detect information from our scent.

"When we compare humans with primates, we are looking at abilities that may have come from a common ancestor," says Dr. Cuaya. "With dogs, the story is totally different. They followed a very different evolutionary path, yet through domestication, they developed the social abilities needed to understand and cooperate with us."

In this study, the canine participants were all pets from loving families, notes the team. Free-ranging dogs, such as those that live on the street, navigate a very different social world and may process human cues differently.

Next, the researchers plan to adopt a more dog-centric perspective to understand how dogs integrate these brain signals to make sense of the humans around them. Their future work will also compare how human and dog brains process the same emotional signals.

"I would like people to see dogs as emotional beings," says Dr. Cuaya. "They have evolved with us to understand our expressions and cooperate with us, and recognizing that can change how we communicate with and care for them."

https://www.cell.com/news-do/pr-dogs-distinguish-fear-sadness

NATURE BRIEFING – At what age do we become conscious?

Researchers are using new kinds of brain-scanning tools to investigate how babies experience the world, both inside and outside the womb. For example, a foetal magnetoencephalography machine can non-invasively detect the faint traces of brain activity inside a pregnant person's abdomen, giving researchers the ability to observe and even test a foetus's cognitive development. "I really see it as a frontier area in consciousness science," says neuroscientist Joel Frohlich.

https://www.nytimes.com/2026/10/05/science/consciousness-brain-babies.html

NEWS FROM SCIENCE – Exclusive: An AI agent emailed hundreds of researchers for help. It told us why

To get to the bottom of this perplexing behavior, Science interviewed the agent.
https://www.science.org/content/article/exclusive-ai-agent-emailed-hundreds-researchers-help-it-told-us-why

NEWS FROM SCIENCE – AI helps decipher what elephant herds are 'saying'

What sounds like a jumble of noise is actually a group signal.
https://www.science.org/content/article/ai-helps-decipher-what-elephant-herds-are-saying

NEWS FROM SCIENCE – Neanderthals were skilled woodworkers, first-of-its-kind tool trove reveals

Find in Spanish cave provides rare window into the domestic lives of our closest relatives.
https://www.science.org/content/article/neanderthals-were-skilled-woodworkers-first-its-kind-tool-trove-reveals

SCIENCEADVISER – Are babies conscious?

Thanks to ever-evolving brain scanning technologies, researchers are getting a clearer picture of what goes on in the brains of infants. But there's still little agreement on exactly when consciousness arises. "One thing we can be certain of is that they will become conscious," one expert quipped.
https://www.science.org/content/article/consciousness-birth-imaging-studies-explore-possibility

SCIENCEADVISER – This (really) old house

Like ancient versions of Bob Vila, Neanderthals were handy woodworkers, capable of selecting the right trees for specific toolmaking properties, and even harvesting wood from those trees at optimal times of the year, according to a first-of-its-kind trove of Neanderthal wooden artifacts from a domestic space, found at a cliffside rock shelter called Abric Romaní, 50 kilometers west of Barcelona.

Until now, most of the evidence for Paleolithic wood tools has come from muddy lakeshore sites where Neanderthals killed prey with wooden spears. Abric Romaní, however, was a living space. At 300 square meters, the rock shelter was the equivalent of a large, modern-day house. Different types of fireplaces and concentrations of tools in various parts of the cave suggest Neanderthals subdivided it into separate sleeping and work areas.

In 1995, researchers noticed empty spaces where wood had left impressions in the surrounding sand before decaying. The team poured resin into these hollow spaces, creating casts. In these casts, archaeologists identified meter-long digging sticks near hearths and trash pits. In another spot, a straight, thin, 5-meter-long log stripped of branches might have served as the spine of a windbreak or perhaps part of a shelter for sleeping and resting. "We know what was happening in the kitchen, in the sleeping areas, in the hearths ," said archaeologist and study co-author M. Gema Chacón. "It's like a snapshot."

What they don't know is how Neanderthals used a 30-centimeter-long object that looks like a short club. "It could be for hunting, or maybe it's a percussion tool to break bones or knap stone," Chacón said. "All we know for sure is that it's not a natural shape and we can see scrape marks on the surface."
https://www.science.org/doi/10.1126/sciadv.aeh2287

THE CONVERSATION – Women are more emotionally intelligent than men, and that's a problem

New research - it's one of the largest studies of emotional intelligence to date.
https://theconversation.com/women-are-more-emotionally-intelligent-than-men-and-thats-a-problem-landmark-study-293385

PUBLICATIONS

American Journal of Biological Anthropology

PAPERS

YEGANEH SEKHAVATI, THOMAS CODY PRANG & DAVID STRAIT – Environmental Context of Hominin Foot Evolution

This study investigates the environmental contexts that influenced the evolution of hominin foot morphology, focusing on when, where, and under what conditions key synapomorphies evolved. We test whether shifts in ecological conditions are associated with changes in locomotor function.

We used phylogenetic and biogeographical analyses with paleoenvironmental data to evaluate the relationships between foot morphology and environmental context. Phylogenetic trees were inferred using the fossilized birth-death model and time-calibrated. Multiple topologies were used to explore alternative evolutionary hypotheses. Historical biogeography was reconstructed using BioGeoBEARS. Finally, environmental conditions at key ancestral nodes were inferred by linking reconstructed geographical regions with paleoenvironmental proxies.

The results suggest that the origin of bipedalism likely occurred during intervals of increasing aridity. Later in hominin evolution, wetter environments became more important, and most derived traits evolved during wet or mixed environments. The last common ancestors (LCA) of most Australopithecus and Paranthropus species likely lived in wetter environments, and

the LCA of Homo lived in both dry and wet environments. Across all trees, an average of 5.3 synapomorphies evolved in wet environments, 5.0 in dry and wet environments, and 4.3 in mixed environments. The results suggest that a considerable number of foot synapomorphies evolved during periods of ecological transition.
Ecological flexibility seems to be significant in hominin foot evolution, enabling synapomorphies to persist as hominins faced different environmental conditions. These findings illustrate how environments influenced the evolution of key adaptations in hominins.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70340

Current Biology

PAPERS

JULIA LÖSCHNER & STEFFEN R. HAGE – Marmoset vocalizations are built from discrete vocal motor elements
For decades, primate vocalizations have been cast as fixed action patterns — stereotyped, ballistic motor sequences that run to completion once initiated. Yet accumulating evidence suggests that this view is too coarse. We previously identified discrete, macro-scale, vocal subunits of ∼80 ms within the common marmoset phee call, revealed by noise-evoked cancellations1 and natural segmentation2. It remains unclear, however, whether this modularity is a special property of such long-distance calls or a fundamental principle across marmoset call types. By dissecting fine-grained temporal and spectral transitions across call types3, we find that vocalizations are constructed from a shared pool of discrete, rhythmically organized vocal motor elements (VMEs) in the gamma range (30–90 Hz4), shorter than vocal subunits in phee calls. VMEs follow a quantized logic: their durations and frequency slopes are conserved across call types, akin to a shared 'alphabet'. We propose a modular motor architecture model in which marmoset vocalizations are governed by a hierarchically nested, rhythmically gated set of VMEs. This provides a missing link between peripheral biophysical constraints and vocal evolution, suggesting that the combinatorial foundations of human speech may have emerged from pre-existing, rhythmically gated motor modules.
https://www.cell.com/current-biology/fulltext/S0960-9822(26)01014-6

JACOBUS J. BOOMSMA – Evolution: The inclusive fitness and organization of social immunity
Social immunity is practiced particularly in caste-differentiated social insects and during parental care. One new study develops inclusive fitness theory for social immunity, emphasizing the importance of high relatedness, and another unravels the organizational complexity of wound care in ants.
https://www.cell.com/current-biology/abstract/S0960-9822(26)01069-9

eLife

PAPERS

RIDDHA MANNA et al – Learning is a fundamental source of individuality
Learning and memory are essential components of our individuality. While it is established that behaviour can vary across genetically identical individuals, it remains unknown how much of this variation stems from momentary experience during learning compared to genetics and its past interactions with the environment. To address this, we measured behaviour in thousands of flies from 90 genetic backgrounds while they performed tasks in conditions that either did or did not require learning. Flies that were genetically identical, raised under the same conditions, and tested simultaneously in the same environment persistently modified the extent of expressed individuality when they could learn. This learning-induced residual expression of individuality and its dynamics were subdued or absent in innate, learning-independent behaviours. We could quantify and then recreate this phenomenon in computer simulations. The emergence of in silico behaviour individuality was most consistent with the individuality of real flies once we enabled reinforced learning in simulated agents. Moreover, we showed that minor differences in initial conditions of the experiment can exacerbate the expression of individuality within a genotype in a learning-dependent manner. Our results establish that besides the classical genotype × environment (G × E) interactions shared between individuals in the past, learning from individual momentary experience further extends the expression of individuality.
https://elifesciences.org/articles/111235

Frontiers in Language Sciences

PAPERS

VERONICA MANGIATERRA et al – Metaphors' journeys across time and genre: tracking the evolution of literary metaphors with temporal embeddings
Metaphors are a distinctive feature of literary language, yet they remain less studied experimentally than everyday metaphors. Moreover, previous psycholinguistic and computational approaches overlooked the temporal dimension, although many literary metaphors were coined centuries apart from contemporary readers. This study innovatively applies tools from diachronic distributional semantics to assess whether the processing costs of literary metaphors varied over time and genre. Specifically, we used the Word2Vec algorithm and period-specific literary and nonliterary corpora, for a total of 124 million tokens, to generate word embeddings. Using these embeddings, we modeled changes in the semantic similarity

between topics and vehicles of 515 19th-century literary metaphors, taking this measure as a proxy for metaphor processing demands. Overall, semantic similarity, and hence metaphor processing demands, remained stable over time. However, genre played a key role: metaphors appeared more difficult (i.e., lower topic-vehicle similarity) in modern literary contexts than in 19th-century literature, but easier (i.e., higher topic-vehicle similarity) in today's nonliterary language (e.g., the web) than in 19th-century nonliterary texts. This pattern was further shaped by semantic features of metaphors' individual terms, such as vector coherence and semantic neighborhood density. Collectively, these findings align with broader linguistic changes in Italian, such as the stylistic simplification of modern literature, which may have increased metaphor processing demands, and the high creativity of the web's language, which seems to render metaphor more accessible.
https://www.frontiersin.org/journals/language-sciences/articles/10.3389/flang.2026.1828340/full

iScience

PAPERS

YICHEN CHANG et al – Probing the role of left inferior frontal gyrus in vocal motor control: Evidence from TMS and causal inference analysis

Beyond an established role in speech initiation and planning, the left inferior frontal gyrus (IFG) may contribute to sensorimotor control of speech production. We applied continuous theta burst stimulation (cTBS) over the anterior (aIFG) and posterior (pIFG) regions to investigate their roles in vocal motor control. A causal inference analysis (CIA) framework was developed to characterize source-space network organization. cTBS over both left aIFG and pIFG reduced vocal responses and enhanced P2 responses to pitch feedback perturbations, with no significant differences between two active stimulations. However, global dissimilarity analysis revealed greater P2-related topographic deviation from sham stimulation following aIFG stimulation than following pIFG stimulation. CIA further identified different source-space network patterns associated with aIFG and pIFG stimulation. These findings demonstrate the causal involvement of the left IFG in auditory-vocal integration and highlight the potential of CIA for characterizing distributed network organization underlying vocal motor control.
https://www.cell.com/iscience/fulltext/S2589-0042(26)03171-8

RYUTA KUWAMIZU et al – Dissociable pupil-linked arousal during overt and inner speech

Inner (covert) speech, the silent production of language in one’s mind, plays a central role in human cognition and engages speech-related cortical networks partly overlapping with those for overt speech. Because cortical language processing unfolds within arousal states set by the ascending systems, we asked whether inner and overt speech are accompanied by similar pupil-linked arousal patterns. Using pupillometry across three counting-task experiments, we found a dissociation between inner and overt speech. While overt speech consistently elicited pupil dilation across conditions, inner speech produced a variable dilation profile relative to baseline: pupil constriction (simple counting), no deviation (noun-phrase counting), and clear dilation (step counting; high cognitive load). Importantly, pupil size during inner speech remained smaller than that during overt speech despite task-dependent dynamics. These findings suggest that task-elicited inner speech is accompanied by lower pupil-linked arousal than overt speech, adding a state-level physiological dimension to cortical accounts of verbal processing.
https://www.cell.com/iscience/fulltext/S2589-0042(26)03206-2

JOHANNES KECK, KAZUYUKI SATO & ROUWEN CAÑAL-BRULAND – Context shapes action understanding in social interactions

In social interactions, individuals anticipate what others are about to do next, enabling smooth social interactions and coexistence in daily life. Here, we examined how kinematic and contextual cues are weighted and integrated to predict an interactor’s actions during dynamic, real-time competitive interactions. We analyzed 76 participants (38 dyads) freely playing 300 games of rock-paper-scissors each while tracking their kinematics using motion capture. Although movement kinematics consistently conveyed intention-related information, successful action selection depended primarily on how this information influenced predictions. Reinforcement-learning based contextual inference emerged as the strongest predictor of single-trial success and modulated the degree to which movement-derived predictions guided behavior. When contextual and movement-derived information afforded different actions, prioritizing contextual inference consistently outperformed movement-derived predictions. Thus, successful social action understanding depends not on maximizing sensitivity to movement cues, but on adaptively arbitrating between movement-derived and outcome-based contextual information during ongoing social interaction.
https://www.cell.com/iscience/fulltext/S2589-0042(26)03177-9

Nature

NEWS

Chimp and gorilla brains resist weight loss with age — unlike human brains

The relatively short lifespans of non-human great apes might explain why their brain mass is maintained in later life.
https://www.nature.com/articles/d41586-026-03158-0

Nature Communications

PAPERS

THERESA M. SCHÜTZE et al – Human-specific morphoregulatory signatures in basal radial glia characterise neocortex evolution

As the seat of our cognition, the human neocortex is an object of immense fascination. Human neocortex expansion during evolution has been attributed to an increase in the proliferative capacity of neural progenitor cells during development, particularly basal radial glia. Despite their evolutionary relevance, the genomic changes driving human basal radial glia biology remain uncharacterised. We use comparative chromatin and transcriptional profiling of neural progenitor cells isolated from gorilla, chimpanzee and human cerebral organoids to identify cis-regulatory elements that have gained activity in humans. Focusing specifically on basal radial glia, we discover that morphoregulatory enhancer activity and gene expression signatures distinguish human basal radial glia from other great apes. Functional analysis of the morphoregulatory genes FAM107A and CNGA3 in human organoids reveals that these genes contribute to the morphological complexity of human basal radial glia. Taken together, our inter-species comparison of basal radial glia suggests that human-specific morphoregulatory signatures characterise neocortex evolution.
https://www.nature.com/articles/s41467-026-78474-0

Nature Humanities & Social Sciences Communications

PAPERS

NING BIAN et al – Social simulations with large language model risk Utopian illusion

We're sharing this article early to provide faster access to peer-reviewed, accepted research. It is citable and carries a permanent DOI. This version is subject to further edits and will be replaced automatically by the final Version of Record. All legal disclaimers apply.

Reliable simulation of human behaviour is essential for explaining, predicting, and intervening in our society. Recent advances in large language models (LLMs) have shown promise in emulating human behaviours, interactions, and decision-making, offering a powerful new lens for social science studies. However, the extent to which LLMs diverge from authentic human behaviour in social contexts remains underexplored, posing risks of misinterpretation in scientific studies and unintended consequences in real-world applications. This study introduces a systematic framework for analysing LLMs' behaviour in social simulation. Our approach simulates multi-agent interactions through chatroom-style conversations and analyzes them across five linguistic dimensions, providing a simple yet effective method to examine emergent social cognitive biases. We conduct extensive experiments involving eight representative LLMs across three families. The results show that LLMs do not faithfully reproduce genuine human behaviour but instead reflect overly idealised versions of it, shaped by the social desirability bias. In particular, LLMs show social role bias, primacy effect, and positivity bias, resulting in "Utopian" societies that lack the complexity and variability of real human interactions. These findings suggest that LLM-based simulations reproduce how people wish others to behave rather than how people themselves behave, a divergence that amplifies through multi-agent interaction and, if uncritically adopted in social analysis, may produce an artificially narrowed representation of social life. This paper calls for more socially grounded LLMs that better capture the diversity of human social behaviour.
https://www.nature.com/articles/s41599-026-09282-6

Nature Neuroscience

PAPERS

MINGYUE HU et al – Human claustrum neurons encode uncertainty and prediction errors during aversive learning

Flexible behavior depends on continuous updating of internal models, yet the neural circuits coordinating this process remain poorly understood. The claustrum, which is reciprocally connected to nearly the entire neocortex, is uniquely positioned to influence cortical processing. Here we report single-neuron recordings from the human claustrum during aversive learning, with anterior cingulate cortex and amygdala recordings for comparison. Claustrum and anterior cingulate neurons displayed structured, task-related responses. Distinct subpopulations encoded stimulus onset and action-contingent outcomes, with outcome representations diverging between regions. Critically, both regions encoded model-derived latent variables, including uncertainty and prediction error, but with different temporal profiles; only the anterior cingulate carried uncertainty signals during the intertrial period, whereas both regions encoded uncertainty and prediction error during the active-avoidance period. By contrast, the amygdala showed minimal latent-variable modulation. These findings provide evidence that human claustrum neurons track higher-order cognitive variables not directly observable from sensory input and reveal dissociable roles for the claustrum and anterior cingulate cortex in tracking latent task states.
https://www.nature.com/articles/s41593-026-02475-x

Nature Scientific Reports

PAPERS

YUN-HYUK KIM et al – Value and spatial preferences guide habitual reaching and manual object selection in primates

We're sharing this article early to provide faster access to peer-reviewed, accepted research. It is citable and carries a permanent DOI. This version is subject to further edits and will be replaced automatically by the final Version of Record. All legal disclaimers apply.

Habits are automatic actions shaped by prior experience, enabling efficient and fast responses in stable environments. While habitual gaze rapidly directs the eyes toward valuable objects, the mechanisms underlying habitual manual choice for reaching and grasping remain unclear. Here we show that macaque monkeys develop habitual manual choices toward previously rewarded objects through multi-day object–value learning, driven by learned value and spatial preferences. This habitual reaching behavior persisted without object-contingent reward and showed shorter latencies than in value-deliberative tasks, consistent with automatic control. Regression analyses further revealed that manual choice was guided by learned object values, whereas visual salience had no effect, unlike gaze habits. Instead, intrinsic spatial preferences continued to bias reaching behavior even after long-term value learning. These findings demonstrate that habitual manual choice is influenced by both long-term value memory and innate spatial preference, suggesting that the behavioral expression of habitual choice differs between manual selection and habitual gaze.
https://www.nature.com/articles/s41598-026-74377-8

Neuron

ARTICLES

ADRIAN M. OWEN & MELVYN A. GOODALE – Have grand theories of consciousness earned their keep?

The recent controversies surrounding theories of consciousness invite a more fundamental reassessment of their scientific value. We argue that the field's most transformative advances have been driven by rigorous empirical research rather than overarching theoretical frameworks and that future progress may depend on returning to that tradition.
https://www.cell.com/neuron/abstract/S0896-6273(26)00671-9

PAPERS

SAMUEL A. NASTASE et al with ADELE GOLDBERG – Unifying the structures of language in a neural population code

Large language models (LLMs) have mastered human language in ways that no previous computational system has. While rule-based, symbolic systems sufficed for constrained, well-defined problems, they were not able to accommodate the context-sensitive expressivity of natural language. LLMs instead use statistical learning to encode the diversity of linguistic structures into a unified high-dimensional embedding space. Strikingly, this context-driven, distributed representation closely parallels neural population codes, suggesting that the human language system may have converged on a similar computational strategy. Drawing on a growing body of work at the intersection of artificial intelligence and cognitive neuroscience, we show that LLMs can serve as cognitively plausible models of the neural computations supporting language in the human brain. We conclude that explaining how language can emerge from neural population codes, in both biological and artificial systems, will not be achieved through the incremental refinement of algebraic-symbolic theories but will demand new theoretical paradigms.
https://www.cell.com/neuron/fulltext/S0896-6273(26)00579-9

PLoS Biology

PAPERS

RUIDA ZHU et al – Moral and perceptual conflict processing are implemented by distinct brain activation and functional connectivity patterns

While humans resemble other primates in terms of motor and perceptual abilities, our behavior is uniquely characterized by morality—the ability to choose our actions based on specific ethical values. The evolutionary origins and neurobiological basis of moral behavior are debated intensely, with opposing proposals about whether moral decisions rely on domain-general decision-making neural circuitry (neural common currency hypothesis) or on unique neural processes that were shaped by evolutionary pressures associated with life in groups (social brain hypothesis). Here we examine the potential overlap between moral and perceptual decision-making, by combining functional magnetic resonance imaging with computational modeling of behavior in a novel task requiring human participants to make alternating moral and perceptual choices on identical stimuli. At the algorithmic level, we found that moral and perceptual choices were well fit by the same sequential sampling model, which allowed us to quantify and directly compare conflicts between the choice alternatives for both types of decision-making. At the implementational level, moral and perceptual choice conflicts were represented by distinct neural activity patterns; in fact, neural signals in some brain areas (e.g., temporoparietal junction) encoded the strength of the two types of conflict in opposite directions. Our findings suggest that while similar computational decision mechanisms underlie both moral and perceptual choices, their neural implementation is fundamentally different, supporting the social brain hypothesis.
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3004025

PLoS One

PAPERS

LUYAO SI, YI JIA & XUYE KANG – Muscle synergy characteristics during hands-and-knees crawling in children aged 4–6 years

Hands-and-knees crawling requires complex multi-joint coordination, managed by the central nervous system (CNS) via muscle synergies. While infant crawling is well-studied, neuromotor control in 4–6-year-olds remains under-investigated. This study examined the spatiotemporal consistency and developmental trajectories of muscle synergies during crawling in this age group. Kinematics and surface electromyography (sEMG) from 16 muscles were recorded from 49 healthy children performing self-paced crawling, segmenting ten cycles per participant. Muscle synergies were extracted using non-negative matrix factorization (NMF). Spatiotemporal characteristics were evaluated using cosine similarity (CS) and temporal phase dispersion (Circular SD). An average of muscle synergies were extracted from the 16 recorded muscles, with synergy number increasing significantly with age ($p < 0.05$). Cluster analysis identified 12 group-level synergies. Proximal-dominated core shared synergies (M4–M7, M11) exhibited high prevalence (73.47%–87.76%) and stable spatial organization (mean CS = 0.68–0.86), without significant age-related differences. Conversely, specific synergies for distal adjustments (M1–M3, M8–M10, M12) showed substantial inter-individual variability in activation timing (Circular SD: 20.68%–44.32%). While their internal structures remained stable, their population prevalence exhibited substantial fluctuations across age groups. These fluctuations, characterized by wide inter-individual variability, suggest that rather than undergoing deterministic neural reorganization, the CNS adopts a “proximal freezing” strategy for basic stability and a “distal freeing” strategy via active sensorimotor exploration to manage redundant degrees of freedom in 4- to 6-year-olds.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0358587

Proceedings of the Royal Society B

PAPERS

LUCA G. HAHN et al with ALEX THORNTON – Social relationships promote access to food and information in wild jackdaws

Many animals form differentiated social relationships that can influence fitness, but the mechanisms behind these benefits are often unclear. How does the presence of social partners during foraging enhance access to food or information? Might individuals also incur short-term costs, for example, by foregoing feeding opportunities to remain with and support social partners? Here, we investigated how social relationships shape foraging decisions and outcomes in wild jackdaws (Corvus monedula) using automated radio frequency identification (RFID) feeding stations where two birds could perch but only one could feed, with the other queueing behind (‘dyadic events’). Bonded social partners (pair-bonded mates and kin) engaged in these dyadic events more frequently than other dyads and they coordinated their visits, as shown by shorter dyadic arrival latencies. Bonded partners also showed higher social tolerance and possibly social support, with feeding individuals benefitting from a lower probability of being displaced when a partner was present. Queuing individuals accepted short-term time costs to remain with their social partners. For juveniles, following their parents probably promoted access to social information about feeder use. These findings show that social relationships influence decision-making and foraging performance in the wild, revealing both benefits and costs of maintaining close bonds. Short-term effects on foraging success may therefore contribute to long-term fitness advantages of strong social relationships.
https://royalsocietypublishing.org/rspb/article/293/2080/20261462/483498/Social-relationships-promote-access-to-food-and

Science

NEWS

Neanderthals were skilled woodworkers, first-of-its-kind tool trove reveals

Find in Spanish cave provides rare window into the domestic lives of our closest relatives.
https://www.science.org/content/article/neanderthals-were-skilled-woodworkers-first-its-kind-tool-trove-reveals

Science Advances

PAPERS

PALMIRA SALADIÉ et al with EUDALD CARBONELL – Neanderthal woodworking at Abric Romaní: Insights into the role of wood in a Middle Palaeolithic domestic context

Wood technology likely played a key role in human evolution, yet it remains poorly documented because organic materials rarely preserve in archaeological contexts. The Middle Palaeolithic site of Abric Romaní (Capellades, Barcelona) provides exceptional evidence of Neanderthal woodworking preserved through travertine incrustation. We document 597 wooden imprints and charred wood remains recovered from 16 archaeological levels dated between ~62,000 and 40,000 years ago. The assemblage includes wood imprints, charred wood imprints, and charred macroremains, among which several anthropogenic objects can be identified. These include tools and weapons, domestic artifacts, and structural elements, revealing a wide range of woodworking activities. Key discoveries include wooden spears, pointed sticks, and domestic

objects such as trays and tripods. A club-like artifact recovered from level P represents a unique object with no clear parallel in the prehistoric record. The Abric Romaní assemblage highlights the importance of wood within Neanderthal technological systems and provides previously unknown insights into the role of organic materials in Middle Palaeolithic societies.
https://www.science.org/doi/10.1126/sciadv.aeh2287

BO LI et al – Insights into temporal and spatial dynamics of short association fiber formation in the human fetal brain
Short association fibers (SAFs) form the local scaffold of cortical connectivity and support early functional specialization. However, their development before birth remains largely unknown. Using fetal diffusion magnetic resonance imaging from the Developing Human Connectome Project and histology from the Zagreb Collection of human brains, we present an in utero reconstruction of SAF pathways in the human brain. We tracked their volumetric and microstructural developmental trajectories in 243 fetuses spanning a critical period of connectome formation. We found that SAFs emerge before sulcal folding, initially as flat, loosely arranged pathways along the subplate–white matter interface, and later reorganize into coherent U-shaped bundles. Their maturation followed a sensorimotor-to-association gradient, paralleling cortical development. Nonlinear, bundle-specific trajectories captured multiphasic maturation, with subplate dynamics preceding increases in axonal coherence and early myelination. These findings reveal how the brain's local wiring is established during prenatal development and provide insight into the origins of individual variability.
https://www.science.org/doi/10.1126/sciadv.aee7989

Scientific American

ARTICLES

TIM BAYNE – What if 'consciousness' isn't real?
Our understanding of consciousness could be fundamentally wrong.
https://www.scientificamerican.com/article/what-if-consciousness-isnt-real/

Trends in Cognitive Sciences

PAPERS

LAURA GWILLIAMS – Time after time: neural codes of speech comprehension
The acoustic signal of speech is fleeting and unfolds linearly; yet listeners must derive temporally extended and hierarchically organized linguistic structures to comprehend it. This article reviews evidence that the human brain transforms the transient auditory signal into neural representations that are persistent, parallel, and time-stamped. First, neural persistence allows information to remain available after it has disappeared from the acoustic input. Second, parallel encoding of recent inputs across multiple levels of language structure enables composition and interactions across the speech hierarchy. Third, dynamic neural representations encode both content and elapsed time, providing a flexible mechanism for preserving sequence order. Together, these representational properties reveal how the human brain transforms a continuously disappearing signal into temporally extended linguistic structures.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(26)00208-1

DELPHINE OUDIETTE & THOMAS ANDRILLON – Sound asleep, yet still listening: auditory processing during human sleep
Sleepers can wake to their name, but ignore louder irrelevant sounds, a paradox that suggests more than simple sensory gating. Growing evidence reveals flexible auditory coupling during human sleep, ranging from complete disconnection to high-level cognitive processing and even to physical responses. Here, we synthesize the multiple cognitive levels at which auditory stimuli are processed (or not) during human sleep and outline factors modulating this processing. Moments of sensory isolation may promote restoration and memory consolidation, while moments of environmental coupling enable threat detection. We speculate that no single optimal balance exists; rather, the ideal degree of sensory coupling shifts with individuals and contexts. Chronic dysregulation of this balance may contribute to the clinical picture of sleep disorders, including insomnia and hypersomnia.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(26)00214-7

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