EAORC BULLETIN 999 – 7 August 2022

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.

NEWS

SCIENCE NEWS – Dolphins make peace and love—not war—when they encounter strangers

In the summer of 2013, dolphin researcher Nicole Danaher-Garcia spotted something rare and remarkable in the animal world. As she stood on top of the bridge of a sport fishing yacht near Bimini in the Bahamas, she spied 10 adult Atlantic spotted dolphins she had never seen before—speeding into the waters of another group of dolphins.
Most mammals attack intruders, but war wasn't on the menu that day. Instead, the newcomers—eventually 46 in all—joined up with the resident dolphins, some 120 in number. Today, the two groups of Atlantic spotted dolphins (Stenella frontalis) have partially integrated, diving and swimming together, forming fast friendships, and likely even mating.
https://www.science.org/content/article/dolphins-make-peace-and-love-not-war-when-they-encounter-strangers

SOCIETY FOR SCIENCE – How slow and steady lionfish win the race against fast prey

Lionfish overcome speedy prey with persistent pursuit, waiting for the perfect moment to strike. Other slow predatory fish may use the technique too.
{Lionfish may be, like humans, pursuit hunters.}
http://click.societyforscience-email.com/?qs=323d38df4d8dc74b1dd9efacba770a6ca32341dc68110e7d02f422a02553c57a321acfb38ab2a171a12badbe7eb79e2bda4f36dd5e65ceff03d8c4bdb4cac876

THE CONVERSATION – Nudge theory doesn't work after all – but it could still have a future

The behavioural technique may not be dead just quite yet
https://theconversationuk.cmail19.com/t/r-l-tykdsiy-khhlilahh-p/

PUBLICATIONS

American Journal of Biological Anthropology

PAPERS

ARODI FARRERA – Formal models for the study of the relationship between fluctuating asymmetry and fitness in humans

To evaluate three of the main verbal models that have been proposed to explain the relationship between fluctuating asymmetry and fitness in humans: the "good genes," the "good development," and the "growth" hypotheses.
A formal model was generated for each verbal model following three steps. First, based on the literature, a theoretical causal model and the theoretical object of inquiry were outlined. Second, an empirical causal model and the targets of inference were defined using observational data of facial asymmetries and life-history traits related to fitness. Third, generalized linear models and causal inference were used as the estimation strategy.
The results suggest that the theoretical and empirical assumptions of the "good genes" hypothesis should be reformulated. The results were compatible with most of the empirical assumptions of "the good development" hypothesis but suggest that further discussion of its theoretical assumptions is needed. The results were less informative about the "growth" hypothesis, both theoretically and empirically. There was a positive association between facial fluctuating asymmetry and the number of offspring that was not compatible with any of the empirical causal models evaluated.
Although the three hypotheses focus on different aspects of the link between asymmetry and fitness, their overlap opens the possibility of a unified theory on the subject. The results of this study make explicit which assumptions need to be updated and discussed, facilitating the advancement of this area of research. Overall, this study elucidates the potential benefit of using formal models for theory revision and development.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24588

WILLIAM D. HOPKINS et al – A comprehensive analysis of variability in the sulci that define the inferior frontal gyrus in the chimpanzee (Pan troglodytes) brain

In the human brain, the inferior frontal gyrus (IFG) is comprised of three morphological regions, which include the pars opercularis, pars triangularis, and pars orbitalis. These brains regions are implicated in a number of cognitive and linguistic functions, and the pars opercularis and pars triangularis of the language dominant hemisphere are collectively referred to as Broca's area. Evolution of the morphology of the IFG has been a topic of study in comparative neuroscience.
Using magnetic resonance images (MRI) from 294 chimpanzees with known pedigrees, we quantified the folding patterns, surface area, and depth of three sulci and their subdivisions that define the IFG.
Chimpanzees show considerable individual variation in IFG sulci. A higher proportion of males and chimpanzees with better orofacial motor control had a bifurcation in the dorsal limb of the fronto-orbital sulcus. For surface area and depth, chimpanzees with better orofacial motor control had greater leftward asymmetries in surface area and increased gyrification for the fronto-orbital sulcus and greater rightward biases for the inferior precentral sulcus. Quantitative genetic analyses revealed that the average surface area and depth for three of the five sulci subdivisions were significantly heritable. By contrast, we found no evidence for heritability in asymmetries for any of the sulci.

These findings provide context to understanding evolutionary selection for increasing motor, cognitive and linguistic functions among primates, and contribute an essential comparative framework for interpreting IFG evolution in the human lineage.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24590

GREGORIO OXILIA et al – Direct evidence that late Neanderthal occupation precedes a technological shift in southwestern Italy
During the middle-to-upper Paleolithic transition (50,000 and 40,000 years ago), interaction between Neanderthals and Homo sapiens varied across Europe. In southern Italy, the association between Homo sapiens fossils and non-Mousterian material culture, as well as the mode and tempo of Neanderthal demise, are still vividly debated. In this research, we focus on the study of two human teeth by using 3D geometric morphometric approaches for a reliable taxonomical attribution as well as obtaining new radiometric dates on the archeological sequence.
This work presents two lower deciduous molars uncovered at Roccia San Sebastiano (Mondragone-Caserta, Italy), stratigraphically associated with Mousterian (RSS1) and Uluzzian (RSS2) artifacts. To obtain a probabilistic attribution of the two RSS teeth to each reference taxa group composed of Neanderthals and Homo sapiens, we performed and compared the performance of three supervised learning algorithms (flexible discriminant analysis, multiadaptive regression splines, and random forest) on both crown and cervical outlines obtained by virtual morphometric methods.
We show that RSS1, whose Mousterian context appears more recent than 44,800–44,230 cal BP, can be attributed to a Neanderthal, while RSS2, found in an Uluzzian context that we dated to 42,640–42,380 cal BP, is attributed to Homo sapiens. This site yields the most recent direct evidence for a Neanderthal presence in southern Italy and confirms a later shift to upper Paleolithic technology in southwestern Italy compared to the earliest Uluzzian evidence at Grotta del Cavallo (Puglia, Italy).
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24593

Current Anthropology

COMMENTARIES

RONALD J. PLANER & KIM STERELNY – The Costs of Magical Thinking and Hypervigilance: A Comment on Singh 2021
Comment on: Manvir Singh (2021). Magic, Explanations, and Evil: The Origins and Design of Witches and Sorcerers. Current Anthropology 62:1, 2-29.
https://www.journals.uchicago.edu/doi/abs/10.1086/720417

MANVIR SINGH – Cognitive and Evolutionary Foundations of Superstition and Paranoia: A Reply to Planer and Sterelny
Reply to comment on: Manvir Singh (2021). Magic, Explanations, and Evil: The Origins and Design of Witches and Sorcerers. Current Anthropology 62:1, 2-29.
https://www.journals.uchicago.edu/doi/abs/10.1086/720418

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eLife

PAPERS

SAMANTHA S COHEN, NIM TOTTENHAM & CHRISTOPHER BALDASSANO – Developmental changes in story-evoked responses in the neocortex and hippocampus
How does the representation of naturalistic life events change with age? Here, we analyzed fMRI data from 414 children and adolescents (5–19 years) as they watched a narrative movie. In addition to changes in the degree of inter-subject correlation (ISC) with age in sensory and medial parietal regions, we used a novel measure (between-group ISC) to reveal age-related shifts in the responses across the majority of the neocortex. Over the course of development, brain responses became more discretized into stable and coherent events and shifted earlier in time to anticipate upcoming perceived event transitions, measured behaviorally in an age-matched sample. However, hippocampal responses to event boundaries actually decreased with age, suggesting a shifting division of labor between episodic encoding processes and schematic event representations between the ages of 5 and 19.
https://elifesciences.org/articles/69430

JAN BOELTS, JAN-MATTHIS LUECKMANN, RICHARD GAO & JAKOB H MACKE – Flexible and efficient simulation-based inference for models of decision-making
Inferring parameters of computational models that capture experimental data is a central task in cognitive neuroscience. Bayesian statistical inference methods usually require the ability to evaluate the likelihood of the model—however, for many models of interest in cognitive neuroscience, the associated likelihoods cannot be computed efficiently. Simulation-based inference (SBI) offers a solution to this problem by only requiring access to simulations produced by the model. Previously, Fengler et al. introduced Likelihood Approximation Networks (LAN, Fengler et al., 2021) which make it possible to apply SBI to models of decision-making, but require billions of simulations for training. Here, we provide a new SBI method that is substantially more simulation-efficient. Our approach, Mixed Neural Likelihood Estimation (MNLE), trains neural density estimators on model simulations to emulate the simulator, and is designed to capture both the continuous (e.g., reaction

times) and discrete (choices) data of decision-making models. The likelihoods of the emulator can then be used to perform Bayesian parameter inference on experimental data using standard approximate inference methods like Markov Chain Monte Carlo sampling. We demonstrate MNLE on two variants of the drift-diffusion model (DDM) and show that it is substantially more efficient than LANs: MNLE achieves similar likelihood accuracy with six orders of magnitude fewer training simulations, and is significantly more accurate than LANs when both are trained with the same budget. This enables researchers to perform SBI on custom-tailored models of decision-making, leading to fast iteration of model design for scientific discovery.
https://elifesciences.org/articles/77220

Frontiers in Ecology and Evolution

PAPERS

ANDREA RAVIGNANI, MASSIMO LUMACA & SONJA A. KOTZ – Interhemispheric Brain Communication and the Evolution of Turn-Taking in Mammals

In the last 20 years, research on turn-taking and duetting has flourished in at least three, historically separate disciplines: animal behavior, language sciences, and music cognition. While different in scope and methods, all three ultimately share one goal—namely the understanding of timed interactions among conspecifics. In this perspective, we aim at connecting turn-taking and duetting across species from a neural perspective. While we are still far from a defined neuroethology of turn-taking, we argue that the human neuroscience of turn-taking and duetting can inform animal bioacoustics. For this, we focus on a particular concept, interhemispheric connectivity, and its main white-matter substrate, the corpus callosum. We provide an overview of the role of corpus callosum in human neuroscience and interactive music and speech. We hypothesize its mechanistic connection to turn-taking and duetting in our species, and a potential translational link to mammalian research. We conclude by illustrating empirical venues for neuroethological research of turn-taking and duetting in mammals.
https://www.frontiersin.org/articles/10.3389/fevo.2022.916956/full

CHIARA DE GREGORIO et al – Parent-offspring turn-taking dynamics influence parents' song structure and elaboration in a singing primate

Parent-offspring interactions are essential to interpret animal social evolution and behavior, but their role in mediating acoustic communication in animals that interact vocally is still unclear. Increasing evidence shows that primate vocal communication is way more flexible than previously assumed, and research on this topic can provide further information on how the social environment shaped vocal plasticity during the evolution of the Primate order. Indris communicate through elaborated vocal emissions, usually termed songs. Songs are interactive vocal displays in which all members of the family group alternate their emissions, taking turns during chorusing events. We aimed to understand whether specific rules regulate the turn-taking of different group members and investigate the flexibility of indris' vocal behavior when co-singing with their offspring. We found that social factors can influence the turn-taking organization in a chorus, as offspring were more likely to drop out from the parents' duet than join in, and we speculate that overlap might signal competition by members of the same-sex. The duet between the reproductive pair was the most common type of singing organization, followed by a duet between mothers and sons and the triadic interaction between mother, father, and son. Interestingly, parents' solo singing seems to stimulate offspring to vocalize, and we also found that mothers and fathers simplify, at least in part, song elaboration when chorusing with offspring. Our results indicate that indris can perform short-time adjustments to the number of co-emitters and their identity: our approach is advantageous in highlighting the multilevel influences on primate vocal flexibility. Moreover, it provides evidence that some aspects of our vocal plasticity were already present in the lemur lineage.
https://www.frontiersin.org/articles/10.3389/fevo.2022.906322/full

COMMENTARIES

BRIAN VILLMOARE & MARK GRABOWSKI – Did the transition to complex societies in the Holocene drive a reduction in brain size? A reassessment of the DeSilva et al. (2021) hypothesis

Encephalization has long been understood to be a key adaptation in the human lineage, and over the last four million years species attributed to Australopithecus and Homo have shown demonstrable trends toward increased brain size. However, our understanding of past populations is limited by our reliance on the fossil record. For some poorly preserved species, we are currently dependent on a few or even a single cranium. This places limits on our ability to infer subtle changes in brain size, even as the broader trend of encephalization is clear.
DeSilva et al. (2021) [https://www.frontiersin.org/articles/10.3389/fevo.2021.742639/full] hypothesize that modern human brain size has decreased, starting at roughly 3,000 years ago. They offer a model in which directional selection for decreased brain size, and/or stabilizing selection for maintaining large brains, was relaxed due to the ability to store information externally in social groups. Under this model, which they analogize from ants, following the development of complex societies, the cumulative intelligence and knowledge of the social group acted to relax the strong forces of selection that had been present in earlier human populations. They propose that "group-level cognition may select for reduced brain size and/or adaptive brain size variation" (DeSilva et al., 2021, p 7).
https://www.frontiersin.org/articles/10.3389/fevo.2022.963568/full

Mind & Language

PAPERS

JONATHAN BIRCH & ANDREW BUSKELL – How we got stuck: The origins of hierarchy and inequality

Kim Sterelny's book The Pleistocene social contract provides an exceptionally well-informed and credible narrative explanation of the origins of inequality and hierarchy. In this essay review, we reflect on the role of rational choice theory in Sterelny's project, before turning to Sterelny's reasons for doubting the importance of cultural group selection. In the final section, we compare Sterelny's big picture with an alternative from David Wengrow and David Graeber.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12420

COMMENTARIES

KIM STERELNY – Further thoughts on hierarchy and inequality

This paper responds to Birch and Buskell's thoughtful critique. In it, I defend my use of behavioural ecology. I argue, contra Birch and Buskell, that I can give a principled defence of the emergence of conventions for respecting property, modelling as a network of pairwise iterated PDs between incipient farmers. Second, I defend my scepticism about the power of cultural group selection to optimise community normative packages. Finally, I located my views, as requested, against those of The dawn of everything. I argue that the more complex "original position" envisaged in Dawn depends on special conditions rarely found on Pleistocene Africa.
https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12435

National Geographic

ARTICLES

ROFF SMITH – Britain's Stone Age Building Boom

Something momentous was in the air in the south of Britain about 4,500 years ago during the dying days of the Neolithic era, the final chapter of the Stone Age. Whatever it was—-religious zeal, bravura, a sense of impending change—it cast a spell over the inhabitants and stirred them into a frenzy of monument building.
https://www.nationalgeographic.com/magazine/graphics/stonehenge-was-one-triumph-amid-a-prehistoric-building-boom-feature

Nature

PAPERS

RAJ CHETTY et al – Social capital I: measurement and associations with economic mobility

Social capital—the strength of an individual's social network and community—has been identified as a potential determinant of outcomes ranging from education to health. However, efforts to understand what types of social capital matter for these outcomes have been hindered by a lack of social network data. Here, in the first of a pair of papers, we use data on 21 billion friendships from Facebook to study social capital. We measure and analyse three types of social capital by ZIP (postal) code in the United States: (1) connectedness between different types of people, such as those with low versus high socioeconomic status (SES); (2) social cohesion, such as the extent of cliques in friendship networks; and (3) civic engagement, such as rates of volunteering. These measures vary substantially across areas, but are not highly correlated with each other. We demonstrate the importance of distinguishing these forms of social capital by analysing their associations with economic mobility across areas. The share of high-SES friends among individuals with low SES—which we term economic connectedness—is among the strongest predictors of upward income mobility identified to date. Other social capital measures are not strongly associated with economic mobility. If children with low-SES parents were to grow up in counties with economic connectedness comparable to that of the average child with high-SES parents, their incomes in adulthood would increase by 20% on average. Differences in economic connectedness can explain well-known relationships between upward income mobility and racial segregation, poverty rates, and inequality. To support further research and policy interventions, we publicly release privacy-protected statistics on social capital by ZIP code at https://www.socialcapital.org.
https://www.nature.com/articles/s41586-022-04996-4

RAJ CHETTY et al – Social capital II: determinants of economic connectedness

Low levels of social interaction across class lines have generated widespread concern and are associated with worse outcomes, such as lower rates of upward income mobility. Here we analyse the determinants of cross-class interaction using data from Facebook, building on the analysis in our companion paper. We show that about half of the social disconnection across socioeconomic lines—measured as the difference in the share of high-socioeconomic status (SES) friends between people with low and high SES—is explained by differences in exposure to people with high SES in groups such as schools and religious organizations. The other half is explained by friending bias—the tendency for people with low SES to befriend people with high SES at lower rates even conditional on exposure. Friending bias is shaped by the structure of the groups in which people interact. For example, friending bias is higher in larger and more diverse groups and lower in religious organizations than in schools and workplaces. Distinguishing exposure from friending bias is helpful for identifying interventions to increase cross-SES friendships (economic connectedness). Using fluctuations in the share of students with

high SES across high school cohorts, we show that increases in high-SES exposure lead low-SES people to form more friendships with high-SES people in schools that exhibit low levels of friending bias. Thus, socioeconomic integration can increase economic connectedness in communities in which friending bias is low. By contrast, when friending bias is high, increasing cross-SES interactions among existing members may be necessary to increase economic connectedness. To support such efforts, we release privacy-protected statistics on economic connectedness, exposure and friending bias for each ZIP (postal) code, high school and college in the United States at https://www.socialcapital.org.
https://www.nature.com/articles/s41586-022-04997-3

OBITUARIES

JOHN GRIBBIN – James E. Lovelock (1919–2022)
Inventor who introduced the Gaia hypothesis to environmental science.
https://www.nature.com/articles/d41586-022-02116-w

Nature Communications

PAPERS

BUDDHIKA BELLANA, ABHIJIT MAHABAL & CHRISTOPHER J. HONEY – Narrative thinking lingers in spontaneous thought
Some experiences linger in mind, spontaneously returning to our thoughts for minutes after their conclusion. Other experiences fall out of mind immediately. It remains unclear why. We hypothesize that an input is more likely to persist in our thoughts when it has been deeply processed: when we have extracted its situational meaning rather than its physical properties or low-level semantics. Here, participants read sequences of words with different levels of coherence (word-, sentence-, or narrative-level). We probe participants' spontaneous thoughts via free word association, before and after reading. By measuring lingering subjectively (via self-report) and objectively (via changes in free association content), we find that information lingers when it is coherent at the narrative level. Furthermore, and an individual's feeling of transportation into reading material predicts lingering better than the material's objective coherence. Thus, our thoughts in the present moment echo prior experiences that have been incorporated into deeper, narrative forms of thinking.
https://www.nature.com/articles/s41467-022-32113-6

Nature Ecology & Evolution

ARTICLES

ERIN R. SIRACUSA – Social senescence in red deer
Longitudinal data spanning 43 years from a wild ungulate population reveal changes in social connectedness as individuals age, and suggest that these changes may in part be driven by changes in spatial behaviour.
https://www.nature.com/articles/s41559-022-01766-3

BOGDAN SIERIEBRIENNIKOV – Complementary brains
Pharaoh ants live in highly organized colonies with elaborate social structure. An atlas of the brain cells of the different sexes and social groups of this ant reveals cell compositions tailored to the tasks performed by each group.
https://www.nature.com/articles/s41559-022-01805-z

PAPERS

GREGORY F. ALBERY et al with TIM H. CLUTTON-BROCK – Ageing red deer alter their spatial behaviour and become less social
Social relationships are important to many aspects of animals' lives, and an individual's connections may change over the course of their lifespan. Currently, it is unclear whether social connectedness declines within individuals as they age, and what the underlying mechanisms might be, so the role of age in structuring animal social systems remains unresolved, particularly in non-primates. Here we describe senescent declines in social connectedness using 46 years of data in a wild, individually monitored population of a long-lived mammal (European red deer, Cervus elaphus). Applying a series of spatial and social network analyses, we demonstrate that these declines occur because of within-individual changes in social behaviour, with correlated changes in spatial behaviour (smaller home ranges and movements to lower-density, lower-quality areas). These findings demonstrate that within-individual socio-spatial behavioural changes can lead older animals in fission–fusion societies to become less socially connected, shedding light on the ecological and evolutionary processes structuring wild animal populations.
https://www.nature.com/articles/s41559-022-01817-9

TANYA L. ROGERS, BETHANY J. JOHNSON & STEPHAN B. MUNCH – Chaos is not rare in natural ecosystems
Chaotic dynamics are thought to be rare in natural populations but this may be due to methodological and data limitations, rather than the inherent stability of ecosystems. Following extensive simulation testing, we applied multiple chaos detection methods to a global database of 172 population time series and found evidence for chaos in >30%. In contrast, fitting traditional one-dimensional models identified <10% as chaotic. Chaos was most prevalent among plankton and insects and

least among birds and mammals. Lyapunov exponents declined with generation time and scaled as the −1/6 power of body mass among chaotic populations. These results demonstrate that chaos is not rare in natural populations, indicating that there may be intrinsic limits to ecological forecasting and cautioning against the use of steady-state approaches to conservation and management.
https://www.nature.com/articles/s41559-022-01787-y

COMMENTARIES

CARRIE S. MONGLE et al – Modelling hominin evolution requires accurate hominin data
ARISING FROM H. P. Püschel et al. Nature Ecology & Evolution https://doi.org/10.1038/s41559-021-01431-1 (2021)
https://www.nature.com/articles/s41559-022-01791-2

HANS P. PÜSCHEL et al – Reply to: Modelling hominin evolution requires accurate hominin data
REPLYING TO C. S. Mongle et al. Nature Ecology & Evolution https://doi.org/10.1038/s41559-022-01791-2 (2022).
https://www.nature.com/articles/s41559-022-01792-1

Nature Neuropsychopharmacology

PAPERS

MICHAEL D. GREGORY & KAREN F. BERMAN – Echoes of ancient DNA in living modern humans affect risk for neuropsychiatric disease and brain structure and function of networks subserving higher-order cognition
New, ground-breaking technological advances have enabled sequencing of ancient DNA from fossil remains, revealing unprecedented insights into our evolutionary biology and genetic influences on neuropsychiatric disease. These methods have demonstrated that ancestors of modern humans mixed with Neanderthals, our closest evolutionary cousins, approximately 40,000–75,000 years ago, leaving residual echoes in our DNA. This inheritance is not just an idle feature of our genome, but is indeed functional in modern humans, for example, imparting changes in keratin to help skin and hair adapt to non-African climates and associating with risk for autoimmune conditions.
https://www.nature.com/articles/s41386-022-01396-0

Nature Reviews Psychology

PAPERS

TAMAR SAGUY & MICHAL REIFEN-TAGAR – The social psychological roots of violent intergroup conflict
Violent intergroup conflicts continue to be one of the most pressing issues of our time. One key factor that instigates and perpetuates conflict is people's support for violence against the outgroup. Thus, understanding the psychology behind such support is essential for developing strategies to reduce conflict. In this Review, we offer a new umbrella term, the conflict-supporting mindset (CSM), to tie together findings across the extensive literature on the psychology of conflict. A CSM captures a set of interrelated negative attitudes, feelings and beliefs regarding the outgroup, which devalues and demonizes its members. As such, a CSM is pivotal in making violence seem permissible and even necessary. We consider the sources of a CSM: basic cognitive and motivational roots, personal inclinations, group-level influences, situational influences and post-hoc justifications of violence. We then discuss conflict reduction interventions that draw on the psychology underlying a CSM. Finally, we reflect on the limitations of efforts towards conflict reduction, both from a practical and an ethical perspective, and suggest directions for future research.
https://www.nature.com/articles/s44159-022-00083-7

ARTICLES

SIDDHARTH RAMANAN – The brain basis of cognition
At the supermarket, you see tomatoes, basil, and mozzarella. Your brain screams "pizza!" Suddenly you are hit with nostalgia and are mentally transported to your recent holiday to the Amalfi coast in Italy. You might wonder how the sensations of these objects transformed into a strong visual of a cherished memory.
https://www.nature.com/articles/s44159-022-00094-4

Nature Scientific Reports

PAPERS

VARGHESE PETER et al – Language specificity in cortical tracking of speech rhythm at the mora, syllable, and foot levels
Recent research shows that adults' neural oscillations track the rhythm of the speech signal. However, the extent to which this tracking is driven by the acoustics of the signal, or by language-specific processing remains unknown. Here adult native listeners of three rhythmically different languages (English, French, Japanese) were compared on their cortical tracking of speech envelopes synthesized in their three native languages, which allowed for coding at each of the three language's dominant rhythmic unit, respectively the foot (2.5 Hz), syllable (5 Hz), or mora (10 Hz) level. The three language groups were also tested with a sequence in a non-native language, Polish, and a non-speech vocoded equivalent, to investigate possible differential speech/nonspeech processing. The results first showed that cortical tracking was most prominent at 5 Hz (syllable

rate) for all three groups, but the French listeners showed enhanced tracking at 5 Hz compared to the English and the Japanese groups. Second, across groups, there were no differences in responses for speech versus non-speech at 5 Hz (syllable rate), but there was better tracking for speech than for non-speech at 10 Hz (not the syllable rate). Together these results provide evidence for both language-general and language-specific influences on cortical tracking.
https://www.nature.com/articles/s41598-022-17401-x

S. KEZIA SULLIVAN et al – Comparing emotion inferences from dogs (Canis familiaris), panins (Pan troglodytes/Pan paniscus), and humans (Homo sapiens) facial displays
Human beings are highly familiar over-learnt social targets, with similar physical facial morphology between perceiver and target. But does experience with or similarity to a social target determine whether we can accurately infer emotions from their facial displays? Here, we test this question across two studies by having human participants infer emotions from facial displays of: dogs, a highly experienced social target but with relatively dissimilar facial morphology; panins (chimpanzees/bonobos), inexperienced social targets, but close genetic relatives with a more similar facial morphology; and humans. We find that people are more accurate inferring emotions from facial displays of dogs compared to panins, though they are most accurate for human faces. However, we also find an effect of emotion, such that people vary in their ability to infer different emotional states from different species' facial displays, with anger more accurately inferred than happiness across species, perhaps hinting at an evolutionary bias towards detecting threat. These results not only compare emotion inferences from human and animal faces but provide initial evidence that experience with a non-human animal affects inferring emotion from facial displays.
https://www.nature.com/articles/s41598-022-16098-2

YASHVIN SEETAHUL & TOBIAS GREITEMEYER – A practical test of the link between perceived identifiability and prosociality with two field studies
Covering the face with masks in public settings has been recommended since the start of the pandemic. Because faces provide information about identity, and that face masks hide a portion of the face, it is plausible to expect individuals who wear a mask to consider themselves less identifiable. Prior research suggests that perceived identifiability is positively related to prosocial behavior, and with two pre-registered field studies (total N = 5706) we provide a currently relevant and practical test of this relation. Our findings indicate that mask wearers and non-wearers display equivalent levels of helping behavior (Studies 1 and 2), although mask wearers have a lower level of perceived identifiability than those without a mask (Study 2). Overall, our findings suggest that claims that face masks are related to selfish behavior are not warranted, and that there is no practical link between perceived identifiability and prosocial behavior.
https://www.nature.com/articles/s41598-022-17248-2

New Scientist

ARTICLES

ALISON GEORGE – How the secrets of ancient cuneiform texts are being revealed by AI
Much of the world's first writing, carved into clay tablets, remains undeciphered. Now AI is helping us piece together this ancient Mesopotamian script, revealing the incredible stories of men, women and children at the dawn of history.
https://www.newscientist.com/article/mg25533981-400-how-the-secrets-of-ancient-cuneiform-texts-are-being-revealed-by-ai/

PeerJ

PAPERS

RIMJHIM & SOURAV DANDAPAT – Is gender-based violence a confluence of culture? Empirical evidence from social media
Gender-based violence (GBV) has been plaguing our society for long back. The severity of GBV has spurred research around understanding the causes and factors leading to GBV. Understanding factors and causes leading to GBV is helpful in planning and executing efficient policies to curb GBV. Past researches have claimed a country's culture to be one of the driving reasons behind GBV. The culture of a country consists of cultural norms, societal rules, gender-based stereotypes, and social taboos which provoke GBV. These claims are supported by theoretical or small-scale survey-based research that suffers from under-representation and biases. With the advent of social media and, more importantly, location-tagged social media, huge ethnographic data are available, creating a platform for many sociological research. In this article, we also utilize huge social media data to verify the claim of confluence between GBV and the culture of a country. We first curate GBV content from different countries by collecting a large amount of data from Twitter. In order to explore the relationship between a country's culture and GBV content, we performed correlation analyses between a country's culture and its GBV content. The correlation results are further re-validated using graph-based methods. Through the findings of this research, we observed that countries with similar cultures also show similarity in GBV content, thus reconfirming the relationship between GBV and culture.
https://peerj.com/articles/cs-1051/

PLoS One

PAPERS

IULIA BĂDESCU et al – Effects of infant age and sex, and maternal parity on the interaction of lactation with infant feeding development in chimpanzees

The interaction between infant feeding and maternal lactational physiology influences female inter-birth intervals and mediates maternal reproductive trade-offs. We investigated variation in feeding development in 72 immature wild chimpanzees (Pan troglodytes schweinfurthii) at Ngogo, Kibale National Park, Uganda, and made inferences about maternal lactation over the course of infancy. We compared the percentage (%) of time that mothers nursed infants as a function of infant age and assessed how hourly rates and bout durations of nursing and foraging varied in association with differences in offspring age, sex, and maternal parity. Nursing % times, rates and durations were highest for infants ≤ 6 months old but did not change significantly from 6 months to 5 years old. Nursing continued at a decreasing rate for some 5- to 7-year-olds. Infants ≤ 6 months old foraged little. Foraging rates did not change after 1 year old, but foraging durations and the % time devoted to foraging increased with age. Independent foraging probably became a dietary requirement for infants at 1 year old, when their energy needs may have surpassed the available milk energy. Infants spent as much time foraging by the time they were 4 to 5 years old as adults did. No sex effect on infant nursing or foraging was apparent, but infants of primiparous females had higher foraging rates and spent more time foraging than the infants of multiparous females did. Although no data on milk composition were collected, these findings are consistent with a working hypothesis that like other hominoids, chimpanzee mothers maintained a fixed level of lactation effort over several years as infants increasingly supplemented their growing energy, micronutrient and hydration needs via independent foraging. Plateauing lactation may be a more widespread adaptation that allows hominoid infants time to attain the physiology and skills necessary for independent feeding, while also providing them with a steady dietary base on which they could rely consistently through infancy, and enabling mothers to maintain a fixed, predictable level of lactation effort.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0272139

ISABELLE BONI et al with STEVEN T. PIANTADOSI – Verbal counting and the timing of number acquisition in an indigenous Amazonian group

Children in industrialized cultures typically succeed on Give-N, a test of counting ability, by age 4. On the other hand, counting appears to be learned much later in the Tsimane', an indigenous group in the Bolivian Amazon. This study tests three hypotheses for what may cause this difference in timing: (a) Tsimane' children may be shy in providing behavioral responses to number tasks, (b) Tsimane' children may not memorize the verbal list of number words early in acquisition, and/or (c) home environments may not support mathematical learning in the same way as in US samples, leading Tsimane' children to primarily acquire mathematics through formalized schooling. Our results suggest that most of our subjects are not inhibited by shyness in responding to experimental tasks. We also find that Tsimane' children (N = 100, ages 4-11) learn the verbal list later than US children, but even upon acquiring this list, still take time to pass Give-N tasks. We find that performance in counting varies across tasks and is related to formal schooling. These results highlight the importance of formal education, including instruction in the count list, in learning the meanings of the number words.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0270739

BEATRIZ GÓMEZ-VIDAL et al – Subjects are not all alike: Eye-tracking the agent preference in Spanish

Experimental research on argument structure has reported mixed results regarding the processing of unaccusative and unergative predicates. Using eye tracking in the visual world paradigm, this study seeks to fill a gap in the literature by presenting new evidence of the processing distinction between agent and theme subjects. We considered two hypotheses. First, the Unaccusative Hypothesis states that unaccusative (theme) subjects involve a more complex syntactic representation than unergative (agent) subjects. It predicts a delayed reactivation of unaccusative subjects compared to unergatives after the presentation of the verb. Second, the Agent First Hypothesis states that the first ambiguous NP of a sentence will preferably be interpreted as an agent due to an attentional preference to agents over themes. It predicts a larger reactivation of agent subjects than themes. We monitored the time course of gaze fixations of 44 native speakers across a visual display while processing sentences with unaccusative, unergative and transitive verbs. One of the pictures in the visual display was semantically related to the sentential subject. We analyzed fixation patterns in three different time frames: the verb frame, the post-verb frame, and the global post-verbal frame. Results indicated that sentential subjects across the three conditions were significantly activated when participants heard the verb; this is compatible with observing a post-verbal reactivation effect. Time course and magnitude of the gaze-fixation patterns are fully compatible with the predictions made by the Agent First Hypothesis. Thus, we report new evidence for (a) a processing distinction between unaccusative and unergative predicates in sentence comprehension, and (b) an attentional preference towards agents over themes, reflected by a larger reactivation effect in agent subjects.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0272211

JELLE A. VAN DIJK et al – Intracranial recordings show evidence of numerosity tuning in human parietal cortex

Numerosity is the set size of a group of items. Numerosity perception is a trait shared across numerous species. Numerosity-selective neural populations are thought to underlie numerosity perception. These neurons have been identified primarily using electrical recordings in animal models and blood oxygen level dependent (BOLD) functional magnetic resonance

imaging (fMRI) in humans. Here we use electrical intracranial recordings to investigate numerosity tuning in humans, focusing on high-frequency transient activations. These recordings combine a high spatial and temporal resolution and can bridge the gap between animal models and human recordings. In line with previous studies, we find numerosity-tuned responses at parietal sites in two out of three participants. Neuronal populations at these locations did not respond to other visual stimuli, i.e. faces, houses, and letters, in contrast to several occipital sites. Our findings further corroborate the specificity of numerosity tuning of in parietal cortex, and further link fMRI results and electrophysiological recordings.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0272087

MATHILDE SALAGNON et al with FRANCESCO D'ERRICO – Neural correlates of perceiving and interpreting engraved prehistoric patterns as human production: Effect of archaeological expertise
It has been suggested that engraved abstract patterns dating from the Middle and Lower Palaeolithic served as means of representation and communication. Identifying the brain regions involved in visual processing of these engravings can provide insights into their function. In this study, brain activity was measured during perception of the earliest known Palaeolithic engraved patterns and compared to natural patterns mimicking human-made engravings. Participants were asked to categorise marks as being intentionally made by humans or due to natural processes (e.g. erosion, root etching). To simulate the putative familiarity of our ancestors with the marks, the responses of expert archaeologists and control participants were compared, allowing characterisation of the effect of previous knowledge on both behaviour and brain activity in perception of the marks. Besides a set of regions common to both groups and involved in visual analysis and decision-making, the experts exhibited greater activity in the inferior part of the lateral occipital cortex, ventral occipitotemporal cortex, and medial thalamic regions. These results are consistent with those reported in visual expertise studies, and confirm the importance of the integrative visual areas in the perception of the earliest abstract engravings. The attribution of a natural rather than human origin to the marks elicited greater activity in the salience network in both groups, reflecting the uncertainty and ambiguity in the perception of, and decision-making for, natural patterns. The activation of the salience network might also be related to the process at work in the attribution of an intention to the marks. The primary visual area was not specifically involved in the visual processing of engravings, which argued against its central role in the emergence of engraving production.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0271732

PATRICIA CERNADAS CUROTTO et al – Back to the future: A way to increase prosocial behavior
Previous studies suggest a link between future thinking and prosocial behaviors. However, this association is not fully understood at state and trait level. The present study tested whether a brief future thinking induction promoted helping behavior in an unrelated task. In addition, the relation between mental time travel and prosocial behaviors in daily life was tested with questionnaire data. Forty-eight participants filled in questionnaires and were asked to think about the future for one minute or to name animals for one minute (control condition) before playing the Zurich Prosocial Game (a measure of helping behavior). Results revealed that participants in the future thinking condition helped significantly more than participants in the control condition. Moreover, questionnaire data showed that dispositional and positive orientation toward the future and the past was significantly associated with self-reported prosocial behaviors. The present findings suggest that thinking about the future in general has positive transfer effects on subsequent prosocial behavior and that people who think more about the past or future in a positive way engage more in prosocial behavior.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0272340

PNAS

ARTICLES

ANNE E. PUSEY – Warlike chimpanzees and peacemaking bonobos
https://www.pnas.org/doi/abs/10.1073/pnas.2208865119

Trends in Cognitive Sciences

PAPERS

STANISLAS DEHAENE et al – Symbols and mental programs: a hypothesis about human singularity
Natural language is often seen as the single factor that explains the cognitive singularity of the human species. Instead, we propose that humans possess multiple internal languages of thought, akin to computer languages, which encode and compress structures in various domains (mathematics, music, shape…). These languages rely on cortical circuits distinct from classical language areas. Each is characterized by: (i) the discretization of a domain using a small set of symbols, and (ii) their recursive composition into mental programs that encode nested repetitions with variations. In various tasks of elementary shape or sequence perception, minimum description length in the proposed languages captures human behavior and brain activity, whereas non-human primate data are captured by simpler nonsymbolic models. Our research argues in favor of discrete symbolic models of human thought.
{Great. As if explaining a special system for human language wasn't tricky enough, we must now explain special human-only systems for mathematics, music, shape, etc. – and we aren't allowed to use any previously-existing systems, everything has to made from fresh-out-the-box specialist components. We now have to explain not one macromutation but a whole series of

them – including a new mechanism for recursion (which is no longer a thing in language, it is a macromutation all of its own). This is where going down rabbit-holes gets you.}
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00141-3

Trends in Ecology and Evolution

PAPERS

ELLEN O. AIKENS et al – Viewing animal migration through a social lens

Evidence of social learning is growing across the animal kingdom. Researchers have long hypothesized that social interactions play a key role in many animal migrations, but strong empirical support is scarce except in a few unique systems and species. In this review, we aim to catalyze advances in the study of social migrations by synthesizing research across disciplines and providing a framework for understanding when, how, and why social influences shape the decisions animals make during migration. Integrating research across the fields of social learning and migration ecology will advance our understanding of the complex behavioral phenomena of animal migration and help to inform conservation of animal migrations in a changing world.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(22)00141-0

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