EAORC BULLETIN 1,145 – 25 May 2025

CONTENTS

NOTICES

FORMATTED VERSION OF THIS BULLETIN

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

PUBLICATION ALERTS

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

EDITORIAL INTERJECTIONS

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

NEWS

NATURE BRIEFING – Capuchins 'abducting' baby howler monkeys

Young male capuchin monkeys (Cebus capucinus imitator) have been observed 'kidnapping' infant howler monkeys (Alouatta palliata coibensis) in Panama. Behavioral ecologist and co-author Zoë Goldsborough said it was "shocking" to discover scenes of capuchins carrying baby howlers in footage captured on camera traps. "We've not seen anything like this in the animal kingdom," she says. "A hopeful part of me wants to believe some escaped and went back to their mothers," says anthropologist and co-author Margaret Crofoot. "But we don't know."
https://apnews.com/article/monkey-kidnappings-panama-f7b39d0d77532769835494145dd53cd4

NATURE BRIEFING – What exactly is a Denisovan?

In 2008, a tiny fingertip rewrote human history when DNA sequencing revealed that it belonged to a previously unknown group of hominins: Denisovans. Further research revealed that they interbred with modern humans and were once widespread across Asia. In the past few years, more fossils have emerged that are helping to flesh out who Denisovans were and how exactly they fit into our family tree.
https://www.nature.com/articles/d41586-025-01549-3

NEWS FROM SCIENCE – 'About as close to aliens as we'll ever get.' Can AI crack animal language?

Dolittle Prize recognizes breakthroughs in translating "speech" of dolphins, cuttlefish, and other creatures.
https://www.science.org/content/article/about-close-aliens-we-ll-ever-get-can-ai-crack-animal-language

NEWS FROM SCIENCE – Research may be incremental—but lasting paradigm shifts are on the rise

New metric identifying "persistently disruptive" papers offers a "bright spot" amid signs of declining innovation.
https://www.science.org/content/article/research-may-be-increasingly-incremental-studies-making-lasting-paradigm-shifts-are

SCIENCEADVISER – Tracing humanity's longest walk

During the late Pleistocene epoch, ancient humans expanded out of Africa, eventually spreading all over the world. Those who reached the southernmost tip of South America completed the longest migration of all—although when exactly they arrived has long been the subject of debate.
Now, using DNA sequence data from 1537 individuals representing 139 ethnic groups, scientists have unlocked some of the mysteries of this historic journey. The new study, led by researchers from the GenomeAsia 100k project, reveals that early Asians traveled more than 20,000 kilometers from North Asia to South America—a trek that would have taken multiple generations. After arriving at the northwestern tip of South America about 14,000 years ago, these early migrants split into four distinct groups: One remained in the Amazon basin, another moved eastward to the dry Chaco region, a third went south to Patagonia, and the fourth to the valleys of the Andes mountains.
The long, arduous migration caused genetic diversity to dwindle. Once the South American groups split up and became geographically isolated, this diversity decreased even more—leading to a marked reduction in variation in human leukocyte antigen (HLA) genes, which play a key role in the immune system. The loss of diversity in these genes could explain why some Indigenous communities were so susceptible to diseases later introduced by European colonists, the researchers say. As study corresponding author Kim Hie Lim notes in a statement, " Understanding how past dynamics have shaped the genetic structure of today's current population can yield deeper insights into human genetic resilience."
https://www.science.org/doi/10.1126/science.adk5081

SCIENCE DAILY – Wild orangutans show communication complexity thought to be uniquely human

Researchers have found that wild orangutans vocalize with a layered complexity previously thought to be unique to human communication, suggesting a much older evolutionary origin.
https://www.sciencedaily.com/releases/2025/05/250516134254.htm

SCIENCE DAILY – Asians made humanity's longest prehistoric migration, shaping genetics in the Americas

An international genomics study has revealed that early Asians undertook humanity's longest known prehistoric migration. These early humans, who roamed the earth over 100,000 years ago, are believed to have traveled more than 20,000 kilometers on foot from North Asia to the southernmost tip of South America. Scientists have mapped the unexpectedly vast genetic diversity of Asians, who make up more than half of the world's population. These findings overturn long-held assumptions of European genetic dominance and show that native South Americans are of Asian descent. The study also sheds light on how such a vast migration and differing environments have shaped human evolution, including how populations have adapted to diseases and how their immune systems have evolved.
https://www.sciencedaily.com/releases/2025/05/250515141549.htm

SCIENCE DAILY – Brain scans reveal what happens in the mind when insight strikes

That 'aha' moment when you come back to a puzzle and immediately figure it out? Something fascinating is going on in your brain. A new study using functional magnetic resonance imaging shows that these flashes of insight aren't just satisfying -- they create strong memories that can help etch learning into the brain.
https://www.sciencedaily.com/releases/2025/05/250514175431.htm

SCIENCE DAILY – Dexterity and climbing ability: how ancient human relatives used their hands

Scientists have found new evidence for how our fossil human relatives in South Africa may have used their hands. Researchers investigated variation in finger bone morphology to determine that South African hominins not only may have had different levels of dexterity, but also different climbing abilities.
https://www.sciencedaily.com/releases/2025/05/250514141659.htm

SCIENCE DAILY – How the brain allows us to infer emotions

Researchers have discovered how inferred emotions are learned. The study shows that the frontal part of the brain coordinates with the amygdala -- a brain region important for simple forms of emotional learning -- to make this higher-order emotional ability possible. This breakthrough study is the first to show how the brain codes human-like internal models of emotion.
https://www.sciencedaily.com/releases/2025/05/250514111102.htm

SCIENCE DAILY – Not all orangutan mothers raise their infants the same way

Sumatran orangutan mothers differ from one another in how they behave with and take care of their infants and how flexibly they adjust their mothering behaviors as their infants grow. Whilst mothers differed from one another in their maternal behaviors, they remained consistent in their behaviors with their different infants. Consistent differences among Sumatran orangutan mothers suggest that individual maternal personalities may exist, potentially influencing infant development.
https://www.sciencedaily.com/releases/2025/05/250513225711.htm

SCIENCENEWS – Juvenile capuchins are kidnapping infants of another monkey species

Among primates, spending time with infants from another species is very rare.
https://www.sciencenews.org/article/capuchins-kidnapping-howler-monkeys

THE CONVERSATION – For long-tailed tits, it really does take a village

The evolutionary reason so many birds help raise other parents' chicks.
https://theconversation.com/for-long-tailed-tits-it-really-does-take-a-village-256128

THE CONVERSATION – Did humans evolve to prefer religion? Many atheists intuitively favour faith

Research highlights Atheists often believe religious faith is positive, even though they don't hold it themselves.
https://theconversation.com/did-humans-evolve-to-prefer-religion-research-shows-many-atheists-intuitively-favour-faith-256391

PUBLICATIONS

Academia Biology

PAPERS

CHARLES CAPADAY – From biology to physics and the unknown: What would it mean to understand consciousness?

The three main ideas of the relation between the brain and the mind, Cartesian dualism, epiphenomenalism and brain–mind identity theory are critically reviewed. The point is made that none of these ideas, or their numerous variants, are based on

explicit biological, or physical, mechanisms and are therefore not scientific in nature. By contrast, the Penrose–Hameroff orchestrated objective reduction theory does make testable biological predictions. I do not discuss the theory per se, but review two of its recent experimental tests for the purpose of urging caution in the interpretation of their results. A brief review of the neural correlates of consciousness follows. It is concluded that such experiments neither support nor falsify any of the three main ideas on the relation between brain and mind. First and foremost, science is experimental. Consequently, to bring the mind–brain problem in the realm of science requires that we directly measure conscious states the way that we measure electric current, or blood pressure, as examples. The entity of conscious state measurements will be referred to as 'conscions', and these must be causally linked to neural activity. If this were ever realized, a deep gap of understanding would persist. This is because of what I will refer to as Tyndall's point. It can be summarized with a simple example as follows: if love were found to be associated with a right-handed turn of a given molecule and hate associated with its left-handed turn, then the question 'why we have these feelings' would remain unanswerable.
https://www.academia.edu/2837-4010/3/2/10.20935/AcadBiol7653

Current Biology

ARTICLES

ANGELA STOEGER – Secrets of dolphin communication
Imagine being able to talk to animals like Dr Dolittle — a long-standing dream rooted in folklore and literature but also if being honest shared by scientists (at least by me) due to our fascination with animal intelligence. In Is Anyone Listening?, Denise Herzing brings this dream a step closer to reality by exploring the possibility of interspecies communication.
https://www.cell.com/current-biology/abstract/S0960-9822(25)00439-7

PAPERS

ZOË GOLDSBOROUGH et al – Rise and spread of a social tradition of interspecies abduction
Cultural traditions lacking clear function are exceptionally common in humans, partially explained by our hyper-reliance on social learning. In non-human animals, it is unclear whether the same ecological and social conditions drive the emergence of both seemingly adaptive and non-adaptive traditions. Here, we describe the origins and spread of a tradition of interspecies abduction in the wild. We documented carrying of eleven different infant howler monkeys (Alouatta palliata coibensis) by five immature male white-faced capuchin monkeys (Cebus capucinus imitator) over 15 months on Jicarón island, Coiba National Park, Panama. All cases occurred in one capuchin group, which has been studied since 2017 for their localized tradition of habitual stone tool-use, unique to Cebus2. We captured the origin of this 'howler abduction' tradition, starting with one subadult male innovator, and its spread to four subadult and juvenile males. We argue that the same conditions which favored adaptive cultural innovations like tool-use on Jicarón also underlie this non-adaptive tradition.
https://www.cell.com/current-biology/fulltext/S0960-9822(25)00372-0

eLife

PAPERS

CHIARA BULGARELLI et al with THE BRIGHT STUDY TEAM – Growth in early infancy drives optimal brain functional connectivity which predicts cognitive flexibility in later childhood
Functional brain network organization, measured by functional connectivity (FC), reflects key neurodevelopmental processes for healthy development. Early exposure to adversity, e.g. undernutrition, affects neurodevelopment, observable via disrupted FC, and leads to poorer outcomes from preschool age onward. We assessed longitudinally the impact of early growth trajectories on developmental FC in a rural Gambian population from age 5 to 24 months. To investigate how these early trajectories relate to later childhood outcomes, we assessed cognitive flexibility at 3-5 years. We observed that early physical growth before the fifth month of life drove optimal developmental trajectories of FC that in turn predicted cognitive flexibility at pre-school age. In contrast to previously studied developmental populations, this Gambian sample exhibited long-range interhemispheric FC that decreased with age. Our results highlight the measurable effects that poor growth in early infancy has on brain development and the subsequent impact on pre-school age cognitive development, underscoring the need for early life interventions throughout global settings of adversity.
https://elifesciences.org/reviewed-preprints/94194

Frontiers in Environmental Archaeology

PAPERS

MARIANA NABAIS & JOÃO ZILHÃO – Ungulates and carnivores from the late MIS-5 Neanderthal occupation of Gruta da Figueira Brava (Portugal)
This study examines the ungulate and carnivore remains recovered from the Middle Palaeolithic site of Gruta da Figueira Brava, Portugal, to assess Neanderthal subsistence strategies in the region during late Marine Isotope Stage 5 (MIS-5). The site, now facing the Atlantic Ocean, was located up to 2 km inland at the time of occupation, providing access to both terrestrial and coastal environments. Despite extensive fragmentation and carbonate encrustation of the faunal assemblage, zooarchaeological and taphonomic analyses reveal a diversity of prey species, dominated by red deer (Cervus elaphus) and

ibex (Capra pyrenaica), with lesser contributions from aurochs (Bos primigenius) and horses (Equus caballus). The skeletal element representation, along with cut marks, percussion marks and burning evidence suggest a complex and flexible approach to resource transport, processing and consumption. Neanderthals exploited both high-yield and marginal bone portions, maximising nutritional intake through cooking, defleshing and marrow extraction. The assemblage suggests that whole deer carcasses were occasionally transported to the site, while selective transport strategies were applied to larger taxa. The presence of carnivore remains, including bears (Ursus arctos), hyaenas (Crocuta crocuta), wolves (Canis lupus) and wild cats (Felis silvestris), with no evidence of human-carnivore interactions, suggests intermittent use of the cave by non-human predators during periods of human absence (e.g., for cat denning and bear hibernation or as a hyaena latrine).
https://www.frontiersin.org/journals/environmental-archaeology/articles/10.3389/fearc.2025.1564495/full

Frontiers in Psychology

PAPERS

ELISA VISANI et al – Processing L2 action verbs shares the same mechanisms for processing L1 items: evidence from a combined behavioral and MEG study

This study aimed to investigate the involvement of motor system during the processing of L2 items in a combined behavioral and MEG study. Healthy Italian native speakers performed a semantic decision task on hand and foot actions presented by means of pictures or verbs expressed in English as L2.

Results showed slower hand reaction times and weaker suppression of Beta band power during the processing of hand-related pictures and verbs, as compared to foot-related pictures and verbs, thus suggesting shared neural mechanisms for semantic processing of visually and verbally presented items.

This in line with a similar study where Italian verbs were used as language items. However, while no dissimilarity was found in the modulation of the motor system during the processing of verbs presented in L1 and pictures depicting actions in the same category, here, when processing L2 verbs, reaction times were slower than when processing visually presented actions, thus implying an additional cost for processing L2 as compared to L1 verbal items.

We argue that these findings support embodiment, in that they can be explained by a similar, although stronger involvement of the sensorimotor system during the processing of L2 verbal items.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1585897/full

General Anthropology

ARTICLES

JOE WATKINS – Recasting Anthropology: Praxis, People, and Possibilities

Well into its second century, Anthropology continues to search for its place in the world. Its founders were looking to create a new way of studying humans throughout time and space as a means of better understanding who we are, who we have been, and who we can be. Over the course of the past 50 years, I have participated in government-based archaeology, academic archaeology, and contract archaeology at the state, federal, and private levels as an anthropological archaeologist. Today's anthropologists often find themselves in a variety of situations where they must find ways of making the discipline relevant in the eyes of community members, the academic world, and even government entities. In this paper I will offer a glimpse of the ways that I believe anthropology has changed over the fifty years I have been in the discipline, the way it hasn't, and the way it should.
https://anthrosource.onlinelibrary.wiley.com/doi/abs/10.1111/gena.12131

AMANDA L. ELLWANGER – From Conflict to Coexistence: A shifting discourse in studies of the human-primate interface

This paper traces a shift in how researchers talk about human-primate interactions, moving from a focus on conflict to a growing interest in coexistence. Although conflict—like crop-raiding and aggression—has dominated past research, these narratives often overlook mutual adaptation and positive relationships between people and primates. Drawing on a review of 30 years of literature, the author finds a slow but steady increase in coexistence-focused studies, particularly in Asia. I argue that embracing coexistence better reflects the complex reality of shared human-primate spaces and encourages more balanced, collaborative approaches to managing those relationships.
https://anthrosource.onlinelibrary.wiley.com/doi/abs/10.1111/gena.12130

Mind & Language

PAPERS

MICHAEL TOMASELLO – The evolutionary psychology of syntax

Linguists often characterize syntax in terms of combinatorial rules. But there is also a pragmatics to syntax in which communicators choose and tailor syntactic constructions for different communicative contexts. Great apes exposed to “language” combine elements creatively, but they show no skills in the pragmatics of syntax. In contrast, even before language begins, human infants engage with others in unique forms of cooperative communication via deictic and symbolic gestures, which already distinguish pragmatically between a common ground topic and its perspectival focus. Evolutionarily,

event-participant conceptual organization and topic-focus pragmatic organization formed the foundation for the conventionalization of syntactically structured human languages.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12562

Nature

NEWS

Mother–infant bonds in wild chimpanzees resemble those of humans
The observation of bonding behaviours in wild chimpanzees suggests that some aspects of human attachment have a deep evolutionary origin.
https://www.nature.com/articles/d41586-025-01557-3

Who were the ancient Denisovans? Fossils reveal secrets about the mysterious humans
Clues are emerging about the ghostly clan that settled eastern Asia and left a genetic legacy in people today.
https://www.nature.com/articles/d41586-025-01549-3

Nature Communications

PAPERS

ZENOBIA JACOBS et al with SVANTE PÄÄBO & JANET KELSO – Pleistocene chronology and history of hominins and fauna at Denisova Cave
Denisova Cave in southern Siberia is the only site known to have been occupied by Denisovans, Neanderthals and modern humans. The cave consists of three chambers (Main, East and South), with the archaeological assemblages and remains of hominins, fauna and flora recovered from Main and East Chambers being the most thoroughly investigated to date. Here we report the results of analyses of the Palaeolithic artefacts, faunal remains and hominin and mammalian mitochondrial (mt) DNA recovered from renewed excavations in South Chamber. We construct a calendar-year time scale for the stratified Pleistocene deposits from optical dating of the sediments. The timing of hominin occupation and major turnovers in the mtDNA of Denisovans and large mammals largely accords with the patterns detected in Main and East Chambers. Time gaps in those sequences are partly filled by the South Chamber data and the sediment DNA record of Denisovans after 80,000 years ago is more than doubled in size. We combine the sediment dating and DNA records for all three chambers to reveal the whole-of-cave history of this unique site and the climatic conditions experienced by hominins and fauna over the past 300,000 years, including potential changes in habitat suitability for Denisovans and Neanderthals.
https://www.nature.com/articles/s41467-025-60140-6

Nature Communications Biology

PAPERS

LIZ YUANXI LEE et al – Neurogenetic phenotypes of learning-dependent plasticity for improved perceptual decisions
Genetics and experience are known to mold our cognitive development. Yet, the interactions between genetics and brain mechanisms that support learning and flexible behavior in the adult human brain remain largely unknown. Here, we test the link between brain-wide gene expression and macroscopic neuroimaging phenotypes of brain plasticity that support our ability to improve perceptual decisions with training. We demonstrate that gene expression links to learning-dependent changes in spatial variations of cortical microstructure and functional connectivity in visual and fronto-parietal networks that are known to be involved in perceptual decisions. Further, we show that brain stimulation in visual cortex during training boosts learning and alters functional connections, rather than microstructure organization, within and between these networks. Our results reveal neurogenetic phenotypes of plasticity in perceptual decision networks, providing insights into the interplay of genetic expression and macroscopic mechanisms of structural and functional plasticity for learning and flexible behavior.
https://www.nature.com/articles/s42003-025-08212-7

Nature Reviews Genetics

ARTICLES

DIYENDO MASSILANI – A crossroads in the timeline of human evolution
Ancient DNA (aDNA) sequencing is like unlocking a genetic time capsule, almost bringing the past back to life and offering direct insights into the evolutionary processes that have shaped the living world. Yet, accessing DNA from ancient remains is still far from guaranteed, and the meticulous ‘tour de force’ required to retrieve aDNA molecules is often overlooked. A prime example illustrating both the promise and challenging effort behind aDNA research is the mid-Ice Age Sima de los Huesos hominin sequencing project by Matthias Meyer and his collaborators. As the oldest human for whom genomic data have been successfully retrieved, the Sima de los Huesos specimen not only offers a window into ancient human history but also demonstrates scientific genius in action and marks a triumph of modern technology, underscoring how far aDNA studies have come and the challenges that remain.

https://www.nature.com/articles/s41576-025-00855-w

Nature Scientific Reports

PAPERS

R. I. M. DUNBAR & SUSANNE SHULTZ – Self-control has a social role in primates, but not in other mammals or birds

The capacity to inhibit prepotent actions (strategic self-control) is thought to play an important role in many aspects of the behaviour of birds and mammals. Though widely considered important for foraging decisions, inhibition is also crucial for maintaining the temporal and spatial coherence of bonded social groups. We analyse four different sets of comparative experimental data on primates to show (1) that tasks widely assumed to index inhibition segregate naturally into two distinct clusters (those that involve strategic self-control and those that might be better described as detour or causal reasoning tasks) and (2) that, across primate species, the former tasks correlate better with the demands of social contexts, while the latter correlate better with the demands of foraging contexts. Finally, using a wider sample of mammals and birds, we show (3) that the capacity for (strategic) self-control is unique to anthropoid primates (as suggested by the Passingham-Wise Conjecture). We propose that strategic inhibition may be neurologically costly (and hence taxonomically rare) because animals have to model two different views of the world at the same time and prevent one leaking into the other. We conclude, first, that future studies need to examine the cognitive demands of the tasks they use more carefully and avoid misusing terms to label phenomena that involve very different demand characteristics and, second, that more attention is given to neuroimaging studies that examine the neural activity involved in different tasks.
https://www.nature.com/articles/s41598-025-99523-6

New Scientist

NEWS

Capuchin monkeys are stealing howler monkey babies in weird fad

A group of white-faced capuchins on a remote island have started stealing infants from another primate species, and researchers don't know why.
https://www.newscientist.com/article/2480552-capuchin-monkeys-are-stealing-howler-monkey-babies-in-weird-fad/

Babies start showing empathy even before they can speak

When adults pretended to be in pain, children as young as 9 months old comforted them, pushing back the earliest age when humans are known to display empathy.
https://www.newscientist.com/article/2480442-babies-start-showing-empathy-even-before-they-can-speak/

PLoS Biology

PAPERS

BO LIU et al – Object knowledge representation in the human visual cortex requires a connection with the language system

How world knowledge is stored in the human brain is a central question in cognitive neuroscience. Object knowledge effects have been commonly observed in higher-order sensory association cortices, with the role of language being highly debated. Using object color as a test case, we investigated whether communication with the language system plays a necessary role in knowledge neural representation in the visual cortex and corresponding behaviors, combining diffusion imaging (measuring white-matter structural integrity), functional MRI (fMRI; measuring functional neural representation of knowledge), and neuropsychological assessments (measuring behavioral integrity) in a group of patients who suffered from stroke (N = 33; 18 with left-hemisphere lesions, 11 with right-hemisphere lesions, and 4 with bilateral lesions). The structural integrity loss of the white-matter connection between the anterior temporal language region and the ventral visual cortex had a significant effect on the neural representation strength of object color knowledge in the ventral visual cortex and on object color knowledge behavior across modalities. These contributions could not be explained by the potential effects of the early visual perception pathway or potential confounding brain or cognitive variables. Our experiments reveal the contribution of the vision-language connection in the ventral occipitotemporal cortex (VOTC) object knowledge neural representation and object knowledge behaviors, highlighting the significance of the language-sensory system interface.
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3003161

PLoS One

PAPERS

E. DARCY BURGUND, SOLANA R. CUSHING & MOURA SAAD – Effect of verbal interference and response hand on hemisphere asymmetries in sad facial expression processing

A growing amount of evidence highlights a role for the left hemisphere in negative facial expression processing. The present study investigated the extent to which language contributes to this left hemisphere involvement by comparing performance during an emotion detection task presented to the left and right hemispheres using divided visual field under conditions of

verbal interference (covertly rehearsing a 6-digit string for a subsequent memory) and no interference. Participants were college undergraduates with no known neurological or psychiatric conditions. Half used their right hand to respond and half used their left. In line with the hypothesis that language contributes to left hemisphere involvement in negative expression processing, participants who used their right hand to respond were more accurate with sad facial expressions when they were presented to the left hemisphere than the right during the no interference condition, but this left-hemisphere advantage disappeared during the verbal interference condition. Contrary to the hypothesis, participants who used their left hand to respond were more accurate with sad facial expressions when they were presented to the right hemisphere than when they were presented to the left, and this right-hemisphere advantage did not differ significantly between interference groups. Results highlight the influence of language as well as response hand on hemisphere asymmetries in facial expression processing and point towards areas for future research.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0322504

TAIGA MORI, YASUHARU DEN & KRISTIINA JOKINEN – Structure of nods in conversation
Head nods are a commonly observed gesture in daily conversations and has attracted the interest of many researchers in human, social, and computer sciences since early studies. However, there has been little research focusing on the structure of nod movement, which sometimes involve repetition of upward and downward movements. In this study, we shed light on this structure of nods which has been previously overlooked. Prior to the analysis, we propose systematic conceptualization of nod movement. First, we define a cycle as a consecutive upward and downward movement as the basic unit of analysis. We next define the number of cycles within a nod as its length and the relative position of a cycle within a nod as its position. We then define the magnitude as the difference between the lowest and highest points of the head within a cycle. In the analysis, we demonstrate that this magnitude varies depending on length and position, thereby providing evidence that nods exhibit a structured pattern. Specifically, three structural patterns were observed: (1) the magnitude of the first cycles increases with length (anticipatory rising), (2) the magnitude decreases proportionally with position (declination), and (3) the magnitude of the final cycles is noticeably smaller than predicted from the preceding trend (final lowering). Finally, we discuss the similarities between the discovered structure and the phonological structure of utterances, suggesting that these structures may represent a universal characteristic of human repetitive actions.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0323448

DOROTA LIPOWSKA, ADAM LIPOWSKI & ANTÓNIO L. FERREIRA – Homonyms and context in signalling game with reinforcement learning
Using multi-agent signalling game with reinforcement learning, we examine the influence of context on the dynamics of homonyms. In our approach, context denotes additional information sent to the receiver, which helps to recognise the signal. Agents in our model select a communicated word or its interpretation with a probability proportional to the power of its weight, which accumulates over previous successful communication attempts (probability~weightα). The behaviour of the model hinges to some extent on whether this probability depends linearly or superlinearly on the weight. Numerical as well as analytical results show that contextuality stabilizes homonyms and also affects the overall dynamics of language formation. While in the linear regime, contextuality can hinder the formation of an efficient language, in the superlinear regime—it can even speed up the process. Some aspects of the evolution of homonyms in our model can be understood using a certain urn model. Mathematical analysis demonstrates that in the superlinear regime and in the presence of contextuality, the urn model predicts the existence of polarised-like homonyms, while in the linear regime, only symmetric homonyms can exist. Since there are polarised homonyms in natural languages, our work suggests that the superlinear regime (which could be considered as a manifestation of the so-called Metcalfe's law) may be more appropriate to describe language formation than the linear regime.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0322743

ALLISON J. SLETCHER, STEFANIA S. MORO & JENNIFER K. E. STEEVES – Enhanced voice recognition in musicians
Musicians typically have extensive auditory experience and demonstrate better pitch, timbre, and tempo discrimination compared to non-musicians. Musical training is also correlated with earlier and more robust cortical and subcortical responses to linguistic stimuli. We asked whether musical expertise may contribute to other auditory tasks, namely person and object recognition when both auditory and visual cues to identity are available. Musicians and non-musicians learned face-voice and car-horn "identity" pairs. Using a forced choice, old/new paradigm, participants were tested for recognition of the learned stimuli presented among distractor stimuli under three stimulus conditions (auditory only, visual only, and bimodal audiovisual). Compared to non-musicians, musicians were more sensitive at recognizing voices but not object sounds. Further, voice recognition sensitivity was positively correlated with both years of musical training and hours of weekly practice suggesting an influence of experience on performance. This differential performance for people and object stimuli is consistent with distinct neural substrates for face and object processing. Overall, this study demonstrates that experience in a sensory domain can benefit aspects of that sensory ability, such as voice but not object sound recognition, likely due to plasticity in distinct neural processing pathways.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0323604

PNAS

ARTICLES

TESSA M. DEKKER & RONI O MAIMON-MOR – How infants look shapes what they learn

We may not usually be aware of it, but the visual system is full of optimizations and biases—mechanisms designed to extract the most useful information from a constant stream of incoming data. But how much of our visual system is a "bag of prewired tricks"? And to what extent are these biases shaped flexibly by the regularities of the environment that we grow up in? Understanding how these optimizations unfold—in evolutionary and developmental timelines—could help explain why humans are such efficient learners, only requiring small amounts of training data to reach high level of expertise. To probe these questions, which are particularly timely in the age of resource-intensive AI, we must go back to where learning begins: to view the world from the point of view of an infant. In a mammoth undertaking, Petroff et al. have begun to do just this: chart the visual information babies encounter during their first months of life.
https://www.pnas.org/doi/full/10.1073/pnas.2505492122

PAPERS

ZACHARY J. PETROFF et al – The world through infant eyes: Evidence for the early emergence of the cardinal orientation bias

The structure of the environment includes more horizontal and vertical (i.e. cardinal) orientations than oblique orientations, meaning that edges tend to be aligned with or perpendicular to the direction of gravity. This bias in the visual scene is associated with a bias in visual sensitivity in adults. Although infants must learn to function in this biased environment, their immature motor control prevents them from consistently orienting themselves, relative to gravity. This study therefore asked whether cardinal orientations dominate human visual experience from early infancy or only from later in development, as motor control improves. We analyze video clips from head-mounted cameras, showing the egocentric perspective of 75 infants (1 to 12 mo) in their home environments in two communities (Indiana, USA vs. Tamil Nadu, India). We measured the distribution of orientations in each frame of these videos and found that horizontal and vertical orientations were overrepresented in infants from both countries. A cardinal orientation bias was evident even in the egocentric view of the youngest infants (3 wk) and became more prominent during the subsequent weeks of development. The early presence of a cardinal orientation bias in infants' visual input may serve as a consistent cue to gravity and ground planes, potentially influencing motor development and contributing to the formation of sensory, perceptual, and cognitive biases.
https://www.pnas.org/doi/10.1073/pnas.2421277122

Proceedings of the Royal Society B

PAPERS

WIM POUW et al – The human voice aligns with whole-body kinetics

Humans often vocalize while concurrently gesturing with their hands. Fluctuations in the intensity and tone of the voice have been shown to synchronize with gestural upper limb movement. This research provides direct evidence that (postural) muscle activity associated with arm movements predict these voicing fluctuations. We show that specific muscles (e.g. pectoralis major, erector spinae), associated with upper limb movement and their postural anticipations, are especially likely to interact with the voice. Adding a 1 kg mass to the upper limb increased this interaction. Ground-reaction forces were also found to relate to postural muscles, and these measurements also directly covaried with fluctuations in the voice during some movement conditions. These results show that the voice co-patterns with whole-body kinetics (i.e. forces). We thereby go beyond kinematic analyses in studying interactions between gesturing and vocalization, invoking several implications for biomechanical modelling. We conclude that human voicing has evolved in a dynamical interaction with the whole-body motor system.
https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2025.0160

Science

PAPERS

ELENA S. GUSAREVA et mul – From North Asia to South America: Tracing the longest human migration through genomic sequencing

Genome sequencing of 1537 individuals from 139 ethnic groups reveals the genetic characteristics of understudied populations in North Asia and South America. Our analysis demonstrates that West Siberian ancestry, represented by the Kets and Nenets, contributed to the genetic ancestry of most Siberian populations. West Beringians, including the Koryaks, Inuit, and Luoravetlans, exhibit genetic adaptation to Arctic climate, including medically relevant variants. In South America, early migrants split into four groups—Amazonians, Andeans, Chaco Amerindians, and Patagonians—~13,900 years ago. Their longest migration led to population decline, whereas settlement in South America's diverse environments caused instant spatial isolation, reducing genetic and immunogenic diversity. These findings highlight how population history and environmental pressures shaped the genetic architecture of human populations across North Asia and South America.
https://www.science.org/doi/10.1126/science.adk5081

Trends in Cognitive Sciences

ARTICLES

SCARLETT R. HOWARD – The value of ecologically irrelevant animal cognition research

Animal cognition research is often firmly grounded in the ecology and life history of the species. However, there are many studies exploring cognitive tasks that appear ecologically irrelevant. Ecologically irrelevant experiments are cognitive tests lacking clear ecological context in their inspiration, design, and applications. Here, I explore the case for and against ecologically irrelevant cognitive research. I discuss the challenges associated with defining and conducting ecologically irrelevant cognitive research and provide potential solutions for tackling these issues. I pose the question of whether any animal cognition research can be considered completely ecologically irrelevant. My goal is to argue that there is a place for both ecological relevance and irrelevance in the study of animal cognition.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00078-6

PAPERS

LILLIAN BEHM, NICHOLAS B. TURK-BROWNE & MELISSA M. KIBBE – The ubiquity of episodic-like memory during infancy

Considerable progress has been made in understanding early memory development. However, much of this research pre-dates contemporary theories of memory systems in the mature brain. This review provides a refresher on these conceptual frameworks and proposes a common theoretical foundation for reconciling adult and infant studies. This foundation enables a critical analysis of infant studies that have directly tested memory and suggests that they may not capture the full nature and extent of episodic memory abilities in infancy. The analysis is extended to infant studies that are ostensibly focused on cognitive domains other than memory and finds that many such tasks require episodic-like memory. Thus, there may be substantially more evidence for episodic-like memory in infants than previously recognized.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00082-8

COMMENTARIES

RHODRI CUSACK et al – Defending the foundation model view of infant development

In response to the opinion article by Cusack et al., Zettersten et al. challenge the proposal that human infants undergo a stage-like development from sensory to goal-directed actions. Zettersten et al. depict the foundation model theory as one in which infants passively learn statistical regularities and are not capable of motivations, but it was not our intention to rule out motivations. In practice, the objective function that drives learning in a foundation model can codify rich motivation such as a curiosity for surprising things. Further, this type of learning can lead to rich emergent knowledge that is far beyond what would be typically called a statistical regularity in the developmental literature (e.g., sequence transition probabilities).
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00119-6

RESPONSE TO: MARTIN ZETTERSTEN, RUTHE FOUSHEE & MARIEL K. GODDU – 'Helpless' infants are active, goal-directed agents: response to Cusack et al.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00022-1

ORIGINAL PAPER: RHODRI CUSACK, MARC'AURELIO RANZATO & CHRISTINE J. CHARVET – Helpless infants are learning a foundation model
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(24)00114-1

Trends in Ecology and Evolution

PAPERS

CHRISTIAN DRERUP et al – Tactical deception in cephalopods: a new framework for understanding cognition

Many animals rely on deception, including signalling misinformation, to gain advantages over others. While many deceptive strategies rely on deterministic patterns or conditioning, some taxa can flexibly adapt their deceptive behaviour to the identity, perspective, or inferred goals of the observer. These context-dependent deceptive strategies could be considered 'tactical deception' if they rely on higher-level cognitive processes to execute. Here, we outline why cephalopods, such as octopus and cuttlefish, are ideal candidates to explore the link between deception and cognition. As tactical deception relies on understanding differences in one's own and another observer's perspective, we suggest tactical deception as a framework to study aspects of cognition in other animals.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(25)00128-4

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