EAORC BULLETIN 1,114 – 20 October 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 – Learning in Lithic Landscapes

Biological Theory 9, 27-41 (2014).

PETER HISCOCK – Learning in Lithic Landscapes: A Reconsideration of the Hominid "Toolmaking" Niche

This article reconsiders the early hominid ''lithic niche'' by examining the social implications of stone artifact making. I reject the idea that making tools for use is an adequate explanation of the elaborate artifact forms of the Lower Palaeolithic, or a sufficient cause for long-term trends in hominid technology. I then advance an alternative mechanism founded on the claim that competency in making stone artifacts requires extended learning, and that excellence in artifact making is attained only by highly skilled individuals who have been taught and practiced for extensive periods. Consequently both competency and expertise in knapping comes at a high learning cost for both the individual learner and the social group to which they belong. Those high intrinsic costs of learning created contexts in which groups selected cost-reducing forms of social learning and teaching, and in which specialization could develop. Artifacts and their manufacturing processes probably acquired functions as social signals—as honest signals of valuable capacities. The magnification of these signals, through competition between

knappers and through inspiring later craftspeople, may account for a substantial amount of the accumulated elaboration visible in the archaeological record. Consequently lithic artifacts operated as material symbols from an early time in hominid evolution.
https://www.academia.edu/6368302/Learning_in_lithic_landscapes_a_reconsideration_of_the_hominid_toolmaking_niche_Biological_Theory_9_27_41

NEWS

NATURE BRIEFING – How to speak birdsong

Awareness is growing that birds do more than aimlessly tweet. Some species whisper between themselves, sing to their unhatched eggs and develop 'familects' of sounds shared by a family unit. Driven by the urge to understand whether bird vocalizations can be considered 'language' — and to assist with the huge part of bird-watching that involves simply listening — ornithologists and artificial-intelligence researchers are working to decode the meaning.
https://www.newyorker.com/magazine/2024/10/21/how-scientists-started-to-decode-birdsong

SCIAM NEWS – How the Famous Lucy Fossil Revolutionized the Study of Human Origins

Half a century after its discovery, this iconic fossil remains central to our understanding of human origins.
https://www.scientificamerican.com/article/fossil-human-ancestor-lucy-remains-pivotal-50-years-after-discovery/

SCIENCEADVISER – Your cat may be spying on you

Scientists are finally showing what cat owners have long suspected: Your feline friend is eavesdropping on you. Without training or treats, cats appear to learn words the same way babies do, and perhaps even faster. This find suggests that—gasp!—cats may actually be listening to what we say, even when we're not aware of them doing so.
In their study, researchers gave 31 adult pet cats a type of word test designed for human babies. The scientists propped each kitty in front of a laptop and played the nonsense word "keraru" while a growing and shrinking blue-and-white unicorn appeared on the screen, or the similarly gibberish word "parumo" while a red-faced cartoon sun grew and shrank. Then the team played half the images with the audio for the "wrong" word.
Visibly perplexed, the cats spent an average of 33 percent more time looking at the screen when hearing such mismatches—a sign that they had learned to associate the original words with images. "Some cats even gazed at the screen with their pupils dilated," says comparative cognitive scientist and study author Saho Takagi. "It was cute to see how seriously they participated in the experiment."
Surprisingly, the vast majority of the cats had learned each word-image association after only two nine-second lessons. By contrast, most 14-month-old human babies need four 15-second lessons, including hearing each word seven times per lesson, as opposed to four.
For those curious how dogs compare, you're out of luck. While previous studies have shown that our canine pals also pick up rapidly on human language, the work relied on different scientific setups, like owner surveys and fetching.
Still, the bottom line is clear: Be careful what you say around your pets. You never know when they're listening.
https://www.science.org/content/article/cats-beat-babies-word-association-game

SCIENCE DAILY – Bilingualism makes the brain more efficient, especially when learned at a young age

A new study from The Neuro (Montreal Neurological Institute-Hospital) of McGill university, the University of Ottawa and the University of Zaragoza in Spain elaborates on bilingualism's role in cognition, showing increased efficiency of communication between brain regions.
https://www.sciencedaily.com/releases/2024/10/241010142538.htm

SCIENCE DAILY – Playing songs to Darwin's finches confirms link between environment and new species

They say that hindsight is 20/20, and though the theory of ecological speciation -- which holds that new species emerge in response to ecological changes -- seems to hold in retrospect, it has been difficult to demonstrate experimentally, until now. Biologists have identified a key connection between ecology and speciation in Darwin's finches, famous residents of the Galapagos Islands, Ecuador. Prior work on these birds had established that birds' beaks adapt to changing ecological environments, and that beak changes affect how the birds sing. But, until this paper, no one has yet been able to experimentally show that such changes drive the emergence of new species. The innovative key to this discovery? The ghosts of future finches.
https://www.sciencedaily.com/releases/2024/10/241010142532.htm

SCIENCE DAILY – Fossils and fires: Early modern human activity in the jungles of Southeast Asia

Studying microscopic layers of dirt dug from the Tam Pa Ling cave site in northeastern Laos has provided a team of archaeologists further insights into some of the earliest evidence of Homo sapiens in mainland Southeast Asia. The site, which has been studied for the past 14 years, has produced some of the earliest fossil evidence of our direct ancestors in

Southeast Asia but now a new study has reconstructed the ground conditions in the cave between 52,000 and 10,000 years ago.
https://www.sciencedaily.com/releases/2024/10/241010002142.htm

SCIENCE DAILY – Why people think they're right, even when they are wrong

If you smugly believe you're right in a disagreement with a friend or colleague, a new study suggests why you may actually be wrong. Researchers found that people naturally assume they have all the information they need to make a decision or support their position, even when they do not.
https://www.sciencedaily.com/releases/2024/10/241009144819.htm

SCIENCE DAILY – One-time cooperation decisions unaffected by increased benefits to society

Until now, it was considered certain that people are more likely to cooperate if the benefits from cooperation are higher. A recently published, large-scale study has now called this finding into question: in over 2000 study participants, the researchers found no relationship between benefits from cooperation and willingness to cooperate.
https://www.sciencedaily.com/releases/2024/10/241008122350.htm

SCIENCE DAILY – Bonobos may be more vulnerable than previously thought, suggests genetics study

Bonobos, endangered great apes that are among our closest relatives, might be more vulnerable than previously understood, finds a genetics study that reveals three distinct populations.
https://www.sciencedaily.com/releases/2024/10/241015141059.htm

SCIENCE DAILY – Boy or girl? Researchers identify genetic mutation increasing chance of a daughter

Researchers have detected a human genetic variant that influences the sex ratio of children. Additionally, they found that many hidden genetic variants of sex ratio may exist in human populations.
https://www.sciencedaily.com/releases/2024/10/241016115906.htm

SCIENCE DAILY – Origins of our love of carbs predates agriculture and maybe our split from Neanderthals

A new study reveals how the duplication of the salivary amylase gene may not only have helped shape human adaptation to starchy foods, but may have occurred as far back as more than 800,000 years ago, long before the advent of farming.
https://www.sciencedaily.com/releases/2024/10/241017172950.htm

SCIENCE.ORG NEWS – You're wrong. Here's why you keep insisting you're right.

Study helps explain why people who are incorrect are so confident in their correctness.
https://www.science.org/content/article/you-re-wrong-here-s-why-you-keep-insisting-you-re-right

SCIENCE.ORG NEWS – Cats beat babies at word-association game

Study suggests our feline friends are listening to us more than we think.
https://www.science.org/content/article/cats-beat-babies-word-association-game

THE CONVERSATION – Ancient humans survived the last ice age without migration

John Stewart, Bournemouth University; Jeremy Searle, Cornell University Most animals retreated to small, warmer enclaves. But some, like humans, seemed to have stayed where they were.
https://theconversation.com/ancient-humans-were-so-good-at-surviving-the-last-ice-age-they-didnt-have-to-migrate-like-other-species-new-study-240366

THE CONVERSATION – Five simple questions can help spot exaggerated research claims.

Five simple questions can help spot exaggerated research claims over sex differences in the brain
https://theconversation.com/five-simple-questions-can-help-spot-exaggerated-research-claims-over-sex-differences-in-the-brain-240356

PUBLICATIONS

Animal Behaviour

PAPERS

STEPHANIE A. FOX et al with RICHARD WRANGHAM – Selective social tolerance drives differentiated relationships among wild female chimpanzees

Strong, affiliative bonds often function to facilitate social competition through cooperative defence of resources, but the benefits of social bonds may be low when direct competition is less intense or less beneficial. In such cases, one possible outcome is that relationships are weak and undifferentiated. Alternatively, negotiating stable, selectively tolerant relationships may be a strategy to mitigate the costs and risks of sharing space when direct competition is undesirable. We investigated dyadic social tolerance among wild adult female eastern chimpanzees, Pan troglodytes schweinfurthii, who engage in low rates of affiliation and aggression with one another. While females associate with one another at different rates, these patterns could reflect shared patterns of behaviour (e.g. ranging) rather than social preference or variation in relationship quality. We first determined whether patterns of dyadic spatial association (5 m proximity) were differentiated and stable over time. To assess whether dyadic spatial association reflected preference and variation in social tolerance, we tested whether spatial association was actively maintained by waiting and following behaviour and associated with decreased aggression and increased co-feeding. Spatial associations were differentiated, and stronger associations were more stable. Frequent associates used following and waiting behaviour to actively maintain associations. Association positively predicted time co-feeding and negatively predicted aggression. These patterns were true among related and unrelated dyads. Among unrelated females, dyads with stronger associations maintained proximity more mutually. This study highlights social tolerance as a stable relationship attribute that can predict and explain patterns of behaviour and social network structure, distinct from, or in the absence of, affiliation.
https://www.sciencedirect.com/science/article/pii/S000334722400229X

Cell

PAPERS

ANGELO FORLI & MICHAEL M. YARTSEV – Understanding the neural basis of natural intelligence

Understanding the neural basis of natural intelligence necessitates a paradigm shift: from strict reductionism toward embracing complexity and diversity. New tools and theories enable us to tackle this challenge, providing unprecedented access to neural dynamics and behavior across time, contexts, and species. Principles for intelligent behavior and learning in the natural world are now, more than ever, within reach.
https://www.cell.com/cell/abstract/S0092-8674(24)00843-2

MADELINE A. LANCASTER et al – Unraveling mechanisms of human brain evolution

Evolutionary changes in human brain structure and function have enabled our specialized cognitive abilities. How these changes have come about genetically and functionally has remained an open question. However, new methods are providing a wealth of information about the genetic, epigenetic, and transcriptomic differences that set the human brain apart. Combined with in vitro models that allow access to developing brain tissue and the cells of our closest living relatives, the puzzle pieces are now coming together to yield a much more complete picture of what is actually unique about the human brain. The challenge now will be linking these observations and making the jump from correlation to causation. However, elegant genetic manipulations are now possible and, when combined with model systems such as organoids, will uncover a mechanistic understanding of how evolutionary changes at the genetic level have led to key differences in development and function that enable human cognition.
https://www.cell.com/cell/fulltext/S0092-8674(24)01018-3

MACKENZIE WEYGANDT MATHIS et al – Decoding the brain: From neural representations to mechanistic models

A central principle in neuroscience is that neurons within the brain act in concert to produce perception, cognition, and adaptive behavior. Neurons are organized into specialized brain areas, dedicated to different functions to varying extents, and their function relies on distributed circuits to continuously encode relevant environmental and body-state features, enabling other areas to decode (interpret) these representations for computing meaningful decisions and executing precise movements. Thus, the distributed brain can be thought of as a series of computations that act to encode and decode information. In this perspective, we detail important concepts of neural encoding and decoding and highlight the mathematical tools used to measure them, including deep learning methods. We provide case studies where decoding concepts enable foundational and translational science in motor, visual, and language processing.
https://www.cell.com/cell/fulltext/S0092-8674(24)00980-2

Current Biology

PAPERS

SOJUNG HAN et al – Deep genetic substructure within bonobos

Establishing the genetic and geographic structure of populations is fundamental, both to understand their evolutionary past and preserve their future. Nevertheless, the patterns of genetic population structure are unknown for most endangered species. This is the case for bonobos (Pan paniscus), which, together with chimpanzees (Pan troglodytes), are humans' closest living relatives. Chimpanzees live across equatorial Africa and are classified into four subspecies, with some genetic population substructure even within subspecies. Conversely, bonobos live exclusively in the Democratic Republic of Congo and are considered a homogeneous group with low genetic diversity, despite some population structure inferred from mtDNA. Nevertheless, mtDNA aside, their genetic structure remains unknown, hampering our understanding of the species and conservation efforts. Mapping bonobo genetic diversity in space is, however, challenging because, being endangered, only non-invasive sampling is possible for wild individuals. Here, we jointly analyze the exomes and mtDNA from 20 wild-born bonobos, the whole genomes of 10 captive bonobos, and the mtDNA of 136 wild individuals. We identify three genetically distinct bonobo groups of inferred Central, Western, and Far-Western geographic origin within the bonobo range. We estimate the split time between the central and western populations to be ∼145,000 years ago and genetic differentiation to be in the order of that of the closest chimpanzee subspecies. Furthermore, our estimated long-term Ne for Far-West (∼3,000) is among the lowest estimated for any great ape lineage. Our results highlight the need to attend to the bonobo substructure, both in terms of research and conservation.
https://www.cell.com/current-biology/fulltext/S0960-9822(24)01284-3

Heliyon

PAPERS

ELENA DUBENKO – Grammatical gender universalities underlying uniform mental representations of the world: myth or reality?

The subject of grammatical gender and cognition has been continuously examined in psycholinguistics, wherein findings show essential support for gender congruency effects, suggesting that grammar lends matrices for speakers' mental representations. Based on these psycholinguistic data, this study offers an innovative vista of investigation that combines typological and cognitive linguistic approaches. Its purpose lies in determining whether grammatical gender patterns sanction cross-linguistic universality in conceptualising entities as male or female, and whether grammatical gender universalities have semantic motivation. This research reveals universal tendencies in grammatical gender affiliation of the analysed nouns in 32 two and three gender languages belonging to different groups of the Indo-European, Indo-Iranian and Afro-Asiatic language families. From a cognitive perspective, these findings testify to the identical mental images of the entities denoting artefacts, natural phenomena and abstract concepts in speakers of the languages under consideration. Furthermore, grammatical gender universalities manifest certain semantic dimensions involving the motives associated with masculine or feminine and symbolic suggestions of the Woman archetype. As per the data from cognitive poetics, grammatical gender universalities become objects of special stylistic choices emerging as personified images of symbolic relevance in gender and non-gender languages.
https://www.cell.com/heliyon/fulltext/S2405-8440(24)15541-7

MATTEO PRIORELLI & IVILIN PEEV STOIANOV – Slow but flexible or fast but rigid? Discrete and continuous processes compared

A tradeoff exists when dealing with complex tasks composed of multiple steps. High-level cognitive processes can find the best sequence of actions to achieve a goal in uncertain environments, but they are slow and require significant computational demand. In contrast, lower-level processing allows reacting to environmental stimuli rapidly, but with limited capacity to determine optimal actions or to replan when expectations are not met. Through reiteration of the same task, biological organisms find the optimal tradeoff: from action primitives, composite trajectories gradually emerge by creating task-specific neural structures. The two frameworks of active inference – a recent brain paradigm that views action and perception as subject to the same free energy minimization imperative – well capture high-level and low-level processes of human behavior, but how task specialization occurs in these terms is still unclear. In this study, we compare two strategies on a dynamic pick-and-place task: a hybrid (discrete-continuous) model with planning capabilities and a continuous-only model with fixed transitions. Both models rely on a hierarchical (intrinsic and extrinsic) structure, well suited for defining reaching and grasping movements, respectively. Our results show that continuous-only models perform better and with minimal resource expenditure but at the cost of less flexibility. Finally, we propose how discrete actions might lead to continuous attractors and compare the two frameworks with different motor learning phases, laying the foundations for further studies on bio-inspired task adaptation.
https://www.cell.com/heliyon/fulltext/S2405-8440(24)15160-2

iScience

PAPERS

QUENTIN GALLOT et al with KLAUS ZUBERBÜHLER – A non-human primate combinatorial system for long-distance communication

Complex vocal systems are thought to evolve if individuals are regularly challenged by complex social decision-making, the social complexity hypothesis. We tested this idea on a West African forest non-human primate, the Olive Colobus monkey, a highly cryptic species with very little social behaviour and very small group sizes, factors unlikely to favour the evolution of complex communication. The species also has an unusual fission-fusion social system, with group members regularly spending considerable amounts of time with neighbouring groups. As predicted by the social complexity hypothesis, we only found a very basic repertoire of two call types in this species, produced by both males and females. However, the calls were astonishingly loud, never uttered alone but in syntactically-structured sequences assembled along a set of rules. We concluded that the Olive Colobus monkeys have evolved a combinatorial system to interact with distant group members.
https://www.cell.com/iscience/fulltext/S2589-0042(24)02397-6

Journal of Linguistics

PAPERS

GARY THOMS et al with DAVID ADGER – Explaining microvariation using the Tolerance Principle: plugging the amn't gap

In this article, we describe and explain patterns of variation in acceptance of amn't in varieties of Scots, drawing upon data from the Scots Syntax Atlas. Partly in line with findings from Bresnan (2001), we show that amn't is much more widely accepted in inversion environments (amn't I?) than in declaratives (I amn't), but nevertheless, amn't in declaratives is still accepted in certain regions of Scotland. We combine the productivity-based explanation of the amn't gap in Yang (2016, 2017) with new insights into the syntax of Scots negation from Thoms et al. (2023) to provide a predictive account of the attested variation.
https://www.cambridge.org/core/journals/journal-of-linguistics/article/explaining-microvariation-using-the-tolerance-principle-plugging-the-amnt-gap/E43BAF7267E45A0EB6D7BE28E9CEEF7F

Language and Cognition

PAPERS

ANA WERKMANN HORVAT, KRISTINA ŠTRKALJ DESPOT & GORDANA HRŽICA – Early acquisition of figurative meanings in polysemous nouns and verbs

Early research on the first language acquisition of figurative language indicated that figurative language comprehension and production skills develop relatively late, while recent studies contest this view. This study explores early production of metaphorical (e.g., shark meaning a rapacious crafty person) and metonymic (e.g., house meaning an organisation) meanings in English polysemous nouns and verbs by using the Braunwald corpus, which tracks a single child's speech from the age of 1 year, 5 months to 7 years. We explore the initial production of these meanings, with respect to the age, order of acquisition and part of speech (noun vs. verb). Our study shows that children start using figurative meanings at a much earlier age than previously thought. In this early stage, metonymic meanings emerge earlier, while metaphorical meanings come a few months later. These findings challenge prior beliefs that children only develop figurative language skills at 3 years of age and show that it is not only the pre-figurative skills that develop early but also the production of very conventional types of figurative meaning, which might not necessarily require the completed development of the complex set of cognitive skills necessary for cross-domain comparison.
https://www.cambridge.org/core/journals/language-and-cognition/article/early-acquisition-of-figurative-meanings-in-polysemous-nouns-and-verbs/52CC3BB5CD488EEF31C6FB8AF7A457DB

SUSANNE DIETRICH, VERENA C. SEIBOLD & BETTINA ROLKE – Discourse comprehension and referential processing: effects of contextual distance and semantic plausibility on presupposition processing

The present study aimed to investigate whether contextual factors influence how a reference is processed in discourse. We used intact and violated presuppositions (PSP), triggered by a definite or indefinite noun phrase, to monitor the reference process. In one sentence set, a contextual referent was explicitly mentioned close or far from the PSP-triggering noun phrase (memory context). In another sentence set, a referent was not explicitly mentioned in the context, but an inference to a referent was either plausible or implausible due to contextual semantic relations (inference context). Participants were asked to rate the coherence of the discourse after listening to it. Our results revealed a strong influence of the temporal distance of the contextual presentation of a referent. When the referent was far in the context (memory context), PSP violations were judged to be less severe than for close referents, suggesting that they are less clearly represented in memory. Furthermore, PSP violations seemed to play a subordinate role when the semantic context provided a basis for the plausible presence of a referent (inference context). Our results suggest that discourse comprehension involves referential processes whose importance may fade with distance in memory or may be obscured by semantic contextual content.

https://www.cambridge.org/core/journals/language-and-cognition/article/discourse-comprehension-and-referential-processing-effects-of-contextual-distance-and-semantic-plausibility-on-presupposition-processing/6338C1A85919FAC15AF5FBA5BFE926C7

Nature Communications

PAPERS

HUGO WEISSBART & ANDREA E. MARTIN – The structure and statistics of language jointly shape cross-frequency neural dynamics during spoken language comprehension

Humans excel at extracting structurally-determined meaning from speech despite inherent physical variability. This study explores the brain's ability to predict and understand spoken language robustly. It investigates the relationship between structural and statistical language knowledge in brain dynamics, focusing on phase and amplitude modulation. Using syntactic features from constituent hierarchies and surface statistics from a transformer model as predictors of forward encoding models, we reconstructed cross-frequency neural dynamics from MEG data during audiobook listening. Our findings challenge a strict separation of linguistic structure and statistics in the brain, with both aiding neural signal reconstruction. Syntactic features have a more temporally spread impact, and both word entropy and the number of closing syntactic constituents are linked to the phase-amplitude coupling of neural dynamics, implying a role in temporal prediction and cortical oscillation alignment during speech processing. Our results indicate that structured and statistical information jointly shape neural dynamics during spoken language comprehension and suggest an integration process via a cross-frequency coupling mechanism.
https://www.nature.com/articles/s41467-024-53128-1

Nature Scientific Reports

PAPERS

SAEID IRANMANESH & RAAD RAAD – Encounter based energy sharing in wildlife communication systems

In this work, the concept of peer-to-peer energy sharing in wildlife communication systems is explored. In this context, wild animals can share energy wirelessly besides their data communications as they opportunistically come into range of each other. Our goal is to find a way to balance the energy among the nodes and minimize this energy loss. We propose a novel encounter-based energy-sharing scheme, called EBES, that utilizes single and multi-hop transmission to achieve energy balance, minimize energy losses, and maximize the lifetime of the wildlife communication system. EBES is based on a variety of parameters, including the amount of energy left in the system and the nodes' encounter rate, and buffer sizes. In the simulation studies, we considered a wildlife communication network that is involved in data communication and applied EBES over the opportunistic routing protocols such as EBR, Spray&Wait, and Epidemic resulting in a network lifetime increase of 35% and improving the routing protocols performance. Additionally, we compared EBES with the other well-known energy balancing techniques that also contribute to data communication such as EA-Epidemic, EERPFAnt, and OE-OLSR and the results show the remaining energy was improved by 31%, 26%, and 15%, respectively.
https://www.nature.com/articles/s41598-024-73838-2

Neuron

PAPERS

ANDRES AGUDELO-TORO et al – Accurate neural control of a hand prosthesis by posture-related activity in the primate grasping circuit

Brain-computer interfaces (BCIs) have the potential to restore hand movement for people with paralysis, but current devices still lack the fine control required to interact with objects of daily living. Following our understanding of cortical activity during arm reaches, hand BCI studies have focused primarily on velocity control. However, mounting evidence suggests that posture, and not velocity, dominates in hand-related areas. To explore whether this signal can causally control a prosthesis, we developed a BCI training paradigm centered on the reproduction of posture transitions. Monkeys trained with this protocol were able to control a multidimensional hand prosthesis with high accuracy, including execution of the very intricate precision grip. Analysis revealed that the posture signal in the target grasping areas was the main contributor to control. We present, for the first time, neural posture control of a multidimensional hand prosthesis, opening the door for future interfaces to leverage this additional information channel.
https://www.cell.com/neuron/abstract/S0896-6273(24)00688-3

New Scientist

ARTICLES

ELISE CUTTS – The free-energy principle: Can one idea explain why everything exists?

What life is and how the mind works fall within the compass of one bold concept. But critics say that by attempting to explain everything, it may end up explaining nothing

https://www.newscientist.com/article/mg26435130-300-the-free-energy-principle-can-one-idea-explain-why-everything-exists/

COLIN BARRAS – The archaeologist fighting claims about an advanced lost civilisation
Netflix's Ancient Apocalypse peddles the idea that we have overlooked an extraordinary ancient civilisation. Flint Dibble explains why that is wrong, and why real archaeology is more exciting
https://www.newscientist.com/article/mg26435130-400-the-archaeologist-fighting-claims-about-an-advanced-lost-civilisation/

PLoS One

PAPERS

ALICE BONINI et al – The relationship between leadership and adaptive performance: A systematic review and meta-analysis
This research presents a comprehensive review and meta-analysis of literature to examine the impact of various leadership styles on organizational adaptive performance (AP). AP is essential for job performance, especially in environments undergoing rapid changes. Previous reviews on AP found that transformational and self-leadership had had a positive influence on job adaptivity, while the relationship between other leadership styles and AP had not been clear. First, authors outlined the theoretical framework of AP and leadership, clarifying how job adaptivity and the different leadership styles are defined and discussed in the scientific literature. Subsequently four scientific databases were explored to identify studies that investigate the Leadership and AP' relationship. 32 scientific articles and 2 conference papers were investigated for review, of which 31 were used to conduct a meta-analysis; 52 different effect sizes from 32 samples were identified for a total sample size of 11.640 people. Qualitative synthesis revealed that the influence of different leadership styles on AP depended on contextual variables and on aspects related to the nature of the work. Moreover, it was found that leadership supported AP through motivational and relational aspects. Through this meta-analysis, it was found that a significant positive relationship between leadership and AP existed ($Zr = .39$, $SE = .04$, $p < .001$. 95%CI [.32, .47], $r = .37$). However, no differences emerged from the different leadership styles examined in the studies. This review deepens the importance of leadership as organizational factor that affect the employees' likelihood of dealing with continuously emergent changes at work, extended the search to emerging leadership approaches to highlight the value of collective contributions, ethics, and moral and sustainable elements that could positively affect AP.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0304720

RETRACTIONS

THE PLOS ONE EDITORS – Retraction: Molecular Evidence for the Presence of Rickettsia Felis in the Feces of Wild-living African Apes
The PLOS ONE Editors retract this article due to concerns about compliance with the PLOS Animal Research policy and PLOS ONE's guidelines for articles reporting observational and field studies.
This study involved collection of samples in Cameroon and Democratic Republic of Congo, from species categorized by IUCN as endangered (chimpanzee, bonobo) and critically endangered (gorilla).
PLOS received a copy of the ethics approval document N°259/CNE/SE/201 cited in the Ethics Statement. It appears to cover a different study than that reported in this article: N°259/CNE/SE/201 was issued by the Comité National d'Ethique in Cameroon for an SIV study (protocol title: "Identification et prévalences des SIVs chez les primates non-humains sauvages afin d'estimer les risques de nouvelles transmissions inter-espèces et d'étudier plus en détails les réservoirs des ancêtres due HIV-1 chez les grands singes en Afrique Centrale"). The document does not mention collections in the Democratic Republic of Congo or investigation of Rickettsia felis.
In response to PLOS' queries the authors did not clarify this issue or provide documentation to confirm that the study complied with applicable research regulations in the Democratic Republic of Congo and received local approval for all field collections.
A representative of the Aix-Marseille Université Ethics Committee stated that the institute disagrees with the retraction decision, that the cited approval from Cameroon authorized the research, and that the study complied with the local legislation and international ethics standards. PLOS concluded that the response from Aix-Marseille Université did not resolve the above concerns.
DR indicated that he disagrees with the retraction decision. AKK, CS, SAM, PR, CB, AA, BII, JJMT, EMN, ED, MP, and FF either did not respond directly or could not be reached.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0312332

Proceedings of the Royal Society B

PAPERS

SABRINA ENGESSER et al with SIMON W. TOWNSEND – Seeds of language-like generativity in bird call combinations

Language is unbounded in its generativity, enabling the flexible combination of words into novel sentences. Critically, these constructions are intelligible to others due to our ability to derive a sentence's compositional meaning from the semantic relationships among its components. Some animals also concatenate meaningful calls into compositional-like combinations to communicate more complex information. However, these combinations are structurally highly stereotyped, suggesting a bounded system of holistically perceived signals that impedes the processing of novel variants. Using long-term data and playback experiments on pied babblers, we demonstrate that, despite production stereotypy, they can nevertheless process structurally modified and novel combinations of their calls, demonstrating a capacity for deriving meaning compositionally. Furthermore, differential responses to artificial combinations by fledglings suggest that this compositional sensitivity is acquired ontogenetically. Our findings demonstrate animal combinatorial systems can be flexible at the perceptual level and that such perceptual flexibility may represent a precursor of language-like generativity.
https://royalsocietypublishing.org/doi/10.1098/rspb.2024.0922

RICHARD BISCHOF et al – The moon's influence on the activity of tropical forest mammals

Changes in lunar illumination alter the balance of risks and opportunities for animals, influencing activity patterns and species interactions. We examined if and how terrestrial mammals respond to the lunar cycle in some of the darkest places: the floors of tropical forests. We analysed long-term camera trapping data on 86 mammal species from 17 protected forests on three continents. Conservative categorization of activity during the night revealed pronounced avoidance of moonlight (lunar phobia) in 12 species, compared with pronounced attraction to moonlight (lunar philia) in only three species. However, half of all species in our study responded to lunar phases, either changing how nocturnal they were, altering their overall level of activity, or both. Avoidance of full moon was more common, exhibited by 30% of all species compared with 20% of species that exhibited attraction. Nocturnal species, especially rodents, were over-represented among species that avoided full moon. Artiodactyla were more prominent among species attracted to full moon. Our findings indicate that lunar phases influence animal behaviour even beneath the forest canopy. Such impacts may be exacerbated in degraded and fragmented forests. Our study offers a baseline representing relatively intact and well-protected contexts together with an intuitive approach for detecting activity shifts in response to environmental change.
https://royalsocietypublishing.org/doi/10.1098/rspb.2024.0683

SILIANG SONG & JIANZHI ZHANG – In search of the genetic variants of human sex ratio at birth: was Fisher wrong about sex ratio evolution?

The human sex ratio (fraction of males) at birth is close to 0.5 at the population level, an observation commonly explained by Fisher's principle. However, past human studies yielded conflicting results regarding the existence of sex ratio-influencing mutations—a prerequisite to Fisher's principle, raising the question of whether the nearly even population sex ratio is instead dictated by the random X/Y chromosome segregation in male meiosis. Here we show that, because a person's offspring sex ratio (OSR) has an enormous measurement error, a gigantic sample is required to detect OSR-influencing genetic variants. Conducting a UK Biobank-based genome-wide association study that is more powerful than previous studies, we detect an OSR-associated genetic variant, which awaits verification in independent samples. Given the abysmal precision in measuring OSR, it is unsurprising that the estimated heritability of OSR is effectively zero. We further show that OSR's estimated heritability would remain virtually zero even if OSR is as genetically variable as the highly heritable human standing height. These analyses, along with simulations of human sex ratio evolution under selection, demonstrate the compatibility of the observed genetic architecture of human OSR with Fisher's principle and render it plausible that multiple OSR-influencing genetic variants segregate among humans.
https://royalsocietypublishing.org/doi/10.1098/rspb.2024.1876

AMY E. LEEDALE et al with TIM CLUTTON-BROCK – Kin recognition for incest avoidance in Damaraland mole-rats, Fukomys damarensis

Across taxa, breeding among close relatives is usually avoided because it incurs fitness costs to offspring. Incest is often averted through the dispersal of either sex from the natal area to breed. In some philopatric species, association among relatives extends into adulthood, and an ability to discriminate kin may be required for individuals to reduce inbreeding risk. Here, we aim to determine the mechanism of kin recognition for incest avoidance in the Damaraland mole-rat Fukomys damarensis, a cooperative breeder characterized by extreme reproductive skew. Pairs of opposite-sex adults were formed in the laboratory and, within pairs, genetic relatedness and degree of familiarity were manipulated through cross-fostering experiments. We found that unfamiliar pairs were more likely to engage in sexual behaviours and bred more successfully than familiar pairs, regardless of their genetic similarity. Females paired with unfamiliar males were also more likely to exhibit reproductive activation, characterized by increased levels of oestradiol and progesterone. This study shows that in Damaraland mole-rats, inbreeding avoidance can be achieved through a discrimination mechanism that relies on association during rearing, and that ovulation is induced by mating. This study advances our understanding of incest avoidance in species with constrained dispersal.

https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2024.1138

Science

NEWS

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