EAORC BULLETIN 1,126 – 12 January 2025

CONTENTS

NOTICES **3**
FORMATTED VERSION OF THIS BULLETIN 3
PUBLICATION ALERTS 3
EDITORIAL INTERJECTIONS 3
ACADEMIA.EDU – The Rise of Modern Humans 3
IAN TATTERSALL – The Rise of Modern Humans 3
ACADEMIA.EDU – Revisiting the Last Neandertals 4
JEAN-JACQUES HUBLIN & SHARA E. BAILEY – Revisiting the Last Neandertals 4
NEWS **4**
NATURE BRIEFING – Hormone spikes help rinse sleeping brain 4
SCIENCEADVISER – How slumber washes out the brain 4
SCIENCEADVISER – Journal editors' mass resignation marks 'sad day for paleoanthropology' 4
SCIENCE DAILY – Mixed signals: How the brain interprets social cues 4
SCIENCE DAILY – Evolutionary biology: Ants can hold a grudge 5
SCIENCE DAILY – How deep sleep clears a mouse's mind, literally 5
PUBLICATIONS **5**
Animal Behaviour 5
PAPERS **5**
PATRICIO CRUZ Y CELIS PENICHE – Do nonhuman animals copy successful and prestigious models? Disentangling payoff-biased transmission across taxa 5
GRÉGOIRE PASQUIER et al – A neural correlate of learning fails to predict foraging efficiency in the bumble bee Bombus terrestris 5
NICOLAS MATHEVON et al with KLAUS ZUBERBÜHLER – Vocal accommodation in bonobos 5
SHENGLAN CHEN et al – Long-lasting social bonds of a habitat-structured delphinid social system 6
C. VILETTE et al with L. BARRETT – The transition to motherhood as the temporal locus of change for social network integration among wild vervet monkeys 6
TONY CALMETTE, TOM CALMETTE & HÉLÈNE MEUNIER – Persistence suggests metacognition in capuchin monkeys 6
COURTNEY R. GARRISON, SCOTT K. SAKALUK & NED A. DOCHTERMANN – Persistence of alternative reproductive tactics: a test of game-theoretic predictions 7
Behavioral and Brain Sciences 7
PAPERS **7**
AMINE SIJILMASSI, LOU SAFRA & NICOLAS BAUMARD – "Our roots run deep": Historical myths as culturally evolved technologies for coalitional recruitment 7
COMMENTARIES **7**
PETER FONAGY & CHLOE CAMPBELL – Collective selfhood as a psychically necessary illusion 7
MICHAŁ BILEWICZ & ALEKSANDRA BILEWICZ – Myths of trauma and myths of cooperation: Diverse consequences of history for societal cohesion 7
JAMES C. KAUFMAN, TODD B. KASHDAN & PATRICK E. MCKNIGHT – Past glories feel good but creative minorities push us forward 7
CALEB WILDES & KRISTIN ANDREWS – Historical myths promote cooperation through affective states 8
ANTONIO BENÍTEZ-BURRACO – What about language? 8
KEITH OATLEY & SI JIA WU – The influence of stories including myths of origin 8
ALEXANDRA MARYANSKI & JONATHAN H. TURNER – Mythos in the light of evolution 8
LAURA AKERS – Beyond our "ancient roots": Toward a broader understanding of the motivational power of societal meta-narratives 8
ELI ELSTER & LUKE GLOWACKI – "We are one people": Group myths also draw cues from self-concept formation 8
WOUTER WOLF – The social cognitive evolution of myths: Collective narratives of shared pasts as markers for coalitions' communicative and cooperative prowess 8
AMINE SIJILMASSI, LOU SAFRA & NICOLAS BAUMARD – Coalitional psychology and the evolution of nationalistic cultures [Author response] 9
Cell Genomics 9
PAPERS **9**
EUCHARIST KUN, MASHAAL SOHAIL & VAGHEESH M. NARASIMHAN – The trait-specific timing of accelerated genomic change in the human lineage 9
SHAHAR SILVERMAN & DIYENDO MASSILANI – Double or nothing: Ancient duplications in the amylase locus drove human adaptation 9
Current Biology 9
ARTICLES **9**

ASHLEIGH L. WISEMAN – Human evolution: Run Lucy, run! 9
CHRIS STRINGER – Human evolution: The lonely Neanderthal? 9
PAPERS **9**
SUZANNE O. NOLAN et al – Recurrent activity propagates through labile ensembles in macaque dorsolateral prefrontal microcircuits 9
QIANLI YANG et al – A language model of problem solving in humans and macaque monkeys 10
KARL T. BATES et al – Running performance in Australopithecus afarensis 10
Developmental Cell 10
PAPERS **10**
YOSUKE YONEYAMA et al – In toto biological framework: Modeling interconnectedness during human development 10
eLife 11
PAPERS **11**
SAINAN LIU et al – Multi-dimensional social relationships shape social attention in monkeys 11
Evolutionary Anthropology 11
PAPERS **11**
KATHARINE L. BALOLIA & BERNARD WOOD – Comparative Context of Hard-Tissue Sexual Dimorphism in Early Hominins: Implications for Alpha Taxonomy 11
Frontiers in Developmental Psychology 11
PAPERS **11**
FABIO STICCA, VALÉRIE BRAUCHLI & PATRICIA LANNEN – Screen on = development off? A systematic scoping review and a developmental psychology perspective on the effects of screen time on early childhood development 11
Frontiers in Psychology 12
PAPERS **12**
F. R. (RUUD) VAN DER WEEL & AUDREY L. H. VAN DER MEER – Handwriting but not typewriting leads to widespread brain connectivity: a high-density EEG study with implications for the classroom 12
COMMENTARIES **12**
SVETLANA PINET & MARIEKE LONGCAMP – Commentary: Handwriting but not typewriting leads to widespread brain connectivity: a high-density EEG study with implications for the classroom 12
CORRECTIONS **12**
ANDREA BALÁZS et al – Corrigendum: The influence of temperament and perinatal factors on language development: a longitudinal study 12
iScience 12
PAPERS **12**
MEGAN R. WARREN et al – Vocal recognition of partners by female prairie voles 12
Nature Communications Biology 13
PAPERS **13**
SARAH MORENO-RODRIGUEZ et al – The human reward system encodes the subjective value of ideas during creative thinking 13
Nature Reviews Neuroscience 13
COMMENTARIES **13**
LINDA DRIJVERS, STEVEN L. SMALL & JEREMY I. SKIPPER – Language is widely distributed throughout the brain 13
EVELINA FEDORENKO, ANNA A. IVANOVA & TAMAR I. REGEV – Reply to 'Language is widely distributed throughout the brain' 13
Nature Scientific Reports 13
PAPERS **13**
MINXUE NIU et al – The persuasive role of generic-you in online interactions 13
MANUEL WILL & HANNES RATHMANN – Exploring the utility of unretouched lithic flakes as markers of cultural change 14
New Scientist 14
NEWS **14**
Climate change may have killed ancient 'hobbit' hominins 14
ARTICLES **14**
ANNALEE NEWITZ – Ancient humans understood the future and the past pretty much as we do 14
Physics of Life Reviews 14
PAPERS **14**
SIMONE BATTAGLIA, PHILIPPE SERVAJEAN & KARL J. FRISTON – The Paradox of the Self-Studying Brain 14
PLoS One 14
PAPERS **14**
EDUARDO PAIXÃO et al with ERELLA HOVERS – Exploring early Acheulian technological decision-making: A controlled experimental approach to raw material selection for percussive artifacts in Melka Wakena, Ethiopia 14
MEGAN M. BURKHARDT-REED, EDINA R. BENE & D. KIMBROUGH OLLER – Frequencies and functions of vocalizations and gestures in the second year of life 15
AARON C. DRAKE et al – The effect of nature on creativity through mental imagery 15
TIMOTHY R. WOJAN & DAYTON M. LAMBERT – A novel framework for increasing research transparency: Exploring the connection between diversity and innovation 15

Royal Society Open Science 16
PAPERS 16
DENIS NEWMAN-GRIFFIS – AI Thinking: a framework for rethinking artificial intelligence in practice 16
Science 16
PAPERS 16
HARRISON J. OSTRIDGE et mul with CRICKETTE SANZ & CHRISTOPHE BOESCH – Local genetic adaptation to habitat in wild chimpanzees 16
FRANCESCA LANZARINI et al – Neuroethology of natural actions in freely moving monkeys 17
Science Advances 17
PAPERS 17
WARSHA BARDE et al – Beyond nature, nurture, and chance: Individual agency shapes divergent learning biographies and brain connectome 17
The Innovation 17
PAPERS 17
YUFAN WANG et al with WILLIAM D. HOPKINS & CHET C. SHERWOOD – The Chimpanzee Brainnetome Atlas reveals distinct connectivity and gene expression profiles relative to humans 17
Trends in Cognitive Sciences 17
PAPERS 17
JULIO MARTINEZ-TRUJILLO – Why do primates have view cells instead of place cells? 17
ELIZABETH J. KRUMREI-MANCUSO et al – Toward an understanding of collective intellectual humility 18
Trends in Ecology and Evolution 18
PAPERS 18
FEDERICO GARRIDO-DE LEÓN, VALENTINA FRANCO-TRECU & RAUL COSTA-PEREIRA – Keystone niche individuals: some are more unequal than others 18
MICHAEL GRIESSER et al with JUDITH M. BURKART – The power of caring touch: from survival to prosocial cooperation 18
SUBSCRIBE to the EAORC Bulletin 18
UNSUBSCRIBE from the EAORC Bulletin 18
PRODUCED BY AND FOR THE EAORC EMAIL GROUP 18

NOTICES

FORMATTED VERSION OF THIS BULLETIN

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

PUBLICATION ALERTS

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

EDITORIAL INTERJECTIONS

Comments in curly brackets are editorial interjections. The Editor reserves the right to be wrong.

ACADEMIA.EDU – The Rise of Modern Humans

Evolution: Education and Outreach 3, 399-402 (2010).

IAN TATTERSALL – The Rise of Modern Humans

Human beings are distinguished most strikingly by their unique "symbolic" way of processing information about the world. Although based on a long evolutionary history, the modern human cognitive style is not predicted by that history. It is not the product of a process of incremental refinement but is instead "emergent," representing an entirely distinct level of complexity. Physically, Homo sapiens is very distinctive, its peculiarities clearly resulting from a significant developmental reorganization with numerous skeletal ramifications and quite plausibly others as well. It seems reasonable to suppose that the structural underpinnings of symbolic thought were acquired in this reorganization. Still, the fossil and archaeological records indicate that the first anatomically recognizable members of the species predated the first humans who behaved in a demonstrably symbolic manner. So while the biological potential for symbolic thinking most likely arose in the morphogenetic event that gave rise to H. sapiens as a distinctive anatomical entity, this new capacity was evidently exaptive, in the sense that it had to await its "discovery" and expression, clearly through a cultural stimulus that was plausibly the invention of language. One manifestation of symbolic reasoning is the adoption of technological change in response to environmental challenges, in contrast to earlier responses that typically used existing technologies in new ways. As climates changed at the end of the last Ice Age, this new technophile proclivity was expressed in a shift toward agriculture and sedentary lifestyles, precipitating a fundamentally new (and potentially self-destructive) relationship with Nature. Both of the

two most radical and fateful evolutionary innovations in the history of life (symbolic thinking and sedentary lifestyles) were thus very recent occurrences, well within the short tenure of H. sapiens.
https://www.academia.edu/126749806/The_Rise_of_Modern_Humans

ACADEMIA.EDU – Revisiting the Last Neandertals

In Nicholas J. Conard (ed.), When Neanderthals and Modern Humans Met, Kerns Verlag, 105-128 (2006).

JEAN-JACQUES HUBLIN & SHARA E. BAILEY – Revisiting the Last Neandertals

Assessment of the processes that led to the replacement of local Neandertals by modern humans in Europe between 40,000 and 30,000 14C years ago is complicated by the lack of a precise chronology of the sites belonging to this time period. There is some evidence of chronological overlap between the two groups in Europe, and this contemporaneity is supported by the cultural changes observed in the latest Neandertals that are best explained by short- or long-distance diffusion from one group to the other. However, in limited areas the replacement process appears to have progressed rapidly. A question that remains is whether or not there was gene flow between the two groups. This issue has been assessed primarily by looking for Neandertal features in Upper Paleolithic modern humans. In this paper we use an alternative approach, reviewing the evidence for the occurrence of anatomically modern features in the latest Neandertals. When more weight is given to features representing a. strong genetic signal, clear evidence for "intermediate" states in the last Neandertals is not observed. Other features that have been interpreted this way more likely belong to the normal range of variation of the Neandertals, and some are documented in Europe long before any modern humans were present. In some cases, they can also be seen as resulting from behavioral changes during the period of replacement.
https://www.academia.edu/1795694/Hublin_J_J_and_S_E_Bailey_2006_Revisiting_the_last_Neandertals_In_N_J_Conard_ed_When_Neanderthals_and_Modern_Humans_Met_Kerns_Verlag_Tuebingen_105_128

NEWS

NATURE BRIEFING – Hormone spikes help rinse sleeping brain

Blood vessel contractions co-ordinated by regular spikes of an adrenaline-adjacent hormone help to ‘wash’ the brains of mice while they sleep. Scientists think that during sleep, the brain’s waste disposal system — the glymphatic system — flushes cerebrospinal fluid through the brain to clear out any unwanted chemicals. By studying sleeping mice, scientists noticed that levels of norepinephrine in the mice’s brains yo-yo in the non-REM sleep phase, which causes blood vessels to contract in the same rhythm. The team suggests that this pushes cerebrospinal fluid through the brain like a pump, which picks up lingering molecules as it goes.
https://www.science.org/content/article/scientists-uncover-how-brain-washes-itself-during-sleep

SCIENCEADVISER – How slumber washes out the brain

Many scientists think that sleep is the brain’s rinse cycle, when fluid percolating through the organ flushes out chemical waste that accumulated while we were awake. However, what propels this circulation has remained elusive. A study this week in Cell posits that regular contractions of blood vessels in the brain, stimulated by the periodic release of a chemical cousin of adrenaline, could be what pushes the fluid along.

For a little over a decade, researchers have known that liquid bathing the brain flows via tiny passageways alongside blood vessels known as the glymphatic system. In the new study, researchers injected mice with a fluorescent molecule to trace that fluid, observing that it moved in concert with pulses of norepinephrine—a neurotransmitter that, among other things, causes blood vessels to contract. These contractions would create a pump of sorts, the researchers say. And sure enough, stimulating the brain to speed up those norepinephrine pulses prompted more fluid flow into the brain.

The team also found that the sleep drug zolpidem, better known as Ambien, impedes the blood vessel oscillations and the fluid flow they promote, implying it could hamper cleansing. Zolpidem is a widely used sleep aid, and researchers say the study shouldn’t prompt people to stop taking it. Future studies could test whether the same side effects exist for humans, and the new finding could help researchers create new sleep aids that preserve this brain-scrubbing function.
https://www.science.org/content/article/scientists-uncover-how-brain-washes-itself-during-sleep

SCIENCEADVISER – Journal editors’ mass resignation marks ‘sad day for paleoanthropology’

Exodus from the Journal of Human Evolution leaves a flagship journal in crisis.
https://www.science.org/content/article/journal-editors-mass-resignation-marks-sad-day-paleoanthropology

SCIENCE DAILY – Mixed signals: How the brain interprets social cues

Researchers have found that smell and sound signals merge in the mouse brain's hearing center, influencing social behaviors like pup retrieval. The discovery may lead to a better understanding of how neurological conditions such as autism affect a person's ability to interpret social cues.
https://www.sciencedaily.com/releases/2025/01/250106133238.htm

SCIENCE DAILY – Evolutionary biology: Ants can hold a grudge

Evolutionary biologists are investigating the extent to which ants learn from past experiences. After being attacked by ants from a particular nest, ants behave more aggressively towards others from that same nest.
https://www.sciencedaily.com/releases/2025/01/250108144025.htm

SCIENCE DAILY – How deep sleep clears a mouse's mind, literally

A good night's sleep does more than just help you feel rested--it might literally clear your mind. A new study shows how deep sleep may wash away waste buildup in the brain during waking hours, an essential process for maintaining brain health. The findings also offer insights into how sleep aids may disrupt the 'brainwashing' system, potentially affecting cognitive function in the long run.
https://www.sciencedaily.com/releases/2025/01/250108143735.htm

PUBLICATIONS

Animal Behaviour

PAPERS

PATRICIO CRUZ Y CELIS PENICHE – Do nonhuman animals copy successful and prestigious models? Disentangling payoff-biased transmission across taxa

As the empirical literature on social learning across taxa has exploded, some claims that certain social learning strategies are uniquely human have been challenged. While enriching, the interdisciplinary nature of cultural transmission studies has also weakened semantic and conceptual congruence across fields. A theoretical gap has thus been growing between the observed animal behaviours and the hypothesized social learning strategies underlying them. This review specifically explores the taxonomic distribution of social learning strategies based on payoff correlates, like a model's success or prestige, and the possibility that these extend beyond humans. Such 'copy-if-better model' (i.e. indirect bias) strategies are functionally distinct from 'copy-if-better variant' (i.e. direct bias) strategies, although they are both often generically described as payoff-biased transmission. Perhaps most importantly, copy-if-better model heuristics may increase the risks of maladaptive transmission and have been implicated in the spread of fitness-reducing behaviours in humans. This paper first proposes broad criteria of cognitive mechanisms that are required for indirectly biased social learning strategies to be deployed. It then reviews the empirical evidence for these strategies across nonhuman animals. While several studies call into question the ability of nonhuman animals to preferentially copy a model in the absence of any immediately and directly observed relative benefits (e.g. payoffs), multiple others meet the criteria for indirectly biased transmission. Observing indirectly biased transmission dynamics across a range of different taxa could be indicative of the adaptive potential of these social learning strategies. On the other hand, species that rely on this type of social learning strategy may be vulnerable to the transmission of maladaptive information, suggesting future research into how animals mitigate the risks inherent in such a low-cost, but potentially uncertain, heuristic.
https://www.sciencedirect.com/science/article/pii/S0003347224003208

GRÉGOIRE PASQUIER et al – A neural correlate of learning fails to predict foraging efficiency in the bumble bee Bombus terrestris

Mushroom bodies (MB) are integrative structures in the insect brain that, in social bees, contribute to both visual and olfactory learning. Changes in the density of presynaptic boutons (or microglomeruli) within the calyx region of the MB have been linked to various aspects of foraging, including forms of learning that are believed to be key in supporting foraging efficiency. Here, we directly tested the relationship between foraging efficiency and microglomerulus density in a bumble bee model, Bombus terrestris. We found no evidence for microglomerulus density predicting real-world foraging performance, nor any relationship with foraging experience. Instead, our data suggest a potential nonlinear relationship between an individual's age, which is independent of foraging experience, and microglomerulus density in the lip region of the calyx, which is associated with olfactory processing. Our findings suggest that in real-world scenarios there is no simple direct relationship between microglomerulus density, learning ability and foraging efficiency in bumble bees, highlighting the knowledge gap regarding the relationships between learning abilities, neuroanatomy and foraging efficiency.
https://www.sciencedirect.com/science/article/pii/S0003347224003142

NICOLAS MATHEVON et al with KLAUS ZUBERBÜHLER – Vocal accommodation in bonobos

Dialects and accents in human speech have a demonstrated social function as markers of group identity and often serve as psychological foundations of trust and cooperation. The extent to which this phenomenon is a feature of primate communication more generally is still debated. Here, we show that the vocal signatures of bonobos, Pan paniscus, belonging to three social groups show group-specific acoustic features independent of genetic relatedness. We compared the barks of 22 adults from the three groups and found that individuals currently living together had more similar barks than individuals that had never met or had lost touch with each other, regardless of their degree of genetic relatedness. We concluded that

group-specific vocal accommodation is present in bonobos, suggesting an early evolutionary emergence of vocal plasticity in apes, which could be a means to signal social closeness between individuals.
https://www.sciencedirect.com/science/article/pii/S0003347224003166

SHENGLAN CHEN et al – Long-lasting social bonds of a habitat-structured delphinid social system

Owing to the large, three-dimensional, fluid nature of their aquatic environment, the impact of habitat configuration has rarely been investigated in cetacean societies. However, in some coastal areas such as large estuarine systems and lagoons, where environmental variables can be spatially structured, the role of habitat configuration in shaping dolphin societies should not be ignored. In the present study, we examined the social structure of Indo-Pacific humpback dolphins, Sousa chinensis, in waters off the Leizhou Peninsula (LZP), northern South China Sea, using an 11-year photo identification data set (2013–2023). We identified four mixed sex/age communities with segregated region preferences. Three communities exhibited a preference to waters of intermediate depth (5 m ≤ depth < 10 m), while one community preferred shallow waters (< 5 m in depth). Dolphins inhabiting Zhanjiang Bay and northern Leizhou Bay preferred deeper waters, probably a result of reduced access to the shallow waters in these areas. The double dekker semipartialling multiple regression quadratic assignment procedure (MRQAP-DSP) suggested that spatial overlap and gregariousness were the most significant predictors describing the LZP humpback dolphins' social structure. Community size and their geographic/social positions outperformed predation risk (as reflected by shark-inflicted scars) in shaping communities' sociality (measured as Strength, Eigenvector centrality, Reach, Clustering coefficient and Affinity). From our results, we suggest that dolphins with similar area preferences developed strong associations that were stable over time and a habitat-structured social network. This study contributes to our understanding of the complex social structure of coastal dolphins and provides new insights into dolphin behaviours that can be important for developing effective management strategies.
https://www.sciencedirect.com/science/article/abs/pii/S0003347224003270

C. VILETTE et al with L. BARRETT – The transition to motherhood as the temporal locus of change for social network integration among wild vervet monkeys

The birth of a first offspring represents a major change in a female mammal's social circumstances. We hypothesize that the transition to motherhood marks a significant shift in the social network dynamics of female vervet monkeys, Chlorocebus pygerythrus, and represents the crucial boundary between juvenile and adult patterns of engagement. To test this, we compare the grooming network structure of primiparous and multiparous females, using both direct and indirect measures of centrality. We found that, following the birth of their first infant, ego-structure of primiparous females converged with that of multiparous females and that primiparous females became more central in their grooming networks around their first birth event, as measured by eigenvector centrality. Examining shifts in the number of new social ties formed across the birth event, we found a very small increase in the formation of new strong ties, but a larger increase in the number of additional weak ties. A simulated 'knockout' analysis showed that both types of ties contributed to the observed increase in eigenvector centrality. Overall, our findings support the idea that motherhood serves as a catalyst for juveniles to transition into adult social configurations. Note, however, that although the juvenile–adult boundary marked the temporal locus of change for social integration, there was, nevertheless, a striking consistency in the stability of ego-network structure across both the juvenile period and through the motherhood transition. This structure may enhance individual flexibility in social engagement and accommodate the specific needs of females as they experience changes in status and broader demographic shifts within their groups.
https://www.sciencedirect.com/science/article/pii/S0003347224003300

TONY CALMETTE, TOM CALMETTE & HÉLÈNE MEUNIER – Persistence suggests metacognition in capuchin monkeys

Awareness of one's own mental states, also known as metacognition, is an important component of human self-awareness. In recent decades, several studies have investigated nonhuman metacognition and evidence of this ability has notably been gathered in catarrhine primates. Conversely, numerous studies on capuchin monkeys have reported mixed or negative results. Because it has been suggested that the failure of capuchins may be due to species-related limitations of classical metacognition tasks, we tested metacognition in the brown capuchin, Sapajus apella, using a novel experimental paradigm adapted from a study of human infants. In this experiment, capuchins had to choose between two boxes, one of which had previously been baited with a treat under their gaze, before searching the hidden content of the chosen box. As the treat was surreptitiously removed, the time capuchins were willing to search the box for the treat could be used as a nonverbal postdecision indicator of metacognitive confidence, with longer persistence times indicating greater confidence in remembering which box was baited and expecting to find the treat in the chosen box. Consistent with the possibility that capuchins possess metacognitive abilities, capuchins persisted longer in their search after a correct versus incorrect choice. This result suggests that metacognition in primates is not restricted to catarrhines. Although nonmetacognitive explanations are possible, experimental paradigms involving a postdecision indicator of confidence, such as persistence, have advantages over classical paradigms and offer promising perspectives for investigating metacognition in a wide range of animals.
https://www.sciencedirect.com/science/article/pii/S0003347224003105

COURTNEY R. GARRISON, SCOTT K. SAKALUK & NED A. DOCHTERMANN – Persistence of alternative reproductive tactics: a test of game-theoretic predictions

In many species, males produce signals to attract females. However, in some species and populations, only some males produce these signals, with other males competing for and intercepting reproductive opportunities. In these systems, at least three tactics are expected: Always Signal, signal only when others are not (Assess) and Never Signal. The expected representation of these tactics within a population is frequently unknown in part because the costs of signalling (C) and the fitness value of a single reproductive bout (V) are difficult to quantify. Using a game-theoretic model, we predicted that the Always Signal strategy should only be present in a population if the fitness value of calling is greater than twice the cost ($2C < V$). We found that males that Always Signal are apparently absent in decorated crickets, Gryllodes sigillatus, at least in our sampling of a laboratory-housed population. Moreover, males were not strict assessors and instead signalled infrequently (30% of the time) when signalling by others was constant. Males also exhibited substantial among-individual variation in the propensity to call when other males were not signalling ($\tau = 0.3$). Our results indicate a high relative cost of signalling ($2C > V$). The presence of among-individual variation in propensity to call is also suggestive of underlying genetic variation and a mixed evolutionarily stable strategy. More generally, the apparent high cost of signalling and the presence of variation in calling propensity suggest that reduced-cost strategies should spread quickly in populations.
https://www.sciencedirect.com/science/article/pii/S0003347224003117

Behavioral and Brain Sciences

PAPERS

AMINE SIJILMASSI, LOU SAFRA & NICOLAS BAUMARD – "Our roots run deep": Historical myths as culturally evolved technologies for coalitional recruitment

One of the most remarkable manifestations of social cohesion in large-scale entities is the belief in a shared, distinct, and ancestral past. Human communities around the world take pride in their ancestral roots, commemorate their long history of shared experiences, and celebrate the distinctiveness of their historical trajectory. Why do humans put so much effort into celebrating a long-gone past? Integrating insights from evolutionary psychology, social psychology, evolutionary anthropology, political science, cultural history, and political economy, we show that the cultural success of historical myths is driven by a specific adaptive challenge for humans: The need to recruit coalitional support to engage in large-scale collective action and prevail in conflicts. By showcasing a long history of cooperation and shared experiences, these myths serve as super-stimuli, activating specific features of social cognition and drawing attention to cues of fitness interdependence. In this account, historical myths can spread within a population without requiring group-level selection, as long as individuals have a vested interest in their propagation and strong psychological motivations to create them. Finally, this framework explains not only the design features of historical myths, but also important patterns in their cross-cultural prevalence, interindividual distribution, and particular content.
https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/our-roots-run-deep-historical-myths-as-culturally-evolved-technologies-for-coalitional-recruitment/EF4D89B86AE9BF9D8EEC0131E8ADF52D

COMMENTARIES

PETER FONAGY & CHLOE CAMPBELL – Collective selfhood as a psychically necessary illusion

Drawing on developmental psychopathology and thinking about the we-mode of social cognition, we propose that historical myths – be they on the scale of the family, the nation, or an ethnic group – are an expression and function of our need to join with other minds. As such, historical myths are one cognitive technology used to facilitate social learning, the transmission of culture and the relational mentalizing that underpins social and emotional functioning.
https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/collective-selfhood-as-a-psychically-necessary-illusion/0E9B3123A00660E8DF6DE7C994FE83CF

MICHAŁ BILEWICZ & ALEKSANDRA BILEWICZ – Myths of trauma and myths of cooperation: Diverse consequences of history for societal cohesion

We propose that historical myths fall into two distinctive categories: Traumatic and cooperative. Traumatic myths, highlighting collective suffering, can undermine trust and foster conspiracy theories, whereas cooperative myths, emphasizing collective action, enhance group cohesion and within-group coalition building. Psychological and sociological evidence supports these divergent impacts of historical myths both in nations and social movements.
https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/myths-of-trauma-and-myths-of-cooperation-diverse-consequences-of-history-for-societal-cohesion/CEBCE2E711E65C92BB27D493035E0CFC

JAMES C. KAUFMAN, TODD B. KASHDAN & PATRICK E. MCKNIGHT – Past glories feel good but creative minorities push us forward

Historical narratives can satisfy basic individual psychological needs. However, an over-reliance on a group's past can marginalize those who think differently – thus, homogenizing the culture and stifling creativity. By revising narratives to balance the power of collective narratives with the richness of individuality, we foster groups that encourage varied identities.

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/past-glories-feel-good-but-creative-minorities-push-us-forward/E2E29E7F3EA1344B76634F9A24AE4712

CALEB WILDES & KRISTIN ANDREWS – Historical myths promote cooperation through affective states

Although we agree that historical myths function to increase cooperation in the groups that share them, we propose that the mechanisms at work may include affective states. We suggest that sharing historical myths can create a felt sense of intimacy, similarity, and security among group members, which increases trust and motivates cooperation, even without particular beliefs about population structure.

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/historical-myths-promote-cooperation-through-affective-states/A1042CC93E92C8209442041483FB542A

ANTONIO BENÍTEZ-BURRACO – What about language?

Myths about a remote shared past can certainly promote cooperation between distantly related people, seemingly via their impact on our social cognition, and ultimately facilitate the achievement of complex tasks in large-scale societies. Nonetheless, the creation and transmission of these complex narratives are not possible without the parallel development of sophisticated language(s), endowed with properties like displacement (enabling mental travels in space and time) and complex syntax (enabling the assembly and communication of complex thoughts).

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/what-about-language/AAEF77F43E4355215A799D22C32EFB3F

KEITH OATLEY & SI JIA WU – The influence of stories including myths of origin

Sijilmassi et al. argue that myths serve to gain coalitional support by detailing shared histories of ancestry and cooperation. They overlook the emotional influences of stories, which include myths of human origin. We suggest that influential myths do not promote cooperation principally by signaling common ancestry, but by prompting human emotions of interdependence and connection.

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/influence-of-stories-including-myths-of-origin/036685592B817A5FC158BD64A1AEDCD9

ALEXANDRA MARYANSKI & JONATHAN H. TURNER – Mythos in the light of evolution

This commentary adds elements of analysis from the new evolutionary sociology that might help to support the mythologic hypothesis. It discusses the likelihood of a more generalized processer rather than exactly evolved psychological mechanisms, the consequences of bottlenecks, and the importance of utilizing molecular, fossil, and primate data in the authors' research program.

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/mythos-in-the-light-of-evolution/169BEBB55BD977058512D757F9CAB2E2

LAURA AKERS – Beyond our "ancient roots": Toward a broader understanding of the motivational power of societal meta-narratives

The "historical myths" addressed in the target article are but one type of societal meta-narrative, a cognitive framework for understanding the story of one's group: Its origins, purpose, turning points, threats and opportunities, key relationships, and the appropriate affect for group members. Engagement with the broader literature on meta-narratives, including political and sacred myths, and on group entitativity is recommended.

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/beyond-our-ancient-roots-toward-a-broader-understanding-of-the-motivational-power-of-societal-metanarratives/30136A525E204F1F7B484A66DE2887E5

ELI ELSTER & LUKE GLOWACKI – "We are one people": Group myths also draw cues from self-concept formation

Sijilmassi et al. suggest that group myths explaining the shared history of a people succeed and propagate by leveraging cognitive cues from fitness interdependence. We offer an alternative and mutually compatible account rooting the success of group myths in cues from a different cognitive domain: The development of self-concepts.

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/we-are-one-people-group-myths-also-draw-cues-from-selfconcept-formation/85FCD2CD642F2D78B50A45C3D22588A4

WOUTER WOLF – The social cognitive evolution of myths: Collective narratives of shared pasts as markers for coalitions' communicative and cooperative prowess

To understand why humans put much effort into celebrating cultural myths, it is crucial to approach this phenomenon as part of humans' broader social cognitive evolution. Specifically, humans' unique capacity to bond with others through shared/collective representations of shared experiences has likely caused individuals to use myths to assess not only coalitions' fitness interdependence, but also their cooperative prowess.

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/social-cognitive-evolution-of-myths-collective-narratives-of-shared-pasts-as-markers-for-coalitions-communicative-and-cooperative-prowess/5B9997060491C5B1B9E55A4FD581E991

AMINE SIJILMASSI, LOU SAFRA & NICOLAS BAUMARD – Coalitional psychology and the evolution of nationalistic cultures [Author response]

The commentaries addressed various aspects of our account of historical myths. We respond by clarifying the evolutionary theory of coalitional psychology that underlies our claims (R1). This addresses concerns about the role of fitness interdependence in large groups (R2), cultural transmission processes (R3), alternative routes to nation-building (R4) and the role of proximal mechanisms (R5). Finally, we evaluate alternative theories (R6) and discuss directions for future research (R7).

https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/coalitional-psychology-and-the-evolution-of-nationalistic-cultures/C5DD20E58F20AA0C4CC1699392357963

Cell Genomics

PAPERS

EUCHARIST KUN, MASHAAL SOHAIL & VAGHEESH M. NARASIMHAN – The trait-specific timing of accelerated genomic change in the human lineage

Humans exhibit distinct characteristics compared to our primate and ancient hominin ancestors. To investigate genomic bursts in the evolution of these traits, we use two complementary approaches to examine enrichment among genome-wide association study loci spanning diseases and AI-based image-derived brain, heart, and skeletal tissue phenotypes with genomic regions reflecting four evolutionary divergence points. These regions cover epigenetic differences among humans and rhesus macaques, human accelerated regions (HARs), ancient selective sweeps, and Neanderthal-introgressed alleles. Skeletal traits such as pelvic width and limb proportions showed enrichment in evolutionary annotations that mirror morphological changes in the primate fossil record. Additionally, we observe enrichment of loci associated with the longitudinal fasciculus in human-gained epigenetic elements since macaques, the visual cortex in HARs, and the thalamus proper in Neanderthal-introgressed alleles, implying that associated cognitive functions such as language processing, decision-making, sensory signaling, and motor control are enriched at different evolutionary depths.

https://www.cell.com/cell-genomics/fulltext/S2666-979X(24)00369-0

SHAHAR SILVERMAN & DIYENDO MASSILANI – Double or nothing: Ancient duplications in the amylase locus drove human adaptation

Salivary and pancreatic amylase are encoded by AMY1 and AMY2, respectively, which are located within a single genomic locus that has undergone substantial structural variation, resulting in varying gene copy numbers across species. Using optical genome mapping and long-read sequencing, Yilmaz, Karageorgiou, Kim, et al. achieved nucleotide-level resolution of this locus across different human populations, offering new insights into how copy number variation contributes to human adaptation.

https://www.cell.com/cell-genomics/fulltext/S2666-979X(24)00370-7

Current Biology

ARTICLES

ASHLEIGH L. WISEMAN – Human evolution: Run Lucy, run!

Endurance running is thought as critical for the evolutionary success of hominins. A new study analysing the running skills of the famous 'Lucy' — Australopithecus afarensis — finds that they performed poorer than modern humans, suggesting that key features of the human body plan evolved specifically to improve running performance.

https://www.cell.com/current-biology/abstract/S0960-9822(24)01585-9

CHRIS STRINGER – Human evolution: The lonely Neanderthal?

A recently excavated Neanderthal skeleton from southern France has yielded DNA from a distinct lineage, different from other late Neanderthals. This suggests Neanderthals expanded and diversified about 120,000 years ago, and some of that diversity persisted in Europe until near the time of their extinction.

https://www.cell.com/current-biology/abstract/S0960-9822(24)01584-7

PAPERS

SUZANNE O. NOLAN et al – Recurrent activity propagates through labile ensembles in macaque dorsolateral prefrontal microcircuits

Human and non-human primate studies clearly implicate the dorsolateral prefrontal cortex (dlPFC) as critical for advanced cognitive functions. It is thought that intracortical synaptic architectures within the dlPFC are the integral neurobiological substrate that gives rise to these processes. In the prevailing model, each cortical column makes up one fundamental

processing unit composed of dense intrinsic connectivity, conceptualized as the "canonical" cortical microcircuit. Each cortical microcircuit receives sensory and cognitive information from upstream sources, which are represented by sustained activity within the microcircuit, referred to as persistent or recurrent activity. Via recurrent connections within the microcircuit, activity propagates for a variable length of time, thereby allowing temporary storage and computations to occur locally before ultimately passing a transformed representation to a downstream output. Competing theories regarding how microcircuit activity is coordinated have proven difficult to reconcile in vivo, where intercortical and intracortical computations cannot be fully dissociated. Here, using high-density calcium imaging of macaque dlPFC, we isolated intracortical computations by interrogating microcircuit networks ex vivo. Using peri-sulcal stimulation to evoke recurrent activity in deep layers, we found that activity propagates through stochastically assembled intracortical networks wherein orderly, predictable, low-dimensional collective dynamics arise from ensembles with highly labile cellular memberships. Microcircuit excitability covaried with individual cognitive performance, thus anchoring heuristic models of abstract cortical functions within quantifiable constraints imposed by the underlying synaptic architecture. Our findings argue against engram or localist architectures, together demonstrating that generation of high-fidelity population-level signals from distributed, labile networks is an intrinsic feature of dlPFC microcircuitry.
https://www.cell.com/current-biology/fulltext/S0960-9822(24)01636-1

QIANLI YANG et al – A language model of problem solving in humans and macaque monkeys
Human intelligence is characterized by the remarkable ability to solve complex problems by planning a sequence of actions that takes us from an initial state to a desired goal state. Quantifying and comparing problem-solving capabilities across species and finding their evolutionary roots are critical for understanding how the brain carries out this intricate process. We introduce the Language of Problem Solving (LoPS) model as a novel quantitative framework that investigates the structure of problem-solving behavior through a language model. We applied the model to an adapted classic Pac-Man game as a cross-species behavioral paradigm to test both humans and macaque monkeys. The LoPS model extracted the latent structure, or grammar, embedded in the agents' gameplay, revealing the non-Markovian temporal dependency structure of their problem-solving behavior and the hierarchical structures of problem solving in both species. The complexity of LoPS grammar correlated with individuals' game performance and reflected the difference in problem-solving capacity between humans and monkeys. Both species evolved their LoPS grammars during learning, progressing from simpler to more complex ones, suggesting that the structure of problem solving is not fixed but evolves to support more sophisticated and efficient problem solving. Our study provides insights into how humans and monkeys break down problem solving into compositional units and navigate complex tasks, deepening our understanding of human intelligence and its evolution and establishing a foundation for future investigations of the neural mechanisms of problem solving.
https://www.cell.com/current-biology/abstract/S0960-9822(24)01501-X

KARL T. BATES et al – Running performance in Australopithecus afarensis
The evolution of bipedal gait is a key adaptive feature in hominids, but the running abilities of early hominins have not been extensively studied. Here, we present physics simulations of Australopithecus afarensis that demonstrate this genus was mechanically capable of bipedal running but with absolute and relative (size-normalized) maximum speeds considerably inferior to modern humans. Simulations predicted running energetics for Australopithecus that are generally consistent with values for mammals and birds of similar body size, therefore suggesting relatively low cost of transport across a limited speed range. Through model parameterization, we demonstrate the key role of ankle extensor muscle architecture (e.g., the Achilles tendon) in the evolution of hominin running energetics and indeed in an increase in speed range, which may have been intrinsically coupled with enhanced endurance running capacity. We show that skeletal strength was unlikely to have been a limiting factor in the evolution of enhanced running ability, which instead resulted from changes to muscle anatomy and particularly overall body proportions. These findings support the hypothesis that key features in the human body plan evolved specifically for improved running performance and not merely as a byproduct of selection for enhanced walking capabilities.
https://www.cell.com/current-biology/fulltext/S0960-9822(24)01566-5

Developmental Cell

PAPERS

YOSUKE YONEYAMA et al – In toto biological framework: Modeling interconnectedness during human development
Recent advancements in pluripotent stem cell and synthetic tissue technology have brought significant breakthroughs in studying early embryonic development, particularly within the first trimester of development in humans. However, during fetal stage development, investigating further biological events represents a major challenge, partly due to the evolving complexity and continued interaction across multiple organ systems. To bridge this gap, we propose an "in toto" biological framework that leverages a triad of technologies: synthetic tissues, intravital microscopy, and computer vision to capture in vivo cellular morphodynamics, conceptualized as single-cell choreography. This perspective will discuss the inherent challenges in capturing such complexities and explore engineering technologies to delve into the less-explored phase of human development. We also propose reframing the organ-centric to a system-centric paradigm, as such a framework

broadens the value of the in vivo-embedded synthetic-tissue-based approach for interrogating the multifaceted interplay of human developmental processes during this crucial stage.
https://www.cell.com/developmental-cell/abstract/S1534-5807(24)00576-8

eLife

PAPERS

SAINAN LIU et al – Multi-dimensional social relationships shape social attention in monkeys

Social relationships guide individual behavior and ultimately shape the fabric of society. Primates exhibit particularly complex, differentiated, and multidimensional social relationships, which form interwoven social networks, reflecting both individual social tendencies and specific dyadic interactions. How the patterns of behavior that underlie these social relationships emerge from moment-to-moment patterns of social information processing remains unclear. Here, we assess social relationships among a group of four monkeys, focusing on aggression, grooming, and proximity. We show that individual differences in social attention vary with individual differences in patterns of general social tendencies and patterns of individual engagement with specific partners. Oxytocin administration altered social attention and its relationship to both social tendencies and dyadic relationships, particularly grooming and aggression. Our findings link the dynamics of visual information sampling to the dynamics of primate social networks.
https://elifesciences.org/reviewed-preprints/104460

Evolutionary Anthropology

PAPERS

KATHARINE L. BALOLIA & BERNARD WOOD – Comparative Context of Hard-Tissue Sexual Dimorphism in Early Hominins: Implications for Alpha Taxonomy

Sexual dimorphism is one of the main factors confounding attempts to generate sound alpha taxonomic hypotheses in the early hominin fossil record. To better understand how between-sex variation may confound alpha taxonomic assessments, we consider some of the factors that drive hard-tissue sexual dimorphism in extant primates. We review the socioecological correlates of body size sexual dimorphism, how sexual selection may be associated with craniofacial sexual dimorphism in the context of visual signaling, and how sex-specific patterns of growth and development in primates contribute to intra-specific variation. To illustrate how variation associated with inferred sexual dimorphism has the potential to confound alpha taxonomic assessments in early hominins, we focus on its impact on our understanding of a single taxon, Paranthropus boisei. We suggest that regions of the skeleton likely to be influenced by sexual selection should be avoided when generating alpha taxonomic hypotheses.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.22052

Frontiers in Developmental Psychology

PAPERS

FABIO STICCA, VALÉRIE BRAUCHLI & PATRICIA LANNEN – Screen on = development off? A systematic scoping review and a developmental psychology perspective on the effects of screen time on early childhood development

Research on the associations between screen time and child development suggests that various forms of screen time might pose a risk for various aspects of child development. However, data on the impact of exposure to screen media on the development of children under 3 years of age is comparatively scarce. Although the evidence available on the topic is evolving rapidly, no review of existing literature has yet encompassed a comprehensive set of developmental outcomes with a focus in the first 3 years of life. To address this research gap, the present literature review focused on the influences of screen time on various developmental outcomes of children aged zero to 36 months. These outcomes were sleep-related parameters, physical health, cognition, learning efficiency, language, motor skills, socio-emotional skills, social interaction, and overall development. To this end, ten databases were searched systematically, and 158 studies that were published between the launch of the iPhone in early 2007 until 2024 were included. Only studies that reported specific results for the age range of zero to 36 months were examined, including longitudinal studies with samples of children aged zero to 36 months at the first wave of assessment. For most outcomes, a comparable amount of undesirable and non-significant associations was found with children's screen time, while few desirable associations were reported. In line with the notion of resilience, these results indicate that characteristics of the child, the context, and/or the content moderate the associations between screen time and child development in early childhood, thus contributing to mitigating the potential of displacement of learning opportunities or even creating new learning opportunities. More studies with designs that can examine the causal effect of screen time on child development and that explicitly address the role of child, content, and context variables are needed.
https://www.frontiersin.org/journals/developmental-psychology/articles/10.3389/fdpys.2024.1439040/full

Frontiers in Psychology

PAPERS

F. R. (RUUD) VAN DER WEEL & AUDREY L. H. VAN DER MEER – Handwriting but not typewriting leads to widespread brain connectivity: a high-density EEG study with implications for the classroom

As traditional handwriting is progressively being replaced by digital devices, it is essential to investigate the implications for the human brain. Brain electrical activity was recorded in 36 university students as they were handwriting visually presented words using a digital pen and typewriting the words on a keyboard. Connectivity analyses were performed on EEG data recorded with a 256-channel sensor array. When writing by hand, brain connectivity patterns were far more elaborate than when typewriting on a keyboard, as shown by widespread theta/alpha connectivity coherence patterns between network hubs and nodes in parietal and central brain regions. Existing literature indicates that connectivity patterns in these brain areas and at such frequencies are crucial for memory formation and for encoding new information and, therefore, are beneficial for learning. Our findings suggest that the spatiotemporal pattern from visual and proprioceptive information obtained through the precisely controlled hand movements when using a pen, contribute extensively to the brain's connectivity patterns that promote learning. We urge that children, from an early age, must be exposed to handwriting activities in school to establish the neuronal connectivity patterns that provide the brain with optimal conditions for learning. Although it is vital to maintain handwriting practice at school, it is also important to keep up with continuously developing technological advances. Therefore, both teachers and students should be aware of which practice has the best learning effect in what context, for example when taking lecture notes or when writing an essay.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2023.1219945/full

COMMENTARIES

SVETLANA PINET & MARIEKE LONGCAMP – Commentary: Handwriting but not typewriting leads to widespread brain connectivity: a high-density EEG study with implications for the classroom

Van Der Weel and Van Der Meer (2024, hereafter VWVM2024) claims that, unlike typing, handwriting generates brain connectivity patterns that promote learning. This result leads the authors to stress "the urge that children, from an early age, must be exposed to handwriting activities in school." This study had a broad impact in the scientific community and in the media: 84,680 views and 11,150 downloads, relayed by 179 news outlets, and tweeted by 8941 (for reference, other research articles published in the same month averaged 1,000–4,000 views). Despite the relevance of the topic addressed, we point to limitations in the protocol, analysis, and interpretations of the results that cast some doubts about the validity of the conclusions.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1517235/full

CORRECTIONS

ANDREA BALÁZS et al – Corrigendum: The influence of temperament and perinatal factors on language development: a longitudinal study

In the published article, there was an error regarding the affiliation for Andrea Balázs. As well as having affiliations 1 and 2, they should also have 3. Department of Cognitive Science, Faculty of Natural Sciences, Budapest University of Technology and Economics, Budapest, Hungary.
In the published article, there was an error in the legend for Table 5 as published. Pearson's r or Spearman's rho, +p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001. Bold: Correlation surviving Bonferroni correction (p < 0.05/5). The corrected legend appears below.
Pearson's r or Spearman's rho, +p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001. Bold: highlights significant and trend-level correlations.
The authors apologize for these errors and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.
[Original paper EAORC Bulletin 1,099.]
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1540286/full

iScience

PAPERS

MEGAN R. WARREN et al – Vocal recognition of partners by female prairie voles

Recognizing conspecifics is vital for differentiating mates, offspring and social threats. Individual recognition is often reliant upon chemical or visual cues, but can also be facilitated by vocal signatures in some species. In common laboratory rodents, playback studies have uncovered communicative functions of vocalizations, but scant behavioral evidence exists for individual vocal recognition. Here, we find that the socially monogamous prairie vole (Microtus ochrogaster) emits behavior-dependent vocalizations that can communicate individual identity. Vocalizations of individual males change after bonding with a female; however, acoustic variation across individuals is greater than within individual variation. Critically, females behaviorally discriminate their partner's vocalizations from a stranger's, even if emitted to another stimulus female. These

results establish the acoustic and behavioral foundation for individual vocal recognition in prairie voles, where neurobiological tools enable future studies revealing its causal neural mechanisms.
https://www.cell.com/iscience/fulltext/S2589-0042(25)00055-0

Nature Communications Biology

PAPERS

SARAH MORENO-RODRIGUEZ et al – The human reward system encodes the subjective value of ideas during creative thinking

Creative thinking involves the evaluation of one's ideas in order to select the best one, but the cognitive and neural mechanisms underlying this evaluation remain unclear. Using a combination of creativity and rating tasks, this study demonstrates that individuals attribute subjective values to their ideas, as a relative balance of their originality and adequacy. This relative balance depends on individual preferences and predicts individuals' creative abilities. Using functional Magnetic Resonance Imaging, we find that the Default Mode and the Executive Control Networks respectively encode the originality and adequacy of ideas, and that the human reward system encodes their subjective value. Interestingly, the relative functional connectivity of the Default Mode and Executive Control Networks with the human reward system correlates with the relative balance of adequacy and originality in individuals' preferences. These results add valuation to the incomplete behavioral and neural accounts of creativity, offering perspectives on the influence of individual preferences on creative abilities.
https://www.nature.com/articles/s42003-024-07427-4

Nature Reviews Neuroscience

COMMENTARIES

LINDA DRIJVERS, STEVEN L. SMALL & JEREMY I. SKIPPER – Language is widely distributed throughout the brain

Fedorenko and coauthors argue that language is localized to a small static set of brain regions, in a single segregated network (Fedorenko, E., Ivanova, A. A. & Regev, T. I. The language network as a natural kind within the broader landscape of the human brain. Nat. Rev. Neurosci. 25, 289–312; 2024) ***[EAORC Bulletin 1,087, https://www.nature.com/articles/s41583-024-00802-4. Further commentaries in EAORC 1,123 & 1,104]***. We challenge this traditional view of the neurobiology of language and argue that language is widely distributed throughout the brain.
https://www.nature.com/articles/s41583-024-00903-0

EVELINA FEDORENKO, ANNA A. IVANOVA & TAMAR I. REGEV – Reply to 'Language is widely distributed throughout the brain'

We thank Drijvers, Small, and Skipper (Drijvers, L., Small, S. L. & Skipper, J. I. Language is widely distributed throughout the brain) for their comments on our Review (Fedorenko, E., Ivanova, A. A. & Regev, T. I. The language network as a natural kind within the broader landscape of the human brain), which we respond to below.
https://www.nature.com/articles/s41583-024-00904-z

Nature Scientific Reports

PAPERS

MINXUE NIU et al – The persuasive role of generic-you in online interactions

Persuasion plays a crucial role in human communication. Yet, convincing someone to change their mind is often challenging. Here, we demonstrate that a subtle linguistic device, generic-you (i.e., "you" that refers to people in general, e.g., "You win some, you lose some"), is associated with successfully shifting people's pre-existing views in a naturalistic context. Leveraging Large Language Models, we conducted a preregistered study using a large (Ntrials = 204,120) online debate dataset. Every use of generic-you in an argument was associated with an up to 14% percent increase in the odds of successful persuasion. These findings underscore the need to distinguish between the specific and generic uses of "you" in large-scale linguistic analyses, an aspect that has been overlooked in the literature. The robust association between generic-you and persuasion persisted with the inclusion of various covariates, and above and beyond other pronouns (i.e., specific-you, I or we). However, these findings do not imply causality. In Supplementary Experiment 2, arguments with generic-you (vs. first-person singular pronouns, e.g., I) were rated as more persuasive by open-minded individuals. In Supplementary Experiment 3, generic-you (vs. specific-you) arguments did not differentially predict attitude change. We discuss explanations for these results, including differential mechanisms, boundary conditions, and the possibility that people intuitively draw on generic-you when expressing more persuasive ideas. Together, these findings add to a growing literature on the interpersonal implications of broadening one's perspective via a subtle shift in language, while motivating future research on contextual and individual differences that may moderate these effects.
https://www.nature.com/articles/s41598-024-83440-1

MANUEL WILL & HANNES RATHMANN – Exploring the utility of unretouched lithic flakes as markers of cultural change
Lithic artefacts provide the principal means to study cultural change in the deep human past. Tools and cores have been the focus of much prior research based on their perceived information content and cultural relevance. Unretouched flakes rarely attract comparable attention in archaeological studies, despite being the most abundant assemblage elements and featuring prominently in ethnographic and experimental work. Here, we examine the potential of flake morphology for tracing cultural change utilising 4,512 flakes, each characterised by 16 standard mixed-scale attributes, from a well-documented cultural sequence at the Middle Stone Age site of Sibhudu, South Africa. We quantified multivariate similarities among flakes using FLEXDIST, a highly versatile method capable of handling mixed, correlated, incomplete, and high-dimensional data. Our findings reveal a significant gradual change in flake morphology that aligns with the documented cultural succession at Sibhudu. Furthermore, our analysis provides new insights into the patterning of variability throughout the studied sequence. The demonstrated potential of flakes to track cultural change opens up additional avenues for comparative research due to their ubiquity, the availability of commonly recorded attributes, and especially in the absence of cores or tools. FLEXDIST, with its versatile applicability to complex lithic datasets, holds particular promise in this regard.
https://www.nature.com/articles/s41598-025-85399-z

New Scientist

NEWS

Climate change may have killed ancient 'hobbit' hominins
Homo floresiensis, a metre-tall ancient hominin, lived on the South Pacific island of Flores and hunted dwarf elephants until about 50,000 years ago – and now it seems climate change played a role in the downfall of both species.
https://www.newscientist.com/article/2462510-climate-change-may-have-killed-ancient-hobbit-hominins/

ARTICLES

ANNALEE NEWITZ – Ancient humans understood the future and the past pretty much as we do
Sticks found in a cave that date back 12,000 years and other archaeological evidence show how humans have long viewed the future in a similar way to us.
https://www.newscientist.com/article/mg26435250-100-ancient-humans-understood-the-future-and-the-past-pretty-much-as-we-do/

Physics of Life Reviews

PAPERS

SIMONE BATTAGLIA, PHILIPPE SERVAJEAN & KARL J. FRISTON – The Paradox of the Self-Studying Brain
The paradox of a brain trying to study itself presents a conundrum, raising questions about self-reference, consciousness, psychiatric disorders, and the boundaries of scientific inquiry. By which means can this complex organ shift the focus of study towards itself? We aim at unpacking the intricacies of this paradox. Historically, this question has been raised by philosophers under different frameworks. Thanks to the development of novel techniques to study the brain on a functional and structural level - as well as neurostimulation protocols that can modulate its activity in selected areas - we now possess advanced methods to progress this intricate inquiry. Nonetheless, the broader implications of the brain's pursuit of understanding itself remain unclear to this day. Ultimately, the need to employ both perception and introspection has led to different formulations of consciousness. This creates a challenge, as evidence supporting one formulation does not necessarily support the other. By deconstructing the paradoxical nature of self understanding - from a philosophical and neuroscientific point of view - we may gain insights into the human brain, which could lead to improved understanding of self-awareness and consciousness.
https://www.sciencedirect.com/science/article/pii/S1571064524001787

PLoS One

PAPERS

EDUARDO PAIXÃO et al with ERELLA HOVERS – Exploring early Acheulian technological decision-making: A controlled experimental approach to raw material selection for percussive artifacts in Melka Wakena, Ethiopia
The evolution of human behaviour is marked by key decision-making processes reflected in technological variability in the early archaeological record. As part of the technological system, differences in raw material quality directly affect the way that humans produce, design and use stone tools. The selection, procurement and use of various raw materials requires decision-making to evaluate multiple factors such as suitability to produce and design tools, but also the materials' efficiency and durability in performing a given task. Therefore, characterizing the physical properties of various lithic raw materials is crucial for exploring changes in human interactions with their natural environment through time and space and for understanding their technological behaviour. In this paper, we present the first step in an ongoing program designed to understand the decision-making criteria involved in the use of raw materials by the early Acheulian tool-makers at the Melka Wakena (MW) site-complex, located on the Ethiopian highlands. We present the results of the first experimental step, in which we identified and measured the engineering properties of raw materials in the lithic assemblages. These data serve as

an objective, quantifiable baseline for natural experiments as well as archaeological inquiries into the technological decision-making processes of early Pleistocene hominins in Africa.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0314039

MEGAN M. BURKHARDT-REED, EDINA R. BENE & D. KIMBROUGH OLLER – Frequencies and functions of vocalizations and gestures in the second year of life

Speculations on the evolution of language have invoked comparisons across human and non-human primate communication. While there is widespread support for the claim that gesture plays a central, perhaps a predominant role in early language development and that gesture played the foundational role in language evolution, much empirical information does not accord with the gestural claims. The present study follows up on our prior work that challenged the gestural theory of language development with longitudinal data showing early speech-like vocalizations occurred more than 5 times as often as gestures in the first year of life. Now we bring longitudinal data on the second year (13, 16 and 20 mo), showing again that vocalizations predominated, and especially in conventional (learned) communication; > 9 times more spoken words were observed than gestures that could be viewed as functionally equivalent to words (i.e., signs). Our observations also showed that about ¾ of gestures across these second-year data were deictics (primarily pointing and reaching), acts that while significant in supporting the establishment of referential vocabulary in both spoken and signed languages, are not signs, but have single universal deictic functions in the here and now. In contrast, words and signs, the primary semantic components of spoken and signed languages, are functionally flexible, making possible reference to abstractions that are not bound to any particular illocutionary force nor to the here and now.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0308760

AARON C. DRAKE et al – The effect of nature on creativity through mental imagery

Immersion in nature has been linked to wide-ranging benefits on mental health and cognitive functions, from reducing stress to enhancing creativity. However, a walk in nature is not always feasible, and whether a proxy for nature immersion via a mental walk in nature can elicit the same benefits as a physical walk remains largely unknown. Accordingly, the current study utilized guided imagery to examine whether a mental walk in nature would improve creativity in general and when compared to a mental walk in an urban environment. We implemented a within-subjects design, wherein participants completed both mental walk conditions (in a nature and urban environment) at least five days apart in counterbalanced order on an online platform. During each session, participants (N = 97) completed two pre-walk tasks assessing convergent (measured by the Remote Associates Test) and divergent creative thinking (measured by the Alternate Uses Test), followed by a mental walk in either a nature or urban environment, then finally the identical two post-walk creativity tasks. After five days, they repeated the same procedure with a mental walk in the other environment. While comparisons of post-walk creativity scores between the nature and urban environment did not significantly differ from each other, the comparisons between the pre- and post-walk creativity scores revealed a significant improvement in convergent creative thinking in the nature environment condition, but not the urban environment condition. Our results suggest that taking a mental walk in nature can enhance at least one aspect of creativity, therefore providing preliminary evidence for the potential to access the creative benefits of mentally immersing ourselves in nature. These findings have important implications for those who wish to enjoy the benefits of nature but are unable to readily access nature physically.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0315141

TIMOTHY R. WOJAN & DAYTON M. LAMBERT – A novel framework for increasing research transparency: Exploring the connection between diversity and innovation

A split sample/dual method research protocol is demonstrated to increase transparency while reducing the probability of false discovery. We apply the protocol to examine whether diversity in ownership teams increases or decreases the likelihood of a firm reporting a novel innovation using data from the 2018 United States Census Bureau's Annual Business Survey. Transparency is increased in three ways: 1) all specification testing and identifying potentially productive models is done in an exploratory subsample that 2) preserves the validity of hypothesis test statistics from de novo estimation in the holdout confirmatory sample with 3) all findings publicly documented in an earlier registered report and in this journal publication. Bayesian estimation procedures that leverage information from the exploratory stage included in the confirmatory stage estimation replace traditional frequentist null hypothesis significance testing. In addition to increasing statistical power by using information from the full sample, Bayesian methods directly estimate a probability distribution for the magnitude of an effect, allowing much richer inference. Estimated magnitudes of diversity along academic discipline, race, ethnicity, and foreign-born status dimensions are positively associated with innovation. A maximally diverse ownership team on these dimensions would be roughly six times more likely to report new-to-market innovation than a homophilic team.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0313826

Royal Society Open Science

PAPERS

DENIS NEWMAN-GRIFFIS – AI Thinking: a framework for rethinking artificial intelligence in practice

Artificial intelligence is transforming the way we work with information across disciplines and practical contexts. A growing range of disciplines are now involved in studying, developing and assessing the use of AI in practice, but these disciplines often employ conflicting understandings of what AI is and what is involved in its use. New, interdisciplinary approaches are needed to bridge competing conceptualizations of AI in practice and help shape the future of AI use. I propose a novel conceptual framework called AI Thinking, which models key decisions and considerations involved in AI use across disciplinary perspectives. AI Thinking addresses five practice-based competencies involved in applying AI in context: motivating AI use, formulating AI methods, assessing available tools and technologies, selecting appropriate data and situating AI in the sociotechnical contexts it is used in. A hypothetical case study is provided to illustrate the application of AI Thinking in practice. This article situates AI Thinking in broader cross-disciplinary discourses of AI, including its connections to ongoing discussions around AI literacy and AI-driven innovation. AI Thinking can help to bridge between the work of diverse disciplines, contexts and actors in the AI space, and shape AI efforts in education, industrial development and policy.
https://royalsocietypublishing.org/doi/10.1098/rsos.241482

Science

PAPERS

HARRISON J. OSTRIDGE et mul with CRICKETTE SANZ & CHRISTOPHE BOESCH – Local genetic adaptation to habitat in wild chimpanzees

How populations adapt to their environment is a fundamental question in biology. Yet, we know surprisingly little about this process, especially for endangered species, such as the nonhuman great apes. Chimpanzees, our closest living relatives, are particularly notable because they inhabit a diversity of habitats, from rainforest to woodland-savannah. Forests have closed canopies with high availability of food and water throughout the year, support high population densities, and harbor a diversity of pathogens and disease vectors. Conversely, savannahs are on the edge of the chimpanzee distribution in East and West Africa and are characterized by open canopies, higher temperatures, lower annual rainfall, and higher rainfall seasonality. Whether genetic adaptation facilitates chimpanzees' habitat diversity remains unknown, despite having wide implications for evolutionary biology and conservation.

Investigating signatures of local adaptation requires genomic samples from wild individuals with known geographic origins. Noninvasive sampling is the only option for many protected species, including nonhuman great apes; however, recent technical and analytical advancements are beginning to enable population genomic analyses on such samples. With fecal samples collected as part of the Pan African Programme, we sequenced the full exome (i.e., protein-coding regions of the genome) from hundreds of wild chimpanzees across their geographic and environmental range. Putatively neutral regions in previously published chromosome 21 (chr21) sequences from the same samples were used to generate null expectations. Integrating genetic and environmental data provides evidence of fine-scale local genetic adaptation in the form of an excess of single-nucleotide polymorphisms (SNPs) associated with a measure of habitat. This includes genetic adaptations to both forest and woodland-savannah habitats. These results suggest that although tool use and thermoregulatory behaviors are important in mitigating environmental stressors, selective pressures still drive genetic adaptation in chimpanzees. Thus, both behavioral flexibility and genetic adaptation may explain how chimpanzees inhabit such a range of habitats.

SNPs inferred to be under positive selection in forests are enriched for pathogen-related genes, consistent with the higher infectious disease burden in these habitats. This highlights the potential importance of genetic adaptation in shaping infectious disease mortality and, therefore, the dangers of displacement and environmental change. Most notably, forest candidate SNPs in the western subspecies are strongly enriched for malaria-related genes. A range of malaria parasites infect chimpanzees, including three species closely related to Plasmodium falciparum, which is responsible for 90% of global malaria mortality in humans. However, the fitness effects of malaria in wild chimpanzees are poorly understood. Our results indicate that this disease may have driven local adaptation and could have fitness effects in present-day wild populations. Genes with signatures of positive selection in chimpanzees underlie resistance and adaptation to malaria in humans. This is notable from an evolutionary point of view and demonstrates how understanding chimpanzee evolution can inform human evolution and medicine.

We found evidence for the presence of locally adaptive genetic differences among populations of wild chimpanzees, even at a fine geographic scale. Just as previous studies highlighted the importance of conserving behavioral diversity, we emphasize the need to consider local genetic adaptation in conservation efforts to ensure that individuals are adapted to their local environment and retain adaptive potential. This is particularly relevant, as direct anthropogenic destruction, climate change, and disease transmission are rapidly changing the environments experienced by chimpanzees. Our study also demonstrates the value and promise of noninvasive sampling to investigate genetic adaptation in wild populations of endangered species.
https://www.science.org/doi/10.1126/science.adn7954

FRANCESCA LANZARINI et al – Neuroethology of natural actions in freely moving monkeys

The current understanding of primate natural action organization derives from laboratory experiments in restrained contexts (RCs) under the assumption that this knowledge generalizes to freely moving contexts (FMCs). In this work, we developed a neurobehavioral platform to enable wireless recording of the same premotor neurons in both RCs and FMCs. Neurons often encoded the same hand and mouth actions differently in RCs and FMCs. Furthermore, in FMCs, we identified cells that selectively encoded actions untestable during RCs and others that displayed mixed selectivity for multiple actions, which is compatible with an organization based on cortical motor synergies at different levels of complexity. Cross-context decoding demonstrated that neural activity in FMCs is richer and more generalizable than in RCs, which suggests that neuroethological approaches are better suited to unveil the neural bases of behavior.
https://www.science.org/doi/10.1126/science.adq6510

Science Advances

PAPERS

WARSHA BARDE et al – Beyond nature, nurture, and chance: Individual agency shapes divergent learning biographies and brain connectome

Individual choices shape life course trajectories of brain structure and function beyond genes and environment. We hypothesized that individual task engagement in response to a learning program results in individualized learning biographies and connectomics. Genetically identical female mice living in one large shared enclosure freely engaged in self-paced, automatically administered and monitored learning tasks. We discovered growing and increasingly stable interindividual differences in learning trajectories. Adult hippocampal neurogenesis and connectivity as assessed by a high-density multielectrode array positively correlated with the variation in exploration and learning efficiency. During some tasks, divergence transiently collapsed, highlighting the sustained significance of context for individualization. Thus, equal environments and equal genes do not result in equal learning biographies because life confronts individuals with choices that lead to divergent paths.
https://www.science.org/doi/10.1126/sciadv.ads7297

The Innovation

PAPERS

YUFAN WANG et al with WILLIAM D. HOPKINS & CHET C. SHERWOOD – The Chimpanzee Brainnetome Atlas reveals distinct connectivity and gene expression profiles relative to humans

Chimpanzees (Pan troglodytes) are one of humans' closest living relatives, making them the most directly relevant comparison point for understanding human brain evolution. Zeroing in on the differences in brain connectivity between humans and chimpanzees can provide key insights into the specific evolutionary changes that might have occurred along the human lineage. However, such comparisons are hindered by the absence of cross-species brain atlases established within the same framework. To address this gap, we developed the Chimpanzee Brainnetome Atlas (ChimpBNA) using a connectivity-based parcellation framework. Leveraging this new resource, we found substantial divergence in connectivity patterns between the two species across most association cortices, notably in the lateral temporal and dorsolateral prefrontal cortex. These differences deviate sharply from the pattern of cortical expansion observed when comparing humans to chimpanzees, highlighting more complex and nuanced connectivity changes in brain evolution than previously recognized. Additionally, we identified regions displaying connectional asymmetries that differed between species, likely resulting from evolutionary divergence. Genes highly expressed in regions of divergent connectivities were enriched in cell types crucial for cortical projection circuits and synapse formation, whose pronounced differences in expression patterns hint at genetic influences on neural circuit development, function, and evolution. Our study provides a fine-scale chimpanzee brain atlas and highlights the chimpanzee-human connectivity divergence in a rigorous and comparative manner. In addition, these results suggest potential gene expression correlates for species-specific differences by linking neuroimaging and genetic data, offering insights into the evolution of human-unique cognitive capabilities.
https://www.cell.com/the-innovation/fulltext/S2666-6758(24)00193-0

Trends in Cognitive Sciences

PAPERS

JULIO MARTINEZ-TRUJILLO – Why do primates have view cells instead of place cells?

Hippocampal place cells that encode the spatial location of an individual during navigation are widely reported in rodents. However, studies in primates have instead reported hippocampal cells that encode views of the environment. Evolutionary adaptations for navigating during night and day may explain the divergence of hippocampal representations between species.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(24)00328-0

ELIZABETH J. KRUMREI-MANCUSO et al – Toward an understanding of collective intellectual humility
The study of intellectual humility (IH), which is gaining increasing interest among cognitive scientists, has been dominated by a focus on individuals. We propose that IH operates at the collective level as the tendency of a collective's members to attend to each other's intellectual limitations and the limitations of their collective cognitive efforts. Given people's propensity to better recognize others' limitations than their own, IH may be more readily achievable in collectives than individuals. We describe the socio-cognitive dynamics that can interfere with collective IH and offer the solution of building intellectually humbling environments that create a culture of IH that can outlast the given membership of a collective. We conclude with promising research directions.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(24)00228-6

Trends in Ecology and Evolution

PAPERS

FEDERICO GARRIDO-DE LEÓN, VALENTINA FRANCO-TRECU & RAUL COSTA-PEREIRA – Keystone niche individuals: some are more unequal than others
Conspecific individuals often diverge in their foraging decisions. Indeed, across diverse taxa, generalist populations contain both generalist and specialist individuals. This intraspecific niche variation allows some individuals to contribute disproportionately to their population's niche. Here, we present the concept of keystone niche individuals and why it matters for ecologists.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(24)00279-9

MICHAEL GRIESSER et al with JUDITH M. BURKART – The power of caring touch: from survival to prosocial cooperation
Cooperation is a pivotal biological phenomenon that occurs in diverse forms. In species that engage in helping, individuals vary in the time they spend together and the degree of their physical proximity, which affects the extent of physical touch between individuals. Here, we propose that touch activates a hormonal feedback loop that supports bond formation and maintenance in mating, parenting, and social contexts. Notably, extended parenting is essential for the emergence of enduring bonds and the development of the prosocial mindset that fosters forms of cooperation with delayed benefits. We incorporate these ideas into the caring-touch hypothesis (CT-H), which emphasizes the role of oxytocin-vasotocin hormones, touch, and enduring bonds in the evolution of different forms of cooperation.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(24)00290-8

SUBSCRIBE to the EAORC Bulletin

If you would like to subscribe to this free weekly newsletter, please contact martin.edwardes@btopenworld.com.

UNSUBSCRIBE from the EAORC Bulletin

Send an email to martin.edwardes@btopenworld.com with the subject "EAORC unsubscribe".

PRODUCED BY AND FOR THE EAORC EMAIL GROUP

EAORC is a fee-free academic internet news service and has no commercial sponsorship or other commercial interests.
EAORC website information is at http://martinedwardes.me.uk/eaorc/
If you have received this bulletin, and are unhappy about receiving it, please contact martin.edwardes@btopenworld.com.