EAORC BULLETIN 1,038 – 7 May 2023

CONTENTS

NOTICES

PUBLICATION ALERTS

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

EDITORIAL INTERJECTIONS

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

OTHER PUBLICATIONS – Intra-specific Variation in the Social Behavior of Barbary macaques

In Frontiers in Psychology 12 (2021).

FEDERICA AMICI et al – Intra-specific Variation in the Social Behavior of Barbary macaques (Macaca sylvanus)

Non-human primates show an impressive behavioral diversity, both across and within species. However, the factors explaining intra-specific behavioral variation across groups and individuals are yet understudied. Here, we aimed to assess how group size and living conditions (i.e., captive, semi-free-ranging, wild) are linked to behavioral variation in 5 groups of Barbary macaques (N=137 individuals). In each group, we collected observational data on the time individuals spent in social interactions and on the group dominance style, along with experimental data on social tolerance over food and neophobia. Our results showed that differences in group size predicted differences in the time spent in social interactions, with smaller groups spending a higher proportion of time in close spatial proximity, but a lower proportion of time grooming. Moreover, group size predicted variation in dominance style, with smaller groups being more despotic. Social tolerance was affected by both group size and living conditions, being higher in smaller groups and in groups living in less natural conditions. Finally, individual characteristics also explained variation in social tolerance and neophobia, with socially integrated individuals having higher access to food sources, and higher-ranking ones being more neophobic. Overall, our results support the view that intra-specific variation is a crucial aspect in primate social behavior and call for more comparative studies to better understand the sources of within-species variation.
https://www.frontiersin.org/articles/10.3389/fpsyg.2021.666166/full

FEDERICA AMICI et al – Corrigendum: Intra-specific variation in the social behavior of Barbary macaques (Macaca sylvanus)
https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1192731/full

LECTURE ALERT – London Semantics Day (LSD), Wednesday 10 May 2023, Queen Mary University

The LSD is a relatively informal, zero-budget, in-person semantics gathering that takes place annually (pandemics permitting). It is happening on Wednesday 10 May this year, at Queen Mary University of London, Mile End campus (the room is Arts Two 3.20; see https://ph.qmul.ac.uk/sites/default/files/Article/Mile-End-campus-map.pdf for a campus map). We are delighted to have Suzi Lima (University of Toronto) as our invited speaker this year.

Talks are 45 minutes long including questions.

Looking forward to seeing many of you there,

Luisa Martí, Senior Lecturer in Spanish Linguistics, Department of Linguistics, Queen Mary University of London

https://sites.google.com/site/luisamartiswebsite/

2023 LSD programme
Arts Two 3.20, Mile End campus
10.30-11.15 Massimo Poesio (QMUL): "The empirical perspective on anaphora"
11.15-12.00 Vera Hohaus (University of Manchester), Nadine Bade (Universität Potsdam) & Ryan Walter Smith (University of Manchester): "Semantics of inversion illusions"
12.00-12.30 Coffee break
12.30- 1.15 Scott AnderBois (Brown University) and Daniel Altshuler (University of Oxford): "A coherence-based theory of switch reference"
1.15-3.00 Lunch break
3.00-3.45 Paul Elbourne (University of Oxford): "Eliminating syntactic categories"
3.45-4.30 Hazel Pearson (QMUL): "Stage-level and individual-level predicates of personal taste"
4.30-5.00 Coffee break
5.00-5.45 Suzi Lima (University of Toronto): "Counting and measuring in Bantu languages"

NEWS

SCIENCE.ORG NEWS – Scientists in India protest move to drop Darwinian evolution from textbooks
Decision marks troubling rejection of science, critics say.
https://www.science.org/content/article/scientists-india-protest-move-drop-darwinian-evolution-textbooks

SCIENCE.ORG NEWS – Scientists use AI to decipher words and sentences from brain scans
Budding neurotechnology could someday help paralyzed patients communicate—but could also raise privacy concerns.
https://www.science.org/content/article/scientists-use-ai-decipher-words-and-sentences-brain-scans

SCIENCE.ORG NEWS – Burst of brain activity during dying could explain life passing before your eyes
New study hints at how consciousness can continue after the heart stops.
https://www.science.org/content/article/burst-brain-activity-during-dying-could-explain-life-passing-your-eyes

SCIENCE.ORG NEWS – Who wore this ancient deer pendant?
Pioneering technique allows scientists to read genetic traces of an artifact's last user.
https://www.science.org/content/article/wore-ancient-deer-pendant-dna-reveals-stone-age-woman-surprising-origins

PUBLICATIONS

eLife
PAPERS

ANDREAS BERGHÄNEL et al – Adolescent length growth spurts in bonobos and other primates: Mind the scale
Adolescent growth spurts (GS) in body length seem to be absent in non-human primates and are considered a distinct human trait. However, this distinction between present and absent length-GSs may reflect a mathematical artefact that makes it arbitrary. We first outline how scaling issues and inappropriate comparisons between length (linear) and weight (volume) growth rates result in misleading interpretations like the absence of length-GSs in non-human primates despite pronounced weight-GSs, or temporal delays between length- and weight-GSs. We then apply a scale-corrected approach to a comprehensive dataset on 258 zoo-housed bonobos that includes weight and length growth as well as several physiological markers related to growth and adolescence. We found pronounced GSs in body weight and length in both sexes. Weight and length growth trajectories corresponded with each other and with patterns of testosterone and IGFBP-3 levels, resembling

adolescent GSs in humans. We further re-interpreted published data of non-human primates, which showed that aligned GSs in weight and length exist not only in bonobos. Altogether, our results emphasize the importance of considering scaling laws when interpreting growth curves in general, and further show that pronounced, human-like adolescent length-GSs exist in bonobos and probably also many other non-human primates.
https://elifesciences.org/reviewed-preprints/86635

KRISTINA B BECK, BEN C SHELDON & JOSH A FIRTH – Social learning mechanisms shape transmission pathways through replicate local social networks of wild birds

The emergence and spread of novel behaviours via social learning can lead to rapid population-level changes whereby the social connections between individuals shape information flow. However, behaviours can spread via different mechanisms and little is known about how information flow depends on the underlying learning rule individuals employ. Here, comparing four different learning mechanisms, we simulated behavioural spread on replicate empirical social networks of wild great tits and explored the relationship between individual sociality and the order of behavioural acquisition. Our results reveal that, for learning rules dependent on the sum and strength of social connections to informed individuals, social connectivity was related to the order of acquisition, with individuals with increased social connectivity and reduced social clustering adopting new behaviours faster. However, when behavioural adoption depends on the ratio of an individuals' social connections to informed versus uninformed individuals, social connectivity was not related to the order of acquisition. Finally, we show how specific learning mechanisms may limit behavioural spread within networks. These findings have important implications for understanding whether and how behaviours are likely to spread across social systems, the relationship between individuals' sociality and behavioural acquisition, and therefore for the costs and benefits of sociality.
https://elifesciences.org/articles/85703

Frontiers in Bioengineering and Biotechnology

PAPERS

XIAO-WEI XV et al – Exploring the effects of skeletal architecture and muscle properties on bipedal standing in the common chimpanzee (Pan troglodytes) from the perspective of biomechanics

It is well known that the common chimpanzee, as both the closest living relative to humans and a facultative bipedal, has the capability of bipedal standing but cannot do so fully upright. Accordingly, they have been of exceeding significance in elucidating the evolution of human bipedalism. There are many reasons why the common chimpanzee can only stand with its hips–knees bent, such as the distally oriented long ischial tubercle and the almost absent lumbar lordosis. However, it is unknown how the relative positions of their shoulder–hip–knee–ankle joints are coordinated. Similarly, the distribution of the biomechanical characteristics of the lower-limb muscles and the factors that affect the erectness of standing as well as the muscle fatigue of the lower limbs remain a mystery. The answers are bound to light up the evolutionary mechanism of hominin bipedality, but these conundrums have not been shed much light upon, because few studies have comprehensively explored the effects of skeletal architecture and muscle properties on bipedal standing in common chimpanzees.

Thus, we first built a musculoskeletal model comprising the head-arms-trunk (HAT), thighs, shanks, and feet segments of the common chimpanzee, and then, the mechanical relationships of the Hill-type muscle-tendon units (MTUs) in bipedal standing were deduced. Thereafter, the equilibrium constraints were established, and a constrained optimization problem was formulated where the optimization objective was defined. Finally, thousands of simulations of bipedal standing experiments were performed to determine the optimal posture and its corresponding MTU parameters including muscle lengths, muscle activation, and muscle forces. Moreover, to quantify the relationship between each pair of the parameters from all the experimental simulation outcomes, the Pearson correlation analysis was employed.

Our results demonstrate that in the pursuit of the optimal bipedal standing posture, the common chimpanzee cannot simultaneously achieve maximum erectness and minimum muscle fatigue of the lower limbs. For uni-articular MTUs, the relationship between muscle activation, relative muscle lengths, together with relative muscle forces, and the corresponding joint angle is generally negatively correlated for extensors and positively correlated for flexors. For bi-articular MTUs, the relationship between muscle activation, coupled with relative muscle forces, and the corresponding joint angles does not show the same pattern as in the uni-articular MTUs.

The results of this study bridge the gap between skeletal architecture, along with muscle properties, and biomechanical performance of the common chimpanzee during bipedal standing, which enhances existing biomechanical theories and advances the comprehension of bipedal evolution in humans.
https://www.frontiersin.org/articles/10.3389/fbioe.2023.1140262/full

Frontiers in Psychology

PAPERS

LENA KOPNARSKI, JULIAN RUDISCH & CLAUDIA VOELCKER-REHAGE – A systematic review of handover actions in human dyads

Handover actions are joint actions in which an object is passed from one actor to another. In order to carry out a smooth handover action, precise coordination of both actors' movements is of critical importance. This requires the synchronization of both the kinematics of the reaching movement and the grip forces of the two actors during the interaction. Psychologists,

for example, may be interested in studying handover actions in order to identify the cognitive mechanisms underlying the interaction of two partners. In addition, robotic engineers may utilize insights from sensorimotor information processing in human handover as models for the design controllers in robots in hybrid (human-robot) interaction scenarios. To date, there is little knowledge transfer between researchers in different disciplines and no common framework or language for the study of handover actions.

For this reason, we systematically reviewed the literature on human-human handover actions in which at least one of the two types of behavioral data, kinematics or grip force, was measured.

Nine relevant studies were identified. The different methodologies and results of the individual studies are here described and contextualized.

Based on these results, a common framework is suggested that, provides a distinct and straightforward language and systematics for use in future studies. We suggest to term the actors as giver and receiver, as well as to subdivide the whole action into four phases: (1) Reach and grasp, (2) object transport, (3) object transfer, and (4) end of handover to comprehensively and clearly describe the handover action. The framework aims to foster the necessary exchange between different scientific disciplines to promote research on handover actions. Overall, the results support the assumption that givers adapt their executions according to the receiver's intentions, that the start of the release of the object is processed feedforward and that the release process is feedback-controlled in the transfer phase. We identified the action planning of the receiver as a research gap.

https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1147296/full

Frontiers in Psychiatry

PAPERS

JING XIN et al – Absence of associations with prefrontal cortex and cerebellum may link to early language and social deficits in preschool children with ASD

Autism spectrum disorder (ASD) is a complex developmental disorder, characterized by language and social deficits that begin to appear in the first years of life. Research in preschool children with ASD has consistently reported increased global brain volume and abnormal cortical patterns, and the brain structure abnormalities have also been found to be clinically and behaviorally relevant. However, little is known regarding the associations between brain structure abnormalities and early language and social deficits in preschool children with ASD.

In this study, we collected magnetic resonance imaging (MRI) data from a cohort of Chinese preschool children with and without ASD (24 ASD/20 non-ASD) aged 12–52 months, explored group differences in brain gray matter (GM) volume, and examined associations between regional GM volume and early language and social abilities in these two groups, separately. We observed significantly greater global GM volume in children with ASD as compared to those without ASD, but there were no regional GM volume differences between these two groups. For children without ASD, GM volume in bilateral prefrontal cortex and cerebellum was significantly correlated with language scores; GM volume in bilateral prefrontal cortex was significantly correlated with social scores. No significant correlations were found in children with ASD.

Our data demonstrate correlations of regional GM volume with early language and social abilities in preschool children without ASD, and the absence of these associations appear to underlie language and social deficits in children with ASD. These findings provide novel evidence for the neuroanatomical basis associated with language and social abilities in preschool children with and without ASD, which promotes a better understanding of early deficits in language and social functions in ASD.

https://www.frontiersin.org/articles/10.3389/fpsyt.2023.1144993/full

Nature

NEWS

Prehistoric pendant's DNA reveals the person who held it

An innovative method reveals that an ancient trinket was handled by a woman some 20,000 years ago.

https://www.nature.com/articles/d41586-023-01482-3

ARTICLES

MARIE SORESSI & MATEJA HAJDINJAK – Ancient woman's DNA recovered from a 20,000-year-old pendant

An innovative method was used to obtain a woman's rich DNA record from a 20,000-year-old pendant found in Siberia, providing the first direct genetic evidence for the identity of an individual who handled an object in the deep past.

https://www.nature.com/articles/d41586-023-01342-0

PAPERS

ELENA ESSEL et al with JEAN-JACQUES HUBLIN & SVANTE PÄÄBO – Ancient human DNA recovered from a Palaeolithic pendant

Artefacts made from stones, bones and teeth are fundamental to our understanding of human subsistence strategies, behaviour and culture in the Pleistocene. Although these resources are plentiful, it is impossible to associate artefacts to

specific human individuals who can be morphologically or genetically characterized, unless they are found within burials, which are rare in this time period. Thus, our ability to discern the societal roles of Pleistocene individuals based on their biological sex or genetic ancestry is limited. Here we report the development of a non-destructive method for the gradual release of DNA trapped in ancient bone and tooth artefacts. Application of the method to an Upper Palaeolithic deer tooth pendant from Denisova Cave, Russia, resulted in the recovery of ancient human and deer mitochondrial genomes, which allowed us to estimate the age of the pendant at approximately 19,000–25,000 years. Nuclear DNA analysis identifies the presumed maker or wearer of the pendant as a female individual with strong genetic affinities to a group of Ancient North Eurasian individuals who lived around the same time but were previously found only further east in Siberia. Our work redefines how cultural and genetic records can be linked in prehistoric archaeology.
https://www.nature.com/articles/s41586-023-06035-2

ZERESENAY ALEMSEGED – Reappraising the palaeobiology of Australopithecus

The naming of Australopithecus africanus in 1925, based on the Taung Child, heralded a new era in human evolutionary studies and turned the attention of the then Eurasian-centric palaeoanthropologists to Africa, albeit with reluctance. Almost one hundred years later, Africa is recognized as the cradle of humanity, where the entire evolutionary history of our lineage prior to two million years ago took place—after the Homo–Pan split. This Review examines data from diverse sources and offers a revised depiction of the genus and characterizes its role in human evolution. For a long time, our knowledge of Australopithecus came from both A. africanus and Australopithecus afarensis, and the members of this genus were portrayed as bipedal creatures that did not use stone tools, with a largely chimpanzee-like cranium, a prognathic face and a brain slightly larger than that of chimpanzees. Subsequent field and laboratory discoveries, however, have altered this portrayal, showing that Australopithecus species were habitual bipeds but also practised arboreality; that they occasionally used stone tools to supplement their diet with animal resources; and that their infants probably depended on adults to a greater extent than what is seen in apes. The genus gave rise to several taxa, including Homo, but its direct ancestor remains elusive. In sum, Australopithecus had a pivotal bridging role in our evolutionary history owing to its morphological, behavioural and temporal placement between the earliest archaic putative hominins and later hominins—including the genus Homo.
https://www.nature.com/articles/s41586-023-05957-1

Nature Communications

PAPERS

MAËL LEROUX et al with KLAUS ZUBERBÜHLER & KATIE E. SLOCOMBE – Call combinations and compositional processing in wild chimpanzees

Through syntax, i.e., the combination of words into larger phrases, language can express a limitless number of messages. Data in great apes, our closest-living relatives, are central to the reconstruction of syntax's phylogenetic origins, yet are currently lacking. Here, we provide evidence for syntactic-like structuring in chimpanzee communication. Chimpanzees produce "alarm-huus" when surprised and "waa-barks" when potentially recruiting conspecifics during aggression or hunting. Anecdotal data suggested chimpanzees combine these calls specifically when encountering snakes. Using snake presentations, we confirm call combinations are produced when individuals encounter snakes and find that more individuals join the caller after hearing the combination. To test the meaning-bearing nature of the call combination, we use playbacks of artificially-constructed call combinations and both independent calls. Chimpanzees react most strongly to call combinations, showing longer looking responses, compared with both independent calls. We propose the "alarm-huu + waa-bark" represents a compositional syntactic-like structure, where the meaning of the call combination is derived from the meaning of its parts. Our work suggests that compositional structures may not have evolved de novo in the human lineage, but that the cognitive building-blocks facilitating syntax may have been present in our last common ancestor with chimpanzees.
https://www.nature.com/articles/s41467-023-37816-y

Nature Ecology & Evolution

PAPERS

KHADY NIANG et al – Longstanding behavioural stability in West Africa extends to the Middle Pleistocene at Bargny, coastal Senegal

Middle Stone Age (MSA) technologies first appear in the archaeological records of northern, eastern and southern Africa during the Middle Pleistocene epoch. The absence of MSA sites from West Africa limits evaluation of shared behaviours across the continent during the late Middle Pleistocene and the diversity of subsequent regionalized trajectories. Here we present evidence for the late Middle Pleistocene MSA occupation of the West African littoral at Bargny, Senegal, dating to 150 thousand years ago. Palaeoecological evidence suggests that Bargny was a hydrological refugium during the MSA occupation, supporting estuarine conditions during Middle Pleistocene arid phases. The stone tool technology at Bargny presents characteristics widely shared across Africa in the late Middle Pleistocene but which remain uniquely stable in West Africa to the onset of the Holocene. We explore how the persistent habitability of West African environments, including mangroves, contributes to distinctly West African trajectories of behavioural stability.

https://www.nature.com/articles/s41559-023-02046-4

ARTICLES

MAXIME ROTIVAL – Archaic hominin traits through the splicing lens

The sequencing of the genomes of archaic hominins has fostered a renewed interest in the identity of our extinct relatives and their legacy in the genome of modern humans. However, characterization of the phenotypes of archaic hominins is limited by the scarcity of remains and the rapid degradation of soft tissues after death. Various attempts have been made to infer archaic phenotypes on the basis of their DNA methylation patterns or through the study of the regulatory alleles that they share with modern humans. Yet, the extensive purge of archaic DNA from the genome of modern humans and the possibility of regulatory divergence between archaic and modern humans4 limit the effectiveness of these approaches. Writing in Nature Ecology & Evolution, Brand et al.5 implemented a solution to this issue by focusing on alternative splicing, which informs us on the phenotypes of archaic hominins and reveals how splice-altering variants (SAVs) that modern humans inherited from their archaic relatives helped them to adapt to their environment, but also contributed to disease.

https://www.nature.com/articles/s41559-023-02045-5

Nature Humanities & Social Sciences Communications

PAPERS

VINCENZO DE LEO et al – Topic detection with recursive consensus clustering and semantic enrichment

Extracting meaningful information from short texts like tweets has proved to be a challenging task. Literature on topic detection focuses mostly on methods that try to guess the plausible words that describe topics whose number has been decided in advance. Topics change according to the initial setup of the algorithms and show a consistent instability with words moving from one topic to another one. In this paper we propose an iterative procedure for topic detection that searches for the most stable solutions in terms of words describing a topic. We use an iterative procedure based on clustering on the consensus matrix, and traditional topic detection, to find both a stable set of words and an optimal number of topics. We observe however that in several cases the procedure does not converge to a unique value but oscillates. We further enhance the methodology using semantic enrichment via Word Embedding with the aim of reducing noise and improving topic separation. We foresee the application of this set of techniques in an automatic topic discovery in noisy channels such as Twitter or social media.

https://www.nature.com/articles/s41599-023-01711-0

TUUKKA YLÄ-ANTTILA – Comparative moral principles: justifications, values, and foundations

The article compares three influential theories used in sociology and psychology to categorize types of morality—Luc Boltanski & Laurent Thévenot's justification theory, Shalom H. Schwartz's basic human values theory, and Jonathan Haidt's moral foundations theory—to simplify the complexity presented by three different categorizations, while retaining necessary nuance, and to translate the concepts of each into the language of the other two. A comparative table is presented to evaluate which categories of the three theories correspond to each other and where do theories make distinctions that are lacking from the other two. This summary framework of Comparative Moral Principles (CMP) consists of eight principles to compare, explain, and interpret practices of moral motivation and meaning-making: Liberty, Inspiration, Safety, Community, Care, Equality, Deservingness, and Competition.

https://www.nature.com/articles/s41599-023-01684-0

Nature Neuroscience

PAPERS

JERRY TANG et al – Semantic reconstruction of continuous language from non-invasive brain recordings

A brain–computer interface that decodes continuous language from non-invasive recordings would have many scientific and practical applications. Currently, however, non-invasive language decoders can only identify stimuli from among a small set of words or phrases. Here we introduce a non-invasive decoder that reconstructs continuous language from cortical semantic representations recorded using functional magnetic resonance imaging (fMRI). Given novel brain recordings, this decoder generates intelligible word sequences that recover the meaning of perceived speech, imagined speech and even silent videos, demonstrating that a single decoder can be applied to a range of tasks. We tested the decoder across cortex and found that continuous language can be separately decoded from multiple regions. As brain–computer interfaces should respect mental privacy, we tested whether successful decoding requires subject cooperation and found that subject cooperation is required both to train and to apply the decoder. Our findings demonstrate the viability of non-invasive language brain–computer interfaces.

https://www.nature.com/articles/s41593-023-01304-9

Nature Scientific Reports
PAPERS

VIVIEN OUTTERS et al – Children's affective involvement in early word learning

The current study set out to examine the underlying physiological mechanisms of and the emotional response associated with word learning success in young 3-year-old predominantly white children. In particular, we examined whether children's physiological arousal following a word learning task predicts their word learning success and whether successful learning in turn predicts children's subsequent positive emotions. We presented children (n = 50) with a cross-situational word learning task and measured their pupillary arousal following completion of the task, as well as changes to their upper body posture following completion of the task, as indices of children's emotions following task completion. Children who showed greater physiological arousal following the novel word recognition task (n = 40) showed improved subsequent word recognition performance. We found that children showed more elevated posture after completing a familiar word learning task compared to completing a novel word learning task (n = 33) but results on children's individual learning success and postural elevation were mixed. We discuss the findings with regards to children's affective involvement in word learning.
https://www.nature.com/articles/s41598-023-34049-3

K. PEREN ARIN, DENI MAZREKAJ & MARCEL THUM – Ability of detecting and willingness to share fake news

By conducting large-scale surveys in Germany and the United Kingdom, we investigate the individual-level determinants of the ability to detect fake news and the inclination to share it. We distinguish between deliberate and accidental sharing of fake news. We document that accidental sharing is much more common than deliberate sharing. Furthermore, our results indicate that older, male, high-income, and politically left-leaning respondents better detect fake news. We also find that accidental sharing decreases with age and is more prevalent among right-leaning respondents. Deliberate sharing of fake news is more prevalent among younger respondents in the United Kingdom. Finally, our results imply that respondents have a good assessment of their ability to detect fake news: those we identified as accidental sharers were also more likely to have admitted to having shared fake news.
https://www.nature.com/articles/s41598-023-34402-6

ALVARO L. CAICOYA, MONTSERRAT COLELL & FEDERICA AMICI – Giraffes make decisions based on statistical information

The ability to make inferences based on statistical information has so far been tested only in animals having large brains in relation to their body size, like primates and parrots. Here we tested if giraffes (Giraffa camelopardalis), despite having a smaller relative brain size, can rely on relative frequencies to predict sampling outcomes. We presented them with two transparent containers filled with different quantities of highly-liked food and less-preferred food. The experimenter covertly drew one piece of food from each container, and let the giraffe choose between the two options. In the first task, we varied the quantity and relative frequency of highly-liked and less-preferred food pieces. In the second task, we inserted a physical barrier in both containers, so giraffes only had to take into account the upper part of the container when predicting the outcome. In both tasks giraffes successfully selected the container more likely to provide the highly-liked food, integrating physical information to correctly predict sampling information. By ruling out alternative explanations based on simpler quantity heuristics and learning processes, we showed that giraffes can make decisions based on statistical inferences.
https://www.nature.com/articles/s41598-023-32615-3

JEONG-YOO KIM & KYU-MIN LEE – Evolution of fairness in the divide-a-lottery game

In this paper, we show that fairness can evolve in the divide-a-lottery game which is more general than the divide-a-dollar game by using an indirect evolutionary approach. In the divide-a-lottery game, the size of a pie is uncertain. Two players sequentially bid for a share and they get their bid if the allocation based on the bids turns out to be feasible and otherwise neither gets anything. In this game, rational players over-compete for a higher share, resulting in a high probability of failure in agreement, whereas fair players who dislike the disparity between shares lower their bids thereby reducing the failure probability and thus increasing the expected payoff. As a result, fairness strictly dominates rationality. This is the mechanism through which fairness evolves. However, this result is not robust against even a slight uncertainty about the opponent's type. Surprisingly, we show a contrasted simulation result that only rational players who are strictly dominated by fair players survive evolutionarily for most of the parameter values if players have even a slight chance of not knowing the opponent's type. Our simulation results in a local interaction model in which players only know the type of closer neighbors capture both insights and demonstrate that moderate proportions of both types coexist evolutionarily over time, and that the population average fitness of this polymorphic population is higher than monomorphic population consisting only of fair types or rational types.
https://www.nature.com/articles/s41598-023-34131-w

New Scientist
NEWS

We now know why we mess up when the stakes are high
A brain mechanism that enables us to carry out tasks to achieve a certain reward may get disrupted when a jackpot prize is in sight.
https://www.newscientist.com/article/2370751-we-now-know-why-we-mess-up-when-the-stakes-are-high/

PLoS One
PAPERS

LUDOVIC SLIMAK – The three waves: Rethinking the structure of the first Upper Paleolithic in Western Eurasia
The Neronian is a lithic tradition recognized in the Middle Rhône Valley of Mediterranean France now directly linked to Homo sapiens and securely dated to 54,000 years ago (ka), pushing back the arrival of modern humans in Europe by 10 ka. This incursion of modern humans into Neandertal territory and the relationships evoked between the Neronian and the Levantine Initial Upper Paleolithic (IUP) question the validity of concepts that define the first H. sapiens migrations and the very nature of the first Upper Paleolithic in western Eurasia. Direct comparative analyses between lithic technology from Grotte Mandrin and East Mediterranean archeological sequences, especially Ksar Akil, suggest that the three key phases of the earliest Levantine Upper Paleolithic have very precise technical and chronological counterparts in Western Europe, recognized from the Rhône Valley to Franco-Cantabria. These trans-Mediterranean technical connections suggest three distinct waves of H. sapiens expansion into Europe between 55–42 ka. These elements support an original thesis on the origin, structure, and evolution of the first moments of the Upper Paleolithic in Europe tracing parallel archaeological changes in the East Mediterranean region and Europe.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0277444

MICHAEL BAALES et al – Western visitors at the Blätterhöhle (city of Hagen, southern Westphalia) during the Younger Dryas? A new final palaeolithic assemblage type in western Germany
Until now, it was considered certain that the last reindeer hunters of the Ahrensburgian (tanged point groups) existed exclusively in northwestern Central Europe during the Younger Dryas Cold Period (~ Greenland Stadial 1). The excavations carried out since 2006 on the forecourt (Vorplatz) of the small Blätterhöhle in Hagen on the northern edge of the Sauerland uplands of southern Westphalia (North Rhine-Westphalia, western Germany) have now changed this view. Beneath a surprisingly extensive sequence of Mesolithic find horizons, Pleistocene sediments could be reached whose excavations yielded a Final Palaeolithic lithic ensemble of the Younger Dryas, unusual for the region and beyond. It is characterised by numerous backed lithic projectile points of high variability. Comparisons suggest a typological-technological connection with the Western European Laborian / Late Laborian. Neither in the nearer nor in the wider surroundings has a comparable lithic find ensemble been found so far. In addition, there is a lack of clear evidence for the reindeer in the fauna. Surprisingly, the vast majority of radiocarbon dates of bones and charcoals from the investigated archaeological horizon of the Final Pleistocene proved to be significantly older than expected from their stratigraphic position. This phenomenon has not yet been clarified.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0284479

Proceedings of the Royal Society B
PAPERS

AVI BENOZIO, BAILEY R. HOUSE & MICHAEL TOMASELLO – Apes reciprocate food positively and negatively
Reciprocal food exchange is widespread in human societies but not among great apes, who may view food mainly as a target for competition. Understanding the similarities and differences between great apes' and humans' willingness to exchange food is important for our models regarding the origins of uniquely human forms of cooperation. Here, we demonstrate in-kind food exchanges in experimental settings with great apes for the first time. The initial sample consisted of 13 chimpanzees and 5 bonobos in the control phases, and the test phases included 10 chimpanzees and 2 bonobos, compared with a sample of 48 human children aged 4 years. First, we replicated prior findings showing no spontaneous food exchanges in great apes. Second, we discovered that when apes believe that conspecifics have 'intentionally' transferred food to them, positive reciprocal food exchanges (food-for-food) are not only possible but reach the same levels as in young children (approx. 75–80%). Third, we found that great apes engage in negative reciprocal food exchanges (no-food for no-food) but to a lower extent than children. This provides evidence for reciprocal food exchange in great apes in experimental settings and suggests that while a potential mechanism of fostering cooperation (via positive reciprocal exchanges) may be shared across species, a stabilizing mechanism (via negative reciprocity) is not.
https://royalsocietypublishing.org/doi/10.1098/rspb.2022.2541

Science

NEWS

Who wore this ancient deer pendant? DNA reveals a Stone Age woman with surprising origins
Pioneering technique allows scientists to read genetic traces of an artifact's last user.
https://www.science.org/content/article/wore-ancient-deer-pendant-dna-reveals-stone-age-woman-surprising-origins

REVIEWS

THOM SCOTT-PHILLIPS – Writing for the reader
Review of 'Scientific Papers Made Easy' by Stuart West and Lindsay Turnbull, Oxford University Press, 2023.
https://www.science.org/doi/10.1126/science.adh1867

Science Advances

PAPERS

JOSÉ BRAGA et al – Hominin fossils from Kromdraai and Drimolen inform Paranthropus robustus craniofacial ontogeny
Ontogeny provides critical information about the evolutionary history of early hominin adult morphology. We describe fossils from the southern African sites of Kromdraai and Drimolen that provide insights into early craniofacial development in the Pleistocene robust australopith Paranthropus robustus. We show that while most distinctive robust craniofacial features appear relatively late in ontogeny, a few do not. We also find unexpected evidence of independence in the growth of the premaxillary and maxillary regions. Differential growth results in a proportionately larger and more postero-inferiorly rotated cerebral fossa in P. robustus infants than in the developmentally older Australopithecus africanus juvenile from Taung. The accumulated evidence from these fossils suggests that the iconic SK 54 juvenile calvaria is more likely early Homo than Paranthropus. It is also consistent with the hypothesis that P. robustus is more closely related to Homo than to A. africanus.
https://www.science.org/doi/full/10.1126/sciadv.ade7165

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