EAORC BULLETIN 1,078 – 11 February 2024

CONTENTS

NOTICES

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 – Long-term Memory and Middle Pleistocene "Mysterians"

In S.A. de Beaune, F.L. Coolidge & T. Wynn, Cognitive Archaeology and Human Evolution, Cambridge University Press, 75-84 (2009).

MICHAEL J. WALKER – Long-term Memory and Middle Pleistocene "Mysterians"

In the long term we are all dead. Alas, dead men's skulls tell no tales about their brains. Therefore, we ignore at our peril scientific information gleaned from the living about how our brains work nowadays. Yet they were not always thus. For the past, Palaeoanthropology and Palaeolithic archaeology can inform us about hominin cognition. The matter of linguistic evolution cuts across both present and past inferences, and it complicates comparisons not only between humans and other primates, but also between ancient hominins and us. Constrained by the limitations of my allotted length in this chapter, I shall address a single question: how did evolving language impinge on the evolution of long-term memory (LTM)?
https://www.academia.edu/2314373/Cognitive_Archaeology_and_Human_Evolution

ACADEMIA.EDU – Language Evolution, by Exaptation, with the Mind Leading

In New Horizons in Evolutionary Linguistics: Journal of Chinese Linguistics Monograph Series 27, 155-186 (2016).

SALIKOKO S. MUFWENE – Language Evolution, by Exaptation, with the Mind Leading

It has usually been claimed that language is what makes humans uniquely human. However, I submit that it is the mind as a general problem-solving capacity for adaptations to current ecological pressures that makes humans uniquely humans. Non-linguistic communication may have provided part of the ecological niche for the emergence of languages, having predisposed hominines to pay attention to each other and to read each other's mind. The same mind that produced all these new developments (in particular complex social life and a richer cognitive capacity) also enabled hominines to develop languages as communication technologies.
https://www.academia.edu/33543040/LANGUAGE_EVOLUTION_BY_EXAPTATION_WITH_THE_MIND_LEADING

ACADEMIA.EDU – Biocultural evolution and human language diversity

In Antonio Benítez-Burraco et al (eds.), Biolinguistics at the cutting edge: promises, achievements, and challenges. De Gruyter Mouton (in Press, Preprint 2023).

CHRIS SINHA – Biocultural evolution and human language diversity

Biolinguistics in its original formulation rests upon the assumption that the biological foundations of language acquisition, development and use are independent of, and in some sense prior to, other psychological and socio-cultural aspects of language. In that respect, the conventional reading of the sub-discipline 'biolinguistics' is framed by the opposition between nature and nurture, whose roots can be sought in the debates between Enlightenment philosophers such as Descartes and Condillac. In this chapter, I argue for an alternative, biocultural approach that accords no less importance to the biological underpinnings of human languages and human language-readiness (Arbib, 2012); but views them in the light of new (and not-so-new) theories in the biological, cognitive and social sciences.
https://www.academia.edu/114355803/Biocultural_evolution_and_human_language_diversity

ACADEMIA.EDU – The Archaeology of Mind: It's Not What You Think

Cambridge Archaeological Journal 23:1, 1-17 (2013).

JOHN C. BARRETT – The Archaeology of Mind: It's Not What You Think

Narratives of human evolution place considerable emphasis upon human cognitive development resulting from the evolution of brain architecture and witnessed by the production of 'symbolic' material culture. Recent work has modified the narrative to the extent that cognitive development is treated as the product of humanity's ability to download certain aspects of brain functionality, such as the storage of information, into external media. This article questions the centrality given to the history of brain architecture as determinate of human cognition by rejecting the widespread assumption that cognition trades in representations, either stored internally in the brain or downloaded externally into cultural media. The alternative, offered here, is that human cognitive development was constructed through the development of joint attention made possible by

the anatomical development of hominins and that this sustained a shared empathy between social agents in their practical understanding of the qualities of materiality.
https://www.academia.edu/17032714/The_Archaeology_of_Mind_Its_Not_What_You_Think

ACADEMIA.EDU – On the evolution of language

In Richard K. Larson, Viviane Deprez and Hiroko Yamakido (eds.), The Evolution of Language: Biolinguistic Perspectives, Cambridge University Press (2010).

JOHN C. BARRETT – On the Evolution of Language: Implications of a new and general theory of human origins, properties and history

Human language apparently has the structure and properties expected of a device produced by natural selection (Jackendoff, 2002: chap. 6; Pinker and Jackendoff 2005). However, we continue to lack a clear theoretical explanation of how or why language evolved uniquely in the human lineage. Equivalently, we have not understood the circumstances under which language might have become adaptive in human ancestors but not in any other of the millions of animal species. Though many theories of language evolution have been proposed in the ca. 150 years since Darwin, none has answered these questions convincingly nor born the fruit expected of a robust theory.
https://www.academia.edu/87264816/On_the_evolution_of_language_implications_of_a_new_and_general_theory_of_human_origins_properties_and_history

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RESEARCHGATE – Stone Toolmaking and the Evolution of Human Culture and Cognition

Philosophical Transactions of The Royal Society B 366, 1050-1059 (2011).

DIETRICH STOUT – Stone Toolmaking and the Evolution of Human Culture and Cognition

Although many species display behavioural traditions, human culture is unique in the complexity of its technological, symbolic and social contents. Is this extraordinary complexity a product of cognitive evolution, cultural evolution or some interaction of the two? Answering this question will require a much better understanding of patterns of increasing cultural diversity, complexity and rates of change in human evolution. Palaeolithic stone tools provide a relatively abundant and continuous record of such change, but a systematic method for describing the complexity and diversity of these early technologies has yet to be developed. Here, an initial attempt at such a system is presented. Results suggest that rates of Palaeolithic culture change may have been underestimated and that there is a direct relationship between increasing technological complexity and diversity. Cognitive evolution and the greater latitude for cultural variation afforded by increasingly complex technologies may play complementary roles in explaining this pattern.
https://www.researchgate.net/publication/50226350_Stone_Toolmaking_and_the_Evolution_of_Human_Culture_and_Cognition

FUNDING ALERT – Research at the intersection of the social and life sciences

Unconventional. Interdisciplinary. Bold.

The NOMIS & Science Young Explorer Award recognizes and rewards early-career M.D., Ph.D., or M.D./Ph.D. scientists that perform research at the intersection of the social and life sciences. Essays written by these bold researchers on their recent work are judged for clarity, scientific quality, creativity, and demonstration of cross-disciplinary approaches to address fundamental questions. A cash prize of up to US $15,000 will be awarded to essay winners, and their engaging essays will be published in Science. Winners will also be invited to share their work and forward-looking perspective with leading scientists in their respective fields at an award ceremony.
Apply by 15 May 2024 at www.science.org/nomis

NEWS

KINGUISTICS – Unveiling the Darkness: A Look at Fairy Tales

Fairy tales are a quintessential part of childhood, unique to every culture and yet similar in their lifelong significance. One can find incorporations from fairy tales in language, with “ugly ducklings” and “wolves in sheep’s clothing” and beginnings of stories with “once upon a time’s”. Fairy tales extend to every form of entertainment; from being inspirations for plays, pantomimes, and movies (especially famous are those by Disney), to more adult interpretations, such as Guillermo del Toro’s film Pinocchio set in a fascist Italy, and Alice: Madness Returns. Here, a video game based on the classic Adventures in Wonderland but instead having Alice hallucinate Wonderland’s existence to cope with the death of her family in a house fire.
https://kinguistics.wordpress.com/2024/01/15/unveiling-the-darkness-a-look-at-fairy-tales/

NATURE BRIEFING – Genes are not the blueprint for life

Reality “is far more interesting and wonderful” than the simplistic idea that “cells are computers and genes are their code”, says science writer Philip Ball in his new book,How Life Works. He argues that our genes are no simple blueprint, and things

often portrayed as fixed — such as the lock-and-key fit of a protein and its target — actually change according to a myriad of factors.
https://www.nature.com/articles/d41586-024-00327-x

NATURE BRIEFING – Co-authors point the way to paper mills

A new approach looks at authors, rather than the content of papers, to help identify journal articles that originate from 'paper mills' — factories for fake research. It looks for unusual patterns of co-authorship and peculiar networks of researchers, which could be a sign that authorship was paid for, rather than earned. The approach could be crucial as artificial intelligence (AI) systems make it all too easy to churn out convincing copy. "This is the kind of signal that is much more difficult to work around or outcompete by clever use of generative AI," says Hylke Koers of the International Association of Scientific, Technical, and Medical Publishers.
https://www.nature.com/articles/d41586-024-00344-w

SAPIENS – Tools of the Wild: Unveiling the Crafty Side of Nature

Once considered a uniquely human activity, tool use has been spotted across diverse species. It's time to rethink what tools reveal about their users' intelligence and evolution.
https://www.sapiens.org/archaeology/archaeology-tool-user-intelligence/

SCIENCEADVISER – Tracing the evolution of sign languages

Language is constantly evolving. Certain words and phrases fall in and out of favor, and their meanings evolve over time. By using computer algorithms to compare vocabulary and grammar, researchers have been able to tease out the relationships between different groups of spoken languages. But this approach—known as computational phylogenetics—has rarely been applied to sign languages, which are used by deaf and hard of hearing communities around the world.
To address this knowledge gap, the authors of a new Science study collected video dictionary entries depicting key vocabulary words from 19 different sign languages. Using computational techniques previously applied to spoken languages, they identified two major sign language families—European and Asian—that showed no evidence of any long-term contact. Their analyses also revealed two distinct subfamilies of Asian sign languages, reflecting how linguistic variations are passed down through generations.
Although their findings are mostly consistent with historical records, the researchers also came to some unexpected conclusions—Western European sign languages, for example, appear to be more closely related to British and New Zealand sign languages than previously assumed. They also saw a profound French influence on American sign language, possibly because the first deaf schools in the United States were established by French educators. This finding, the authors write, illustrates the power of geopolitical forces to shape languages and the communities that use them.
https://www.science.org/doi/10.1126/science.add7766

THE CONVERSATION – How long did Neanderthals and modern humans co-exist in Europe?

Evidence is growing it may have been at least 10,000 years. A new discovery is shedding more light on the overlap between the two species of human, despite the challenges of exploring this distant time.
https://theconversation.com/how-long-did-neanderthals-and-modern-humans-co-exist-in-europe-evidence-is-growing-it-may-have-been-at-least-10-000-years-222762

THE CONVERSATION – The brain is the most complicated object in the universe

This is the story of scientists' quest to decode it – and read people's minds. As Elon Musk's Neuralink begins inserting chips into human brains, we trace the history of 'mind reading' technology and assess the potential risks and rewards.
https://theconversation.com/the-brain-is-the-most-complicated-object-in-the-universe-this-is-the-story-of-scientists-quest-to-decode-it-and-read-peoples-minds-222458

THE CONVERSATION – Five signs that you might be rightwing

Being rightwing involves specific beliefs about the world but is also linked to our genes and environment.
{A more informative read than I thought it would be.}
https://theconversation.com/five-signs-that-you-might-be-rightwing-221930

PUBLICATIONS

eLife

PAPERS

SEBASTIEN BOURET et al – Linking the evolution of two prefrontal brain regions to social and foraging challenges in primates

The diversity of cognitive skills across primates remains both a fascinating and a controversial issue. Recent comparative studies provided conflicting results regarding the contribution of social vs ecological constraints to the evolution of cognition. Here, we used an interdisciplinary approach combining comparative cognitive neurosciences and behavioral ecology. Using brain imaging data from 16 primate species, we measured the size of two prefrontal brain regions, the frontal pole (FP) and the dorso-lateral prefrontal cortex (DLPFC), respectively involved in metacognition and working memory, and examined their relation to a combination of socio-ecological variables. The size of these prefrontal regions, as well as the whole brain, was best explained by three variables: body mass, daily traveled distance (an index of ecological constraints) and population density (an index of social constraints). The strong influence of ecological constraints on FP and DLPFC volumes suggests that both metacognition and working memory are critical for foraging in primates. Interestingly, FP volume was much more sensitive to social constraints than DLPFC volume, in line with laboratory studies showing an implication of FP in complex social interactions. Thus, our data highlights the relative weight of social vs ecological constraints on the evolution of specific prefrontal brain regions and their associated cognitive operations in primates.
https://elifesciences.org/reviewed-preprints/87780

Evolutionary Anthropology

PAPERS

CATHERINE K. MILLER & JEREMY M. DESILVA – A review of the distal femur in Australopithecus

In 1938, the first distal femur of a fossil Australopithecus was discovered at Sterkfontein, South Africa. A decade later, another distal femur was discovered at the same locality. These two fossil femora were the subject of a foundational paper authored by Kingsbury Heiple and Owen Lovejoy in 1971. In this paper, the authors discussed functionally relevant anatomies of these two fossil femora and noted their strong affinity to the modern human condition. Here, we update this work by including eight more fossil Australopithecus distal femora, an expanded comparative dataset, as well as additional linear measurements. Just as Heiple and Lovejoy reported a half-century ago, we find strong overlap between modern humans and cercopithecoids, except for inferiorly flattened condyles and a high bicondylar angle, both of which characterize modern humans and Australopithecus and are directly related to striding bipedalism. All other measured aspects of the femora are by-products of these key morphological traits. Additional fossil material from the early Pliocene will help to inform the evolution of the hominin distal femur and its condition in the Pan-Homo common ancestor that preceded bipedal locomotion.
https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.22012

KRISTA M. MILICH – Male-philopatric nonhuman primates and their potential role in understanding the evolution of human sociality

In most primate species, males transfer out of their natal groups, resulting in groups of unrelated males. However, in a few species, including humans, males remain in their groups and form life-long associations with each other. This pattern of male philopatry is linked with cooperative male behaviors, including border patrols and predator defense. Because females in male-philopatric species form weaker kin networks with each other than in female-philopatric species, they are expected to evolve counter-strategies to male sexual coercion that are relatively independent of support from other females. Studies of male-philopatric nonhuman primates can provide insight into the evolutionary basis of prosocial behaviors, cooperation, and group action in humans and offer comparative models for understanding the sociality of other hominin species. This review will discuss patterns of dispersal and philopatry across primates, explore the resulting male and female behaviors, and argue that male-philopatric nonhuman primate species offer insight into the social and sexual dynamics of hominins throughout evolution.
https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.22014

Frontiers for Young Minds

PAPERS

CHRISTINE J. CHARVET et al – How Old Are You in Chimpanzee Years?

It is fascinating to think about biology and behavior in humans and other animals. Chimpanzees are particularly interesting because they are humans' closest living relatives. In this article, we will tell you about how humans grow up and age compared to chimpanzees, and how to calculate your age in chimpanzee years. Humans and chimpanzees are roughly similar in age after birth, but humans take a bit longer to mature and age. Also, some humans live much longer than chimpanzees do. This means many of us live long enough to interact with our grandchildren and also struggle with aging-related problems, but this is less the case for chimpanzees.

https://kids.frontiersin.org/articles/10.3389/frym.2024.1185773

Frontiers in Ecology and Evolution

PAPERS

DAME DIALLO et al with JILL D. PRUETZ – Savannah chimpanzee (Pan troglodytes verus) nesting behavior in the unprotected area of Tikankali near to a mining exploitation and the Niokolo Koba National Park in Senegal

This work focuses on the nesting behavior of the West African chimpanzee (Pan troglodytes verus) in the anthropized habitats of the village of Tikankali and its surroundings. Studies on chimpanzee nesting behavior are carried out at several sites of Senegal but never in Tikankaly. Thus, proximity with the Niokolo Koba National Park and the presence of a gold mining industry mean that data on chimpanzee nesting behavior and anthropogenic impacts in their habitats for decisions-making about chimpanzee conservation in this area. We recorded a total of 213 chimpanzee nests during two surveys over a distance of 47.81 km (i.e., 47.81 km x 2). Data were collected in October 2020 and October 2021. The majority of nests (63%) were found in wooded savannah, 19% in bamboo savannah, 09% in gallery forest and 07% in open forest. The results showed that 22 plant species belonging to 08 families are used for chimpanzee nests in and around Tikankali. However, half of the nests were in Pterocarpus erinaceus (53%); followed by Hexalobus monopetalus (8%); Diospyros mespiliformis (6%), Piliostigma thonningii (6%), Lannea acida (6%); and Grewia bicolor (4%). The average height of trees used as chimpanzee nest supports was 9.88 m (SD=3.60) and the average height of nests was 7.46 m (SD=3.23). Linear regression analysis (r=0.84; N=213; p< 0.05) suggested a preference for nesting at a particular height but also that nest height is a function of the supporting tree's height. The current study contributes to the knowledge of chimpanzee nesting behavior in Tikankali, the anthropogenic disruption and will help in the implementation of a good chimpanzee management and conservation strategy in Senegal.

https://www.frontiersin.org/articles/10.3389/fevo.2024.1228373/full

Frontiers in Human Neuroscience

PAPERS

AMY F. T. ARNSTEN, MIN WANG & MARK D'ESPOSITO – Dynamic Network Connectivity: from monkeys to humans

Human brain imaging research using functional MRI (fMRI) has uncovered flexible variations in the functional connectivity between brain regions. While some of this variability likely arises from the pattern of information flow through circuits, it may also be influenced by rapid changes in effective synaptic strength at the molecular level, a phenomenon called Dynamic Network Connectivity (DNC) discovered in non-human primate circuits. These neuromodulatory molecular mechanisms are found in layer III of the macaque dorsolateral prefrontal cortex (dlPFC), the site of the microcircuits shown by Goldman-Rakic to be critical for working memory. This research has shown that the neuromodulators acetylcholine, norepinephrine, and dopamine can rapidly change the strength of synaptic connections in layer III dlPFC by (1) modifying the depolarization state of the post-synaptic density needed for NMDA receptor neurotransmission and (2) altering the open state of nearby potassium channels to rapidly weaken or strengthen synaptic efficacy and the strength of persistent neuronal firing. Many of these actions involve increased cAMP-calcium signaling in dendritic spines, where varying levels can coordinate the arousal state with the cognitive state. The current review examines the hypothesis that some of the dynamic changes in correlative strength between cortical regions observed in human fMRI studies may arise from these molecular underpinnings, as has been seen when pharmacological agents or genetic alterations alter the functional connectivity of the dlPFC consistent with the macaque physiology. These DNC mechanisms provide essential flexibility but may also confer vulnerability to malfunction when dysregulated in cognitive disorders.

https://www.frontiersin.org/articles/10.3389/fnhum.2024.1353043/full

Frontiers in Physiology

PAPERS

RAFAEL BRETAS et al – Comparative anatomy of the Sapajus sp. (bearded capuchin) hand with comments on tool use in a parallel evolution with the hominid pathway

Bearded capuchins display a wide variety of manipulatory skills and make routine use of tools in both captivity and the wild. The efficient handling of objects in this genus has led several investigators to assume near-human thumb movements, despite a lack of anatomical studies.

Here, we performed an anatomical analysis of muscles and bones in the capuchin hand. Sapajus morphological traits were quantitatively compared with those of humans, chimpanzees, gorillas, and baboons.

The comparative analysis indicated that the Sapajus hand is more similar to that of baboons and least similar to that of humans according to the muscles, bones, and three-dimensional data. Furthermore, these findings suggest that bearded capuchins lack true thumb opponency. Regarding manipulatory skills, they display rather primitive hand traits, with limited resources for precision grasping using the opponens pollicis.

These findings suggest that bearded capuchins' complex use of tools depends more heavily on their high cognitive abilities than on a versatile hand apparatus. These findings offer crucial insights into the evolution of primate cognition.

https://www.frontiersin.org/journals/physiology/articles/10.3389/fphys.2024.1292035/full

Frontiers in Psychology

PAPERS

DIANE M. HORM et al – Resilience: supporting children's self-regulation in infant and toddler classrooms

Resilience is a process that develops as a complex transaction as children experience and shape their social-ecological contexts. The dynamic development of self-regulation is an aspect of resilience that has received increased attention as a key mechanism predicting a variety of important short- and long-term outcomes. The current study examined how the self-regulation skills of infants and toddlers in a classroom could potentially shape classroom interactions and quality which, in turn, could potentially shape the development of self-regulation skills of the individual infants and toddlers enrolled in the classroom across an early childhood program year. The unique contribution of this study is the focus on a critical component of resilience, self-regulation, in an understudied age group, infants and toddlers, in an important and understudied context, the infant-toddler early childhood classroom.

Data are from a statewide evaluation of early childhood programs serving children birth to age 3 growing up in low-income contexts. Multi-level mediation models were employed to examine the mediation effect of classroom quality between classroom-level self-regulation and individual children's gain in self-regulation over a year.

We found a significant indirect path. The results showed that classroom-level self-regulation skills demonstrated by infants and toddlers in the fall predicted higher levels of teachers' implementation of three important aspects of classroom quality – support for social-emotional, cognitive, and language development – in the winter. We also found that higher levels of teachers' support for social-emotional, cognitive, and language development associated with children's increased growth in self-regulation skills from fall to spring. The direct path from classroom-level self-regulation demonstrated in the fall to individual children's gain in self-regulation was not significant.

These findings, unique due to the focus on infants and toddlers in a classroom context, are discussed within the larger body of existing self-regulation research conducted with older children and prevalent theories outlining developmental mechanisms. Implications for both infant-toddler classroom practices and future research are addressed. Relative to practice, our findings have implications for informing how the development of self-regulation, an important component of resilience, can be supported in the youngest children, infants and toddlers, specifically those enrolled in center-based classrooms serving young children growing up in families with low incomes. We focus on the need to improve the support and professional development of infant-toddler teachers which, in turn, can improve classroom quality and foster resilience in infants and toddlers. Relative to research, our use of a relatively new measure of infant-toddler classroom quality, the Quality of Care for Infants and Toddlers (QCIT), shows how this tool can expand infant-toddler research, a need in the current literature. Future research using different measures, designs, analytical strategies, and diverse samples and contexts is needed to further explain very young children's development of self-regulation, a critical component of resilience.

https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1271840/full

iScience

PAPERS

JEFFREY A. BROOKS et al – Deep learning reveals what facial expressions mean to people in different cultures

Cross-cultural studies of the meaning of facial expressions have largely focused on judgments of small sets of stereotypical images by small numbers of people. Here, we used large-scale data collection and machine learning to map what facial expressions convey in six countries. Using a mimicry paradigm, 5,833 participants formed facial expressions found in 4,659 naturalistic images, resulting in 423,193 participant-generated facial expressions. In their own language, participants also rated each expression in terms of 48 emotions and mental states. A deep neural network tasked with predicting the culture-specific meanings people attributed to facial movements while ignoring physical appearance and context discovered 28 distinct dimensions of facial expression, with 21 dimensions showing strong evidence of universality and the remainder showing varying degrees of cultural specificity. These results capture the underlying dimensions of the meanings of facial expressions within and across cultures in unprecedented detail.

https://www.cell.com/iscience/fulltext/S2589-0042(24)00396-1

Mind & Language

PAPERS

MICHELLE LIU – Mental simulation and language comprehension: The case of copredication

Empirical evidence suggests that perceptual-motor simulations are often constitutively involved in language comprehension. Call this "the simulation view of language comprehension". This article applies the simulation view to illuminate the much-discussed phenomenon of copredication, where a noun permits multiple predications which seem to select different senses of the noun simultaneously. On the proposed account, the (in)felicitousness of a copredicational sentence is closely associated with the perceptual simulations that the language user deploys in comprehending the sentence.

https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12459

PATRICK BUTLIN – Reinforcement learning and artificial agency
There is an apparent connection between reinforcement learning and agency. Artificial entities controlled by reinforcement learning algorithms are standardly referred to as agents, and the mainstream view in the psychology and neuroscience of agency is that humans and other animals are reinforcement learners. This article examines this connection, focusing on artificial reinforcement learning systems and assuming that there are various forms of agency. Artificial reinforcement learning systems satisfy plausible conditions for minimal agency, and those which use models of the environment to perform forward search are capable of a form of agency which may reasonably be called action for reasons.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12458

PETER FAZEKAS – Vividness and content
The notion of subjective vividness plays a fundamental role in comparing different conscious experiences, yet it is poorly understood and lacks proper definition. Philosophical reflection on this topic is especially scarce. This article proposes a novel account of vividness arguing that its standard operationalisation in psychology conflates two major modality-general dimensions along which experiences vary—subjective intensity and subjective specificity—which themselves are determined by further modality-specific factors. The article identifies the neural underpinnings of these factors in the visual domain, demonstrates the unificatory power of the account, and argues that vividness is part of the content of perception.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12455

NERI MARSILI – The definition of assertion: Commitment and truth
According to an influential view, asserting a proposition involves undertaking some "commitment" to the truth of that proposition. But accounts of what it is for someone to be committed to the truth of a proposition are often vague or imprecise, and are rarely put to work to define assertion. This article aims to fill this gap. It offers a precise characterisation of assertoric commitment, and applies it to define assertion. On the proposed view, acquiring commitment is not sufficient for asserting: To assert, commitment must be acquired by explicitly presenting a proposition as true.
{It seems to me that the word "truth" is doing a lot of heavy lifting with a bad back here. "Frodo took the ring to Mount Doom, where it was accidentally destroyed by Gollum": are there people with an assertoric commitment to the truth of this proposition? How about "In the beginning God created the heavens and the earth. Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters"? Or "There are more things in heaven and Earth, Horatio, than are dreamt of in your philosophy"?}
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12476?campaign=wolearlyview

COMMENTARIES

JACQUELINE A. SULLIVAN – Who's in and who's out of the cognitive kinding game? Comments on Muhammad Ali Khalidi's Cognitive ontology: Taxonomic practices in the mind-brain sciences
Muhammad Ali Khalidi contends that because cognitive science casts a wider net than neuroscience in searching for the causes of cognition, it is in the superior position to discover "real" cognitive kinds. I argue that while Khalidi identifies appropriate norms for individuating cognitive kinds, these norms ground his characterization of taxonomic practices in cognitive science, rather than the other way around. If we instead treat Khalidi's norms not as descriptively accurate characterizations of taxonomic practices in cognitive science, but as a set of best practices for kinding cognition, is cognitive science in and neuroscience definitively out of the cognitive kinding game?
https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12475

SARAH K. ROBINS – Kinding memory: Commentary on Muhammad Ali Khalidi's Cognitive ontology
My commentary focuses on Khalidi's defense of episodic memory as a cognitive kind. His argument relies on merging two distinct accounts of episodic memory—the phenomenal and the etiological. I suggest that Khalidi's framework can be used to carve the contemporary memory literature differently. On this view, the phenomenal account supports constructive episodic simulation as a cognitive kind, the etiological account supports event memory as a cognitive kind, and episodic memory ceases to be. The question for Khalidi is, then, how to evaluate this alternative proposal—and more broadly how to adjudicate between competing and overlapping accounts of cognitive kinds.
https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12477

DANIEL WEISKOPF – Computation as the boundary of the cognitive
Khalidi identifies cognition with Marrian computation. He further argues that Marrian levels of inquiry should be interpreted ontologically as corresponding to distinct semi-closed causal domains. But this counterintuitively places the causal domain of representations outside of cognition proper. A closer look at Khalidi's account of concepts shows that these allegedly separate Marrian domains are more tightly integrated than he allows. Theories of concepts converge on algorithmic-representational models rather than computational ones. This suggests that we should reject the wholesale identification of cognition with computation.
https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12479

MUHAMMAD ALI KHALIDI – Kinds in the cognitive sciences: Reply to Weiskopf, Sullivan, and Robins
In this response to three critiques of my book, Cognitive ontology, I expand on some of its main themes. First, I demarcate the domain of cognition to support my claim that it is properly investigated from Marr's computational level. Then, I defend the claim that cognitive kinds ought to be individuated externalistically, by contrast with neural kinds, which are often individuated internalistically. This implies that the relationship between the cognitive sciences is one of delivering mutual constraints, which is a more productive research strategy than the search for "neural correlates" of cognitive constructs.
https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12486

Nature

NEWS

'Altruistic' bull elephant seal lends a helping flipper
Male elephant seals generally have nothing to do with pups — but astounded scientists observed a notable exception.
https://www.nature.com/articles/d41586-024-00319-x

Nature Communications

PAPERS

SEIJI KADOWAKI et al – Delayed increase in stone tool cutting-edge productivity at the Middle-Upper Paleolithic transition in southern Jordan
Although the lithic cutting-edge productivity has long been recognized as a quantifiable aspect of prehistoric human technological evolution, there remains uncertainty how the productivity changed during the Middle-to-Upper Paleolithic transition. Here we present the cutting-edge productivity of eight lithic assemblages in the eastern Mediterranean region that represent a chrono-cultural sequence including the Late Middle Paleolithic, Initial Upper Paleolithic, the Early Upper Paleolithic, and the Epipaleolithic. The results show that a major increase in the cutting-edge productivity does not coincide with the conventional Middle-Upper Paleolithic boundary characterized by the increase in blades in the Initial Upper Paleolithic, but it occurs later in association with the development of bladelet technology in the Early Upper Paleolithic. Given increasing discussions on the complexity of Middle-Upper Paleolithic cultural changes, it may be fruitful to have a long-term perspective and employ consistent criteria for diachronic comparisons to make objective assessment of how cultural changes proceeded across conventional chrono-cultural boundaries.
https://www.nature.com/articles/s41467-024-44798-y

Nature Humanities & Social Sciences Communications

PAPERS

VANESSA AMARO – Crowing in two voices: The cultural transformation of the Portuguese rooster in postcolonial Macau
The Barcelos Rooster, an emblem rooted in Portuguese folklore, has undergone a significant transformation, evolving from a local curiosity to an icon of national pride and subsequently into a symbol of Macau's post-sovereignty transfer to China in 1999. This study examines the rooster's metamorphosis in Macau. In this former Portuguese territory, the rooster has transcended its original symbolism, aligning with the Chinese cultural values of honesty, bravery, and prosperity and becoming ingrained in the city's identity. By tracing its journey from Portugal to Macau, the study explores the rooster's role as a transcultural object within postcolonial tourism and transculturalism frameworks. It investigates how the rooster's adaptation reflects the complex interplay of power, identity, and culture, contributing to the discourse on cultural symbols and collective identity in postcolonial societies.
https://www.nature.com/articles/s41599-024-02748-5

Nature Scientific Reports

PAPERS

XIAOQIAN LI et al – Brain gray matter morphometry relates to onset age of bilingualism and theory of mind in young and older adults
Lifelong bilingualism may result in neural reserve against decline not only in the general cognitive domain, but also in social cognitive functioning. In this study, we show the brain structural correlates that are associated with second language age of acquisition (L2AoA) and theory of mind (the ability to reason about mental states) in normal aging. Participants were bilingual adults (46 young, 50 older) who completed a theory-of-mind task battery, a language background questionnaire, and an anatomical MRI scan to obtain cortical morphometric features (i.e., gray matter volume, thickness, and surface area). Findings indicated a theory-of-mind decline in older adults compared to young adults, controlling for education and general cognition. Importantly, earlier L2AoA and better theory-of-mind performance were associated with larger volume, higher thickness, and larger surface area in the bilateral temporal, medial temporal, superior parietal, and prefrontal brain regions. These regions are likely to be involved in mental representations, language, and cognitive control. The morphometric association with L2AoA in young and older adults were comparable, but its association with theory of mind was stronger in older adults than young adults. The results demonstrate that early bilingual acquisition may provide protective benefits to intact theory-of-mind abilities against normal age-related declines.

https://www.nature.com/articles/s41598-023-48710-4

MORITZ KÖSTER & ROBERT HEPACH – Preverbal infants' understanding of social norms

Social norms are foundational to human cooperation and co-existence in social groups. A crucial marker of social norms is that a behavior is not only shared, but that the conformity to the behavior of others is a basis for social evaluation (i.e., reinforcement and sanctioning), taking the is, how individuals usually behave, to an ought, how individuals should behave to be socially approved by others. In this preregistered study, we show that 11-month-old infants grasp this fundamental aspect about social norms already in their first year. They showed a pupillary surprise response for unexpected social responses, namely the disapproval and exclusion of an individual who showed the same behavior like others or the approval and inclusion of an individual who behaved differently. That preverbal infants link the conformity with others' behavior to social evaluations, before they respond to norm violations themselves, indicates that the foundations of social norm understanding lie in early infancy.

https://www.nature.com/articles/s41598-024-53110-3

NIR HABOUBA et al – Parent–child couples display shared neural fingerprints while listening to stories

Neural fingerprinting is a method to identify individuals from a group of people. Here, we established a new connectome-based identification model and used diffusion maps to show that biological parent–child couples share functional connectivity patterns while listening to stories. These shared fingerprints enabled the identification of children and their biological parents from a group of parents and children. Functional patterns were evident in both cognitive and sensory brain networks. Defining "typical" shared biological parent–child brain patterns may enable predicting or even preventing impaired parent–child connections that develop due to genetic or environmental causes. Finally, we argue that the proposed framework opens new opportunities to link similarities in connectivity patterns to behavioral, psychological, and medical phenomena among other populations. To our knowledge, this is the first study to reveal the neural fingerprint that represents distinct biological parent–child couples.

https://www.nature.com/articles/s41598-024-53518-x

ALEJANDRO SÁNCHEZ-AMARO, LUKE MAURITS & DANIEL B. M. HAUN – Chimpanzees engage in competitive altruism in a triadic ultimatum game

Partner choice promotes competition among individuals to be selected as a cooperative partner, a phenomenon referred to as competitive altruism. We explored whether chimpanzees engage in competitive altruism in a triadic Ultimatum Game where two proposers can send offers simultaneously or consecutively to a responder who can only accept one of the two competing offers. In a dyadic control condition only one proposer at a time could send an offer to the responder. Chimpanzees increased their offers across trials in the competitive triadic, but not in the dyadic control condition. Chimpanzees also increased their offers after being rejected in previous triadic trials. Furthermore, we found that chimpanzees, under specific conditions, outcompete first proposers in triadic consecutive trials before the responder could choose which offer to accept by offering more than what is expected if they acted randomly or simply offered the smallest possible amount. These results suggest that competitive altruism in chimpanzees did not emerge just as a by-product of them trying to increase over previous losses. Chimpanzees might consider how others' interactions affect their outcomes and engage in strategies to maximize their chances of being selected as cooperative partners.

https://www.nature.com/articles/s41598-024-53973-6

TODD A. SUROVELL et al – Use of hare bone for the manufacture of a Clovis bead

A tubular bone bead dating to ~ 12,940 BP was recovered from a hearth-centered activity area at the La Prele Mammoth site in Converse County, Wyoming, USA. This is the oldest known bead from the Western Hemisphere. To determine the taxonomic origin of the bead, we extracted collagen for zooarchaeology by mass spectrometry (ZooMS). We also used micro-CT scanning for morphological analysis to determine likely skeletal elements used for its production. We conclude that the bead was made from a metapodial or proximal phalanx of a hare (Lepus sp.). This find represents the first secure evidence for the use of hares during the Clovis period. While the use of hare bone for the manufacture of beads was a common practice in western North America during the Holocene, its origins can now be traced back to at least the terminal Pleistocene.

https://www.nature.com/articles/s41598-024-53390-9

New Scientist

NEWS

Modern humans were already in northern Europe 45,000 years ago

DNA from bones found in a cave in Germany has been identified as from Homo sapiens, showing that our species endured frigid conditions there as they expanded across the continent.

https://www.newscientist.com/article/2415037-modern-humans-were-already-in-northern-europe-45000-years-ago/

Watch parrots use their beaks for a newly identified form of motion
Not only can parrots fly and walk, they can also swing along branches using their beaks, in a technique researchers are calling beakiation.
https://www.newscientist.com/article/2414946-watch-parrots-use-their-beaks-for-a-newly-identified-form-of-motion/

PLoS One

PAPERS

FIORELLA DEL POPOLO CRISTALDI et al – How previous experience shapes future affective subjective ratings: A follow-up study investigating implicit learning and cue ambiguity
People use their previous experience to predict future affective events. Since we live in ever-changing environments, affective predictions must generalize from past contexts (from which they may be implicitly learned) to new, potentially ambiguous contexts. This study investigated how past (un)certain relationships influence subjective experience following new ambiguous cues, and whether past relationships can be learned implicitly. Two S1-S2 paradigms were employed as learning and test phases in two experiments. S1s were colored circles, S2s negative or neutral affective pictures. Participants (Experiment 1 N = 121, Experiment 2 N = 116) were assigned to the certain (CG) or uncertain group (UG), and they were presented with 100% (CG) or 50% (UG) S1-S2 congruency during an uninstructed (Experiment 1) or implicit (Experiment 2) learning phase. During the test phase both groups were presented with a new 75% S1-S2 paradigm, and ambiguous (Experiment 1) or unambiguous (Experiment 2) S1s. Participants were asked to rate the expected valence of upcoming S2s (expectancy ratings), or their experienced valence and arousal (valence and arousal ratings). In Experiment 1 ambiguous cues elicited less negative expectancy ratings, and less unpleasant valence ratings, independently of prior experience. In Experiment 2, both groups showed similar expectancies, predicting upcoming pictures' valence according to the 75% contingencies of the test phase. Overall, we found that in the presence of ambiguous cues subjective affective experience is dampened, and that implicit previous experience does not emerge at the subjective level by significantly shaping reported affective experience.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297954

AMY M. SCOTT et al – Flanged males have higher reproductive success in a completely wild orangutan population
Male orangutans (Pongo spp.) exhibit bimaturism, an alternative reproductive tactic, with flanged and unflanged males displaying two distinct morphological and behavioral phenotypes. Flanged males are larger than unflanged males and display secondary sexual characteristics which unflanged males lack. The evolutionary explanation for alternative reproductive tactics in orangutans remains unclear because orangutan paternity studies to date have been from sites with ex-captive orangutans, provisioning via feeding stations and veterinary care, or that lack data on the identity of mothers. Here we demonstrate, using the first long-term paternity data from a site free of these limitations, that alternative reproductive tactics in orangutans are condition-dependent, not frequency-dependent. We found higher reproductive success by flanged males than by unflanged males, a pattern consistent with other Bornean orangutan (Pongo pygmaeus) paternity studies. Previous paternity studies disagree on the degree of male reproductive skew, but we found low reproductive skew among flanged males. We compare our findings and previous paternity studies from both Bornean and Sumatran orangutans (Pongo abelii) to understand why these differences exist, examining the possible roles of species differences, ecology, and human intervention. Additionally, we use long-term behavioral data to demonstrate that while flanged males can displace unflanged males in association with females, flanged males are unable to keep other males from associating with a female, and thus they are unable to completely mate guard females. Our results demonstrate that alternative reproductive tactics in Bornean orangutans are condition-dependent, supporting the understanding that the flanged male morph is indicative of good condition. Despite intense male-male competition and direct sexual coercion by males, female mate choice is effective in determining reproductive outcomes in this population of wild orangutans.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0296688

SAMER ELHAJJAR & LAURENT YACOUB – Social media research: We are publishing more but with weak influence
The purpose of this paper is to address the chasm between academic research on social media as an expanding academic discipline and at the same time a growing marketing function. A bibliometric analysis indicated the evolution of academic research on social media. The results of a survey of 280 social media practitioners shed the light on the gap between academic social media research and the practice of professionals. A qualitative study also offered novel insights and recommendations for future developments in academic research on social media. The findings of this paper showed that academic research on social media is growing in terms of the number of publications but is struggling in three areas: visibility, relevance, and influence on practitioners. This study contributes to the body of knowledge on social media. The implications of our study are derived from the importance of our findings on the directions to publish more relevant and timely academic research on social media. While extensive studies exist on social media, their influence on practitioners is still limited.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297241

Royal Society Open Science

PAPERS

EDWIN DICKINSON, MELODY W. YOUNG & MICHAEL C. GRANATOSKY – Beakiation: how a novel parrot gait expands the locomotor repertoire of living birds

Occupation of arboreal habitats poses myriad locomotor challenges, driving both anatomical and behavioural innovations across various tetrapod lineages. Here, we report and biomechanically assess a novel, beak-driven locomotor mode—'beakiation'—by which parrots advance along the underside of narrow arboreal substrates. Using high-speed videography and kinetic analyses, we describe the limb loading patterns and pendular mechanics of beakiation, and compare the biomechanical characteristics of this gait with other suspensory behaviours (namely, forelimb-driven brachiation and inverted quadrupedal walking). We report that the parrot beak experiences comparable force magnitudes (approx. 150% body weight in the normal plane; approx. 50% body weight in the fore–aft plane) to the forelimbs of brachiating primates. Parrot beakiation is also characterized by longer-than-expected pendular periods, similar to observations of gibbon brachiation. However, in terms of mechanical energy recovery, beakiation is typified by lower levels of energetic recovery than brachiating specialists: a product of its slower, more careful nature. The observation of this novel behaviour—which adds to a growing base of literature regarding beak-assisted locomotor strategies in birds—highlights the extraordinary behavioural plasticity of birds, the functional versatility of the avian beak, and the difficulties in reconstructing an animal's locomotor repertoire from morphological characteristics alone.
https://royalsocietypublishing.org/doi/10.1098/rsos.231397

Trends in Cognitive Sciences

PAPERS

LEOR M. HACKEL, DAVID A. KALKSTEIN & PETER MENDE-SIEDLECKI – Simplifying social learning

Social learning is complex, but people often seem to navigate social environments with ease. This ability creates a puzzle for traditional accounts of reinforcement learning (RL) that assume people negotiate a tradeoff between easy-but-simple behavior (model-free learning) and complex-but-difficult behavior (e.g., model-based learning). We offer a theoretical framework for resolving this puzzle: although social environments are complex, people have social expertise that helps them behave flexibly with low cognitive cost. Specifically, by using familiar concepts instead of focusing on novel details, people can turn hard learning problems into simpler ones. This ability highlights social learning as a prototype for studying cognitive simplicity in the face of environmental complexity and identifies a role for conceptual knowledge in everyday reward learning.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(24)00004-4

RAFAEL POLANÍA, DENIS BURDAKOV & TODD A. HARE – Rationality, preferences, and emotions with biological constraints: it all starts from our senses

Is the role of our sensory systems to represent the physical world as accurately as possible? If so, are our preferences and emotions, often deemed irrational, decoupled from these 'ground-truth' sensory experiences? We show why the answer to both questions is 'no'. Brain function is metabolically costly, and the brain loses some fraction of the information that it encodes and transmits. Therefore, if brains maximize objective functions that increase the fitness of their species, they should adapt to the objective-maximizing rules of the environment at the earliest stages of sensory processing. Consequently, observed 'irrationalities', preferences, and emotions stem from the necessity for our early sensory systems to adapt and process information while considering the metabolic costs and internal states of the organism.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(24)00003-2

Trends in Ecology and Evolution

PAPERS

ELEANOR M. CAVES et al with STEPHEN NOWICKI – Backgrounds and the evolution of visual signals

Color signals which mediate behavioral interactions across taxa and contexts are often thought of as color 'patches' – parts of an animal that appear colorful compared to other parts of that animal. Color patches, however, cannot be considered in isolation because how a color is perceived depends on its visual background. This is of special relevance to the function and evolution of signals because backgrounds give rise to a fundamental tradeoff between color signal detectability and discriminability: as its contrast with the background increases, a color patch becomes more detectable, but discriminating variation in that color becomes more difficult. Thus, the signal function of color patches can only be fully understood by considering patch and background together as an integrated whole.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(23)00237-9

ALISON M. BELL – The evolution of decision-making mechanisms under competing demands

Animals in nature are constantly managing multiple demands, and decisions about how to adjust behavior in response to ecologically relevant demands is critical for fitness. Evidence for behavioral correlations across functional contexts (behavioral syndromes) and growing appreciation for shared proximate substrates of behavior prompts novel questions

about the existence of distinct neural, molecular, and genetic mechanisms involved in decision-making. Those proximate mechanisms are likely to be an important target of selection, but little is known about how they evolve, their evolutionary history, or where they harbor genetic variation. Herein I provide a conceptual framework for understanding the evolution of mechanisms for decision-making, highlighting insights on decision-making in humans and model organisms, and sketch an emerging synthesis.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(23)00238-0

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