EAORC BULLETIN 1,137 – 30 March 2025

CONTENTS

NOTICES

FORMATTED VERSION OF THIS BULLETIN

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

PUBLICATION ALERTS

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

EDITORIAL INTERJECTIONS

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

RESEARCHGATE – From Sensations to Contrast, Opposition and Numbers

Forum for Linguistic Studies 06:04, 231-253 (2024).

WES RAYKOWSKI – From Sensations to Contrast, Opposition and Numbers

Language can be deceptively simple in its use yet frustratingly complex in its analysis. Its apparent clarity often masks an inherent complexity, rendering the true meaning of words simultaneously obvious and elusive. This inquiry investigates the multifaceted nature of meaning, encompassing not only language but also forms of expression that do not rely on spoken or written words. Central to this exploration is uncovering the body's role in creating and shaping meaning. The article presents a summary of the sensory schema theory, introduced in the author's previous publications, and examines its application through selected examples. These examples include the notions of scales, opposition, integers, and the number line derived from the sensory schema.

https://www.researchgate.net/profile/Wes-Raykowski/post/Does_Language_Shape_Who_We_Are_How_Speech_Influences_Personality_Social_Behavior_and_Culture/attachment/67e5e6d04e041854a3ded7c6/AS%3A11431281328562819%401743120074640/download/From+Sensations+to+Contrast+Opposition+and+Numbers.pdf

NEWS

NATURE BRIEFING – Joint first authorship does no harm

Sharing first authorship on a paper doesn't come with a reputational penalty, even for the person named second — at least under experimental conditions. In a study, a panel of experts scored seven aspects of a fictional physicist's academic success on the basis of three papers. The scores were largely the same, regardless of whether the physicist was listed as sole first author, first author listed first, or first author listed second. The psychologists behind the study, Miriam Schilbach and Julian Decius, decided to put their money where their mouths are: they shared first authorship and decided whom to list first by rolling dice.

https://www.nature.com/articles/d41586-025-00869-8

SCIENCE DAILY – Mastery of language could predict longevity

A recent study has linked longevity specifically to verbal fluency, the measure of one's vocabulary and ability to use it.

https://www.sciencedaily.com/releases/2025/03/250318141021.htm

SCIENCE DAILY – When did human language emerge?

Humans' unique language capacity was present at least 135,000 years ago, according to a survey of genomic evidence. As such, language might have entered social use 100,000 years ago.

https://www.sciencedaily.com/releases/2025/03/250318140901.htm

SCIENCE DAILY – Attention can be used to drive cooperation

Our ability to cooperate with others may be influenced by how our attention is captured and directed, as much as by how altruistic we are feeling, according to a new study.

https://www.sciencedaily.com/releases/2025/03/250317164055.htm

SCIENCENEWS – Parrots and humans share a brain mechanism for speech

Budgerigar's language centers use a "vocal keyboard" that's surprisingly humanlike.

https://www.sciencenews.org/article/parrots-humans-brain-speech-birds

THE CONVERSATION – What makes the human brain unique? We compared it with monkeys and apes

Advances in technology are making it easier to explore this question.

https://theconversation.com/what-makes-the-human-brain-unique-we-compared-it-with-monkeys-and-apes-to-find-out-252331

THE CONVERSATION – How scratching monkeys can help us understand emotions and consciousness

A recent study found subtle but fascinating differences in the behaviour-emotion connection in humans and monkeys.

https://theconversation.com/how-scratching-monkeys-can-help-us-understand-emotions-and-consciousness-250694

PUBLICATIONS

Current Biology

PAPERS

GUILLAUME GHISBAIN, LARS CHITTKA & DENIS MICHEZ – Bumblebees

Few stinging insects inspire as much warm affection as bumblebees. This group of social, furry, and colorful bees, all comprised within the genus Bombus Latreille, are among the most abundant pollinators in cold or temperate ecosystems, and act as key vectors for the pollination of both wild and cultivated flowering plants. The buzzing flight from flower to flower of these large, noisy insects never fails to capture the attention of children, nature lovers, and also professional entomologists. In his book The Effects of Cross & Self-Fertilisation in the Vegetable Kingdom, Charles Darwin himself made numerous observations on the intelligent floral visitation of "humble bees" (as they were called at the time), which led him to consider them as "...good botanists, for they know that varieties may differ widely in the colour of their flowers and yet belong to the same species". Further fascinated about bumblebee behaviour and their faculty to pierce holes in flowers for robbing nectar, he suggested, in a letter for the Gardner's Chronicle in 1841, "...that the practice of boring holes in [...] flowers is likewise a piece of acquired knowledge". The very tangible consequence of bumblebees' visibility today is their remarkable representation in entomological collections. Museums worldwide are filled with millions of pinned specimens, collected since the 18th century, collectively serving as invaluable witnesses to how insect communities have changed over time. Bumblebees have become flagship species for insect conservation — especially conservation of pollinators — and have shaped our understanding of how current anthropogenic changes impact the animals upon which we depend for our well-being and the resilience of terrestrial ecosystems. In this Primer, we present a beginner's guide to the behavior, biogeography, conservation, ecology and evolution of these highly studied pollinators.
https://www.cell.com/current-biology/fulltext/S0960-9822(25)00071-5

Evolutionary Anthropology

PAPERS

BERNARD WOOD & DANIEL BIGGS – Birth of Paranthropus

Robert Broom, who is best known among vertebrate paleontologists for his research on mammal-like reptiles, was drawn into paleoanthropology because of his defense of Raymond Dart's interpretation of the Taung infant skull. Our contribution documents Robert Broom's background, his life and career, and how he became directly involved with human origins research in South Africa in the second and third decades of the 20thC. It focuses on the circumstances surrounding Broom's interest in what was being recovered at Sterkfontein, how Broom "discovered" the site of Kromdraai, and the fossil evidence that led to his 1938 paper announcing the discovery of a new hominin genus and species, Paranthropus robustus. It also summarizes subsequent discoveries assigned to P. robustus, and developments in interpretations of its evolutionary history. Broom was a complex character who combined remarkably "modern" interpretations of the early hominin fossil record, with decidedly idiosyncratic views about science and evolution, and attitudes to modern human variation that were overtly racist.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.70000

MATHILDE LEQUIN et al – Investigating Development in Human Evolution: Specificities, Challenges, and Opportunities

Unlike developmental biologists, paleoanthropologists primarily investigate development using skeletal remains, specifically fossilized and already-formed bones and teeth. Focusing on peri- and/or postnatal growth, they reconstruct development from fragmented "snapshots" of individual trajectories at various ontogenetic stages. These constraints prompt a discussion of what defines development versus growth, and its boundaries in studies of hominin evolution. We explore how paleoanthropologists address the limitations of the fossil record by using diverse methodological and theoretical frameworks to identify developmental markers despite missing data. Finally, we discuss the potential of the "Extended Evolutionary Synthesis," which calls for a greater focus on developmental processes in interpreting phenotypic variation in the fossil record.
https://onlinelibrary.wiley.com/doi/full/10.1002/evan.70001

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

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

https://onlinelibrary.wiley.com/doi/full/10.1002/evan.22052

ISABEL AUGUST et al – Evolution of Human Susceptibility to Alzheimer's Disease: A Review of Hypotheses and Comparative Evidence

Primates rely on memory to navigate both physical and social environments and in humans, loss of memory function leads to devastating consequences. Alzheimer's disease (AD) is a neurodegenerative disease which begins by impacting memory functioning and is ultimately fatal. AD is common across human populations and its prevalence is predicted to rise with increases in the aging population. Despite this, the full AD phenotype has not been observed in any other nonhuman primate species. While a significant amount of research has been devoted to understanding the immediate mechanisms involved in AD pathogenesis in humans, less research has focused on why humans are particularly vulnerable to neurodegenerative diseases like AD. Here we explore hypotheses on the evolution of distinct human susceptibility to AD and place these in the context of findings from comparative neuroanatomical and molecular studies and discuss recent evidence for evolutionary changes protective against AD in the primate lineage.

https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.22054

iScience

PAPERS

ALEJANDRA PASCUAL-GARRIDO et al with SUSANA CARVALHO – Engineering skills in the manufacture of tools by wild chimpanzees

Physical evidence of early hominin perishable tools is scarce. However, it is reasonable to assume the mechanical constraints surrounding tool use and manufacture have remained somewhat constant. Using a functional framework to understand the technical capabilities of extant hominoid tool users presents a novel approach to predict the perishable tool-using capabilities of our earliest relatives. We investigated the structural and mechanical properties of plant materials used by wild chimpanzees to make termite fishing probes. Materials sourced from plant species extensively used by chimpanzees produced implements of greater flexibility than those constructed from plants never selected by chimpanzees. This pattern was also reflected in chimpanzee tool species preferences, with preferred plant species producing highly flexible implements. Implement flexibility aligns with functional predictions and likely facilitates termite attachment. Our findings provide insights into the technical skills associated with perishable artefact-making and raise questions about how this knowledge is learnt and culturally transmitted.

https://www.cell.com/iscience/fulltext/S2589-0042(25)00419-5

OLIVIA O'CALLAGHAN et al – Maternal care predicts facial expression processing in macaques

Facial expressions are common across mammals and are essential for social communication. In humans, a rich early social environment is important for the appropriate development of facial expression processing. Whether other animals are similarly reliant on social input for facial expression development, or have a more fixed system, is unknown. Here, we investigated how maternal care influences facial expression processing skills in rhesus macaques (Macaca mulatta). We conducted three experiments quantifying facial expression processing and examined performance in relation to historical maternal data and across age. Facial expression processing skill was predicted by positive social contact with the mother during infancy and increased with age until adulthood. Our findings provide the first evidence that early social input, specifically maternal care, enhances facial expression processing skills in non-human animals. This challenges the notion that facial expression processing systems are entirely hard-wired and innate and emphasizes the importance of flexibility and responsiveness to local conditions.

https://www.cell.com/iscience/fulltext/S2589-0042(25)00440-7

Mind & Language

PAPERS

ALEX GRZANKOWSKI – Do emotions represent values and how can we tell?

Do emotions represent values? The dominant "content view" has it that they do. But there is a newcomer on scene: the "attitude view". According to it, rather than representing value properties, there is a value-relevant way you represent the targets of emotion. For example, in feeling angry with someone, you stand to them in the relation of representing-as-having-wronged you. But the central considerations in favour of these competing views are left wanting and it is hard to see how to choose amongst these alternatives. I argue that there is an empirical path to a decision.

https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12544

Nature

NEWS

ABDULLAHI TSANNI – Why Africans should be telling the story of human origins

Yohannes Haile-Selassie wants to shift the trajectory of palaeoanthropology in fossil-rich Ethiopia away from its long colonial heritage.

https://www.nature.com/articles/d41586-025-00695-y

Nature Communications

PAPERS

XIA WU et al – Evolutionary divergence in CTCF-mediated chromatin topology drives transcriptional innovation in humans

Chromatin topology can impact gene regulation, but how evolutionary divergence in chromatin topology has shaped gene regulatory landscapes for distinctive human traits remains poorly understood. CTCF sites determine chromatin topology by forming domains and loops. Here, we show evolutionary divergence in CTCF-mediated chromatin topology at the domain and loop scales during primate evolution, elucidating distinct mechanisms for shaping regulatory landscapes. Human-specific divergent domains lead to a broad rewiring of transcriptional landscapes. Divergent CTCF loops concord with species-specific enhancer activity, influencing enhancer connectivity to target genes in a concordant yet constrained manner. Under this concordant mechanism, we establish the role of human-specific CTCF loops in shaping transcriptional isoform diversity, with functional implications for disease susceptibility. Furthermore, we validate the function of these human-specific CTCF loops using human forebrain organoids. This study advances our understanding of genetic evolution from the perspective of genome architecture.
https://www.nature.com/articles/s41467-025-58275-7

Nature Communications Biology

PAPERS

CLARA RASTELLI et al – Neural dynamics of semantic control underlying generative storytelling

Storytelling has been pivotal for the transmission of knowledge across human history, yet the role of semantic control and its associated neural dynamics has been poorly investigated. Here, human participants generated stories that were either appropriate (ordinary), novel (random), or balanced (creative), while recording functional magnetic resonance imaging (fMRI). Deep language models confirmed participants adherence to task instructions. At the neural level, linguistic and visual areas exhibited neural synchrony across participants regardless of the semantic control level, with parietal and frontal regions being more synchronized during random ideation. Importantly, creative stories were differentiated by a multivariate pattern of neural activity in frontal and fronto-temporo-parietal cortices compared to ordinary and random stories. Crucially, similar brain regions were also encoding the features that distinguished the stories. Moreover, we found specific spatial frequency patterns underlying the modulation of semantic control during story generation, while functional coupling in default, salience, and control networks differentiated creative stories with their controls. Remarkably, the temporal irreversibility between visual and high-level areas was higher during creative ideation, suggesting the enhanced hierarchical structure of causal interactions as a neural signature of creative storytelling. Together, our findings highlight the neural mechanisms underlying the regulation of semantic exploration during narrative ideation.
https://www.nature.com/articles/s42003-025-07913-3

OSCAR NODÉ-LANGLOIS et al with ROMAN M. WITTIG & CATHERINE CROCKFORD – Social tolerance and role model diversity increase tool use learning opportunities across chimpanzee ontogeny

Social learning opportunities shape cognitive skills across species, especially in humans. Although the social environment impacts learning opportunities, the benefits of role model diversity and tolerance on task learning in tool-using species remain poorly understood. To explore these links, we study 2343 peering events (close-range observation of a conspecific) from 35 wild immature (<10 y) chimpanzees (Pan troglodytes verus). We find that chimpanzee peering functions to acquire information more than food, persists during development while peaking around weaning age, and increases with food processing complexity. Role models change throughout development, with increased peering at mothers during early stages and for more complex tasks. Finally, immatures observe many role models, favouring older and more tolerant individuals. We conclude that chimpanzees learn from multiple tolerant individuals, particularly when acquiring complex skills like tool use. Tolerant societies may be necessary for the acquisition and retention of the diverse tool kits rarely found in nature.
https://www.nature.com/articles/s42003-025-07885-4

Nature Communications Physics

PAPERS

DAVID MARCH-PONS, ROMUALDO PASTOR-SATORRAS & M. CARMEN MIGUEL – Non-linear inhibitory responses enhance performance in collective decision-making

The precise modulation of activity through inhibitory signals ensures that both insect colonies and neural circuits operate efficiently and adaptively, highlighting the fundamental importance of inhibition in biological systems. Modulatory signals are produced in various contexts and are known for subtly shifting the probability of receiver behaviors based on response thresholds. Here we propose a non-linear function to introduce inhibitory responsiveness in collective decision-making inspired by honeybee house-hunting. We show that, compared with usual linear functions, non-linear responses enhance final consensus and reduce deliberation time. This improvement comes at the cost of reduced accuracy in identifying the best

option. Nonetheless, for value-based tasks, the benefits of faster consensus and enhanced decision-making might outweigh this drawback.
https://www.nature.com/articles/s42005-025-02046-9

Nature Human Behaviour

ARTICLES

PERE GELABERT & RON PINHASI – First farmers of Central Europe do not show family-related inequality
Extensive genetic and anthropological evidence shows that the first farmers of Central Europe were genetically diverse, and their societies were probably not stratified.
https://www.nature.com/articles/s41562-024-02044-x

DARIO KRPAN, BARBARA FASOLO & LUC SCHNEIDER – A call for precision in the study of behaviour and decision
By definition, behavioural and decision scientists study behaviour and decision — but they rarely define these concepts, which results in divergent interpretations across studies. Researchers should give precise definitions of these concepts to enhance theoretical understanding and develop more effective and ethical interventions.
https://www.nature.com/articles/s41562-025-02111-x

PAPERS

S. BERDUGO et al with S. CARVALHO – Reliable long-term individual variation in wild chimpanzee technological efficiency
Variation in the efficiency of extracting calorie-rich and nutrient-dense resources directly impacts energy expenditure and potentially has important repercussions for cultural transmission where social learning strategies are used. Assessing variation in efficiency is key to understanding the evolution of complex behavioural traits in primates. Here we examine evidence for individual-level differences beyond age- and sex-class in non-human primate extractive foraging efficiency. We used 25 years (1992–2017) of video of 21 chimpanzees aged ≥6 years in Bossou, Guinea, to longitudinally investigate individual-level differences in stone tool use efficiency. Data from 3,882 oil-palm nut-cracking bouts from >800 h of observation were collected. We found reliability in relative efficiency across four measures of nut-cracking efficiency, as well as a significant effect of age. Our findings highlight the importance of longitudinal data from long-term field sites when investigating underlying cognitive and behavioural diversity across individual lifespans and between populations.
https://www.nature.com/articles/s41562-024-02071-8

Nature Scientific Reports

PAPERS

KODAI KUSANO & MARKUS KEMMELMEIER – Expression of prestige through authentic pride, not dominance through hubristic pride, promotes fairness in ultimatum bargaining
This study examines how people react to different types of high social rank displays during negotiations. We focused on two ways people display high rank: dominance (using force or intimidation) and prestige (demonstrating competence and earning respect). In a pre-registered experiment (N = 309), we tested whether these displays would influence people to make fair offers in a negotiation game. Participants first competed in tasks where they were outperformed by their negotiation partner, creating a power difference. They then decided how much money to share with this partner. We found that participants offered more money to partners who displayed prestige after demonstrating superior performance. However, when partners displayed dominance despite similar superior performance, participants did not increase their offers compared to a neutral condition without power differences, and this pattern persisted even under compliance pressure. A path model revealed that expressions of authentic pride (associated with prestige), but not hubristic pride (associated with dominance), explained why participants made fairer offers. These findings suggest that earning and showing respect through prestige is more effective than asserting dominance when negotiating from a position of power.
https://www.nature.com/articles/s41598-025-93858-w

Nature Translational Psychiatry

PAPERS

MICHAEL T. TREADWAY et al – Medial prefrontal glutamate response to acute stress is associated with social subordination in female rhesus macaques
Chronic psychosocial stress is associated with increased risk of psychiatric disorders. Magnetic resonance spectroscopy (MRS) in humans has been used to show that glutamate levels in medial prefrontal cortex (mPFC) following acute stress exposure adapt to recent chronic stress levels. Here, we sought to determine the presence of this glutamate stress response adaptation in rhesus macaques, whose societies are maintained by dominance relationships that are enforced by agonistic interactions and result in chronic stress phenotypes seen in humans. We tested the hypothesis that change in mPFC glutamate after an acute stressor would be moderated by behavioral factors related to social subordination in a manner similar to that previously observed in humans. Seventeen adult female rhesus monkeys (Macaca mulatta, 13–23 yrs.) were

observed over ten weeks to collect behavioral data and then received two MRS scans. The first scan occurred after acute stress manipulation involving relocation and isolation. The second control scan occurred after acclimation to the new location. As expected, we found that a behavioral measure of social subordination predicted an adaptive glutamate response such that animals experiencing more submissive behavior asymmetry (a behavioral measure related to social subordination) exhibited an attenuated glutamate response to the acute stressor. These data establish the use of MRS to measure the adaptive glutamate stress in non-human primates and will help further our understanding of the neurobiology of stress adaptation.
https://www.nature.com/articles/s41398-025-03334-2

Neuron

PAPERS

SAMUEL J. GERSHMAN, ILA FIETE & KAZUKI IRIE – Key-value memory in the brain
Classical models of memory in psychology and neuroscience rely on similarity-based retrieval of stored patterns, where similarity is a function of retrieval cues and the stored patterns. Although parsimonious, these models do not allow distinct representations for storage and retrieval, despite their distinct computational demands. Key-value memory systems, in contrast, distinguish representations used for storage (values) and those used for retrieval (keys). This allows key-value memory systems to optimize simultaneously for fidelity in storage and discriminability in retrieval. We review the computational foundations of key-value memory, its role in modern machine-learning systems, related ideas from psychology and neuroscience, applications to a number of empirical puzzles, and possible biological implementations.
https://www.cell.com/neuron/abstract/S0896-6273(25)00172-2

New Scientist

NEWS

Have we vastly underestimated the total number of people on Earth?
A new way of estimating rural populations has found that we may be undercounting people who live in these areas, potentially inflating the global population beyond the official count of 8.2 billion – but not everyone agrees.
https://www.newscientist.com/article/2472604-have-we-vastly-underestimated-the-total-number-of-people-on-earth/

Budgie brains have a map of vocal sounds just like humans
Recordings of brain activity in budgerigars reveal sets of brain cells that represent different sounds like keys on a keyboard – a structure never seen before in any bird brain.
https://www.newscientist.com/article/2472913-budgie-brains-have-a-map-of-vocal-sounds-just-like-humans/

Monkeys choose babysitters based on who has more parenting experience
Young female black-and-white snub-nosed monkeys often want to hold other females' infants, but mothers are much more permissive of experienced caregivers.
https://www.newscientist.com/article/2473124-monkeys-choose-babysitters-based-on-who-has-more-parenting-experience/

ARTICLES

MICHAEL MARSHALL – A radical new idea for how our ancestors invented stone tools
Stone tools are considered the first form of technology devised by ancient humans – but they might not have been invented from scratch.
https://www.newscientist.com/article/2473159-a-radical-new-idea-for-how-our-ancestors-invented-stone-tools/

PeerJ

PAPERS

JESSICA J. VANDELEEST et al – Differential effects of multiplex and uniplex affiliative relationships on biomarkers of inflammation
Social relationships profoundly impact health in social species. Much of what we know regarding the impact of affiliative social relationships on health in nonhuman primates (NHPs) has focused on the structure of connections or the quality of relationships. These relationships are often quantified by comparing different types of affiliative behaviors (e.g., contact sitting, grooming, proximity) or pooling affiliative behaviors into an overall measure of affiliation. However, it is unclear how the breadth of affiliative behaviors (e.g., how many different types or which ones) a dyad engages in impact health and fitness outcomes. We used a novel social network approach to quantify the breadth of affiliative relationships based on two behaviors: grooming and sitting in contact. Dyadic relationships were filtered into separate networks depending on whether the pair engaged in multiple affiliative behaviors (multiplex networks) or just one (uniplex networks). Typically, in social network analysis, the edges in the network represent the presence of a single behavior (e.g., grooming) regardless of the presence or absence of other behaviors (e.g., contact sitting, proximity). Therefore, to validate this method, we first

compared the overall structure of the standard network for each affiliative behavior: all grooming interactions regardless of contact sitting, and all contact sitting interactions regardless of grooming. We then similarly compared the structure of our filtered multiplex vs. uniplex networks. Results indicated that multiplex networks were more modular, reciprocal, and kin-based while connections in uniplex networks were more strongly associated with social status. These differences were not replicated when comparing networks based on a single behavior alone (i.e., all grooming networks vs. all contact sitting networks). Next, we evaluated whether individual network position in multiplex vs. uniplex (novel approach) or grooming vs. contact sitting (traditional approach) networks differentially impact inflammatory biomarkers in a commonly studied non-human primate model system, the rhesus macaque (Macaca mulatta). Being well connected in multiplex networks (networks where individuals both contact sat and groomed) was associated with lower inflammation (IL-6, TNF-alpha). In contrast, being well connected in uniplex grooming networks (dyad engaged only in grooming and not in contact sitting) was associated with greater inflammation. Altogether, these results suggest that multiplex relationships may function as supportive relationships (e.g., those between kin or strong bonds) that promote health. In contrast, the function of uniplex grooming relationships may be more transactional (e.g., based on social tolerance or social status) and may incur physiological costs. This complexity is important to consider for understanding the mechanisms underlying the association of social relationships on human and animal health.
https://peerj.com/articles/19113/

PLoS One

PAPERS

GIADA BASSET et al – Ostracism affects children's behavioral reactivity and gaze cueing of attention

Being ostracized is a negative experience that threatens important psychological needs, inducing considerable cognitive and behavioral changes and influencing the processing of social signals such as gaze-cueing. Yet, little is known about how self-experienced ostracism affects children's behavior and attentional processes. The present study aims to explore whether the social experience of being included or ostracized can modulate gaze-cueing of attention and behavioral reactivity in 6- (N = 40) and 10-year-old children (N = 40) and adults (N = 50). Participants were video-recorded while playing an online ball-tossing game (i.e., Cyberball), where they could be either included or ostracized. They then participated in a gaze cueing task, where the cue was provided by the eye-gaze of a central human face, and the target could appear in a congruent or incongruent position. Results revealed that ostracism affected both adults' and children's ability to follow another's gaze, as they were slower to respond to incongruent targets when ostracized compared to when included. Additionally, ostracism impaired 10-year-old children's accuracy in responding to the target. Behavioral reactivity results demonstrated that both children and adults were more disappointed during the ostracism vs. inclusion condition. Overall, current findings demonstrate that self-experienced ostracism modulates children's and adults' behavioral reactivity and processing of social signals such as gaze cueing.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0320338

RAPHAELA HEESEN et al with KLAUS ZUBERBÜHLER – Potential evidence of reengagement attempts following interruptions of a triadic social game in bonobos and chimpanzees

When humans engage in joint action, they seem to so with an underlying sense of joint commitment, a feeling of mutual obligation towards their partner and a shared goal. Whether our closest living relatives, bonobos and chimpanzees, experience and understand joint commitment in the same way is subject to debate. Crucial evidence concerns how participants respond to interruptions of joint actions, particularly if they protest or attempt to reengage their reluctant or distracted partners. During dyadic interactions, bonobos and chimpanzees exhibit evidence of reengagement following interruptions of naturalistic joint activities with conspecifics, according to recent studies. Yet, data are still inconsistent for triadic games, where two social partners engage with each other socially by focusing on a common object. We addressed this issue by engaging N = 23 apes (5 adult chimpanzees, 5 infant bonobos, 13 adult bonobos) in a "tug-of-war" game with a human experimenter who abruptly stopped playing. Following interruptions, adult apes readily produced communicative signals towards the experimenter (>60% of subjects on first trial), which we interpreted as reengagement attempts of their passive social partner, with no group differences in this respect. Infant bonobos, by contrast, communicated rarely with the experimenters compared to adult bonobos, and never during their first trial. Crucially, when infant bonobos signaled to passive partners, they predominantly used tactile signals, but rarely exhibited behaviors related to the game, which were instead commonly seen in adults. It is thus possible that bonobos and chimpanzees share some of the basic motivational foundations for joint commitment, yet that this capacity is subject to developmental effects.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0292984

DOUG JONES – Extraordinary siblings: Mole rats, marmosets, and Radcliffe-Brown

According to the theory of kin selection, an organism that shows some level of altruism toward her kin – lowering her own fitness, raising that of a close genetic relative – may enjoy an evolutionary advantage. Some species show beyond-ordinary altruism toward siblings, and other kin, owing to unusual reproductive biology and/or ecology. Human beings are exceptional in another way: how we treat our kin depends partly on how we feel about them, but also partly on socially enforced norms. This article explores several versions of a simple evolutionary game, the Brothers Karamazov Game, that departs from the

standard theory of kin selection to allow for the distinctively human capacity for establishing and enforcing social norms. We discuss possible applications to understanding the "unity of the sibling group" (Radcliffe-Brown) – according exceptional treatment to siblings, and to relatives classified as siblings or linked through siblings. We give special attention to lowland South America, where the sibling relationship is central to social organization.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0319385

Royal Society Open Science

PAPERS

MALATHI THOTHATHIRI, EVAN KIDD & CAROLINE ROWLAND – The role of executive function in the processing and acquisition of syntax

Language acquisition is multifaceted, relying on cognitive and social abilities in addition to language-specific skills. We hypothesized that executive function (EF) may assist language development by enabling children to revise misinterpretations during online processing, encode language input more accurately and/or learn non-canonical sentence structures like the passive better over time. One hundred and twenty Dutch preschoolers each completed three sessions of testing (pre-test, exposure and post-test). During pre-test and post-test, we measured their comprehension of passive sentences and performance in three EF tasks. In the exposure session, we tracked children's eye movements as they listened to passive (and other) sentences. Each child was also assessed for short-term memory and receptive language. Multiple regression evaluated the relationship between EF and online processing and longer-term learning. EF predicted online revision accuracy, while controlling for receptive language, prior passive knowledge and short-term memory, consistent with theories linking EF to the revision of misinterpretations. EF was also associated with longer-term learning, but the results could not disentangle EF from receptive language. These findings broadly support a role for EF in language acquisition, including a specific role in revision during sentence processing and potentially other roles that depend on reciprocal interaction between EF and receptive language.
https://royalsocietypublishing.org/doi/10.1098/rsos.201497

VIJAYACHANDRA RAMACHANDRA et al – The influence of iconicity and autistic traits on novel word learning: a cross-cultural investigation

The effects of iconicity and autistic traits on novel word learning were investigated through an online experiment involving 1481 healthy adult participants aged between 18 and 40 years from four countries: Brazil (N = 261), India (N = 416), Japan (N = 493) and the USA (N = 311). Participants completed a bouba–kiki-based word learning task, viewing novel images paired with either iconic names (congruent condition) or arbitrary names (incongruent condition). Word recognition was assessed using a three-alternative forced-choice procedure, and autistic traits were measured with the autism spectrum quotient (AQ). Results showed a significant benefit of iconicity across all countries, with better performance in the congruent condition. While a linear mixed model revealed no significant effect of AQ on bouba–kiki scores overall, a country-specific analysis found a weak but significant positive correlation between AQ scores and bouba–kiki performance in Japanese participants. This country-specific finding should be interpreted cautiously and warrants further exploration. Overall, the findings demonstrate the robustness and universality of the bouba–kiki effect on word learning across both Western and Eastern cultures. However, the relationship between autistic traits and iconicity was not consistent across all countries and may depend on cultural factors. Further research is needed to explore this in more detail.
https://royalsocietypublishing.org/doi/10.1098/rsos.242161

Science

ARTICLES

SIMON GRAVEL – Mapping a complex evolutionary history

Human genomes contain rich information about the past; even a single sequenced genome can be used to summarize patterns of human relatedness going back hundreds of thousands of years. The genomes of hundreds of thousands of individuals are now sequenced every year, providing the potential for ever-increasing resolution in our understanding of human history. However, the interpretation of these rich data in terms of evolutionary hypotheses is challenging. On page 1391 of this issue, Grundler et al. introduce GAIA, a statistical approach that seeks to learn the geographic position of every genetic ancestor of individuals included in a genome dataset. This approach can help to identify the complex relationships between ancestral populations that shaped the genetic diversity of humans today.
https://www.science.org/doi/10.1126/science.adw5484

PAPERS

MICHAEL C. GRUNDLER, JONATHAN TERHORST & GIDEON S. BRADBURD – A geographic history of human genetic ancestry

Describing the distribution of genetic variation across individuals is a fundamental goal of population genetics. We present a method that capitalizes on the rich genealogical information encoded in genomic tree sequences to infer the geographic locations of the shared ancestors of a sample of sequenced individuals. We used this method to infer the geographic history

of genetic ancestry of a set of human genomes sampled from Europe, Asia, and Africa, accurately recovering major population movements on those continents. Our findings demonstrate the importance of defining the spatiotemporal context of genetic ancestry when describing human genetic variation and caution against the oversimplified interpretations of genetic data prevalent in contemporary discussions of race and ancestry.
https://www.science.org/doi/10.1126/science.adp4642

Trends in Neurosciences

PAPERS

MATILDE AQUILINO et al – Epigenetic and metabolic regulation of developmental timing in neocortex evolution
The human brain is characterized by impressive cognitive abilities. The neocortex is the seat of higher cognition, and neocortex expansion is a hallmark of human evolution. While developmental programs are similar in different species, the timing of developmental transitions and the capacity of neural progenitor cells (NPCs) to proliferate differ, contributing to the increased production of neurons during human cortical development. Here, we review the epigenetic regulation of developmental transitions during corticogenesis, focusing mostly on humans while building on knowledge from studies in mice. We discuss metabolic-epigenetic interplay as a potential mechanism to integrate extracellular signals into neural chromatin. Moreover, we synthesize current understanding of how epigenetic and metabolic deregulation can cause neurodevelopmental disorders. Finally, we outline how developmental timing can be investigated using brain organoid models.
https://www.cell.com/trends/neurosciences/fulltext/S0166-2236(25)00056-6

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