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## NOTICES

### PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do 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, do let me know.

And if you have any other ideas for extending the “EAORC experience”, please contact me.

### SCIENCE NEWS – What does traditional music around the world have in common?

Music is ubiquitous—but do societies around the world use similar building blocks to construct their songs? Researchers dove into detailed descriptions and samples of songs to understand what universal traits underlie music. This video examines four categories of song: lullabies, dance, healing, and love.

[https://www.sciencemag.org/news/2020/01/what-does-traditional-music-around-world-have-common?utm\\_campaign=news\\_daily\\_2020-01-21&et rid=17774313&et cid=3173356](https://www.sciencemag.org/news/2020/01/what-does-traditional-music-around-world-have-common?utm_campaign=news_daily_2020-01-21&et rid=17774313&et cid=3173356)

### SCIENCE NEWS – DNA from child burials reveals ‘profoundly different’ human landscape in ancient Africa

Central Africa is too hot and humid for ancient DNA to survive—or so researchers thought. But now the bones of four children buried thousands of years ago in a rock shelter in the grasslands of Cameroon have yielded enough DNA for scientists to analyze. It’s the first ancient DNA from humans in the region, and as the team reports today in Nature, it holds multiple surprises. For one, the area today is the homeland of Bantu speakers, the majority group in western and Central Africa. But the children turned out to be most closely related to hunter-gatherers such as the Baka and Aka—groups traditionally known as “pygmies”—who today live at least 500 kilometers away in the rainforests of western Central Africa.

[https://www.sciencemag.org/news/2020/01/dna-child-burials-reveals-profoundly-different-human-landscape-ancient-africa?utm\\_campaign=news\\_daily\\_2020-01-22&et rid=17774313&et cid=3174859](https://www.sciencemag.org/news/2020/01/dna-child-burials-reveals-profoundly-different-human-landscape-ancient-africa?utm_campaign=news_daily_2020-01-22&et rid=17774313&et cid=3174859)

### SOCIETY FOR SCIENCE – Ancient kids' DNA reveals new insights into how Africa was populated

Four long-dead youngsters from west-central Africa have opened a window on humankind's far-flung African origins.

<http://click.societyforscience-email.com/?qs=ff42347ba9e5087f95261dcdab32083ccc6574ed2c091c4775534098c4f4100f0d2534d2515a12c290df774ba39aabfe302851771b13c06c>

### BREAKING SCIENCE – Wolf Puppies Play Fetch Too, Researchers Find

In a series of experiments, a duo of researchers from the Department of Zoology at Stockholm University has observed eight-week-old wolf puppies spontaneously responding to social-communicative behaviors from an unfamiliar person by retrieving a ball.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/CI99SEi6XiE/wolf-puppies-fetch-08032.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/CI99SEi6XiE/wolf-puppies-fetch-08032.html?utm_source=feedburner&utm_medium=email)

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## BREAKING SCIENCE – African Gray Parrots Help Partners Obtain Food Rewards

African gray parrots (*Psittacus erithacus*) voluntarily and spontaneously help familiar parrots to achieve a goal, without obvious immediate benefit to themselves, says a duo of researchers from the Max Planck Institute for Ornithology and the Max Planck Comparative Cognition Research Station.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/bsBroyb3Tbs/african-gray-parrots-help-partners-08041.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/bsBroyb3Tbs/african-gray-parrots-help-partners-08041.html?utm_source=feedburner&utm_medium=email)

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## SCIENCE DAILY – Study traces evolution of acoustic communication

A study tracing acoustic communication across the tree of life of land-living vertebrates reveals that the ability to vocalize goes back hundreds of millions of years, is associated with a nocturnal lifestyle and has remained stable. Surprisingly, acoustic communication does not seem to drive the formation of new species across vertebrates.

<https://www.sciencedaily.com/releases/2020/01/200117080831.htm>

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## SCIENCE DAILY – First ancient DNA from West/Central Africa illuminates deep human past

Scientists have produced the first genome-wide ancient human DNA sequences from west and central Africa.

<https://www.sciencedaily.com/releases/2020/01/200122134916.htm>

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## NATURE BRIEFING – First genomes from ancient West Africans

Researchers have sequenced the genomes of four children who lived several thousand years ago in what is now Cameroon. The genomes are the first to be collected from any ancient human in West Africa, and underscore the yawning gap in scientists' understanding of African population history, relative to that of Eurasia, the Americas and even Oceania. The study might help to uncover the origins of a widespread migration that carried languages and agriculture across Africa, the most diverse place on Earth.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=89c0b17f2e&e=1db4b9a19b>

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## ACADEMIA.EDU – Evolution, revolution or saltation scenario for the emergence of modern cultures

*Phil. Trans. R. Soc. B (2011) 366, 1060-1069*

### FRANCESCO D'ERRICO & CHRIS B. STRINGER – Evolution, revolution or saltation scenario for the emergence of modern cultures?

Crucial questions in the debate on the origin of quintessential human behaviours are whether modern cognition and associated innovations are unique to our species and whether they emerged abruptly, gradually or as the result of a discontinuous process. Three scenarios have been proposed to account for the origin of cultural modernity. The first argues that modern cognition is unique to our species and the consequence of a genetic mutation that took place approximately 50 ka in Africa among already evolved anatomically modern humans. The second posits that cultural modernity emerged gradually in Africa starting at least 200 ka in concert with the origin of our species on that continent. The third states that innovations indicative of modern cognition are not restricted to our species and appear and disappear in Africa and Eurasia between 200 and 40 ka before becoming fully consolidated. We evaluate these scenarios in the light of new evidence from Africa, Asia and Europe and explore the mechanisms that may have led to modern cultures. Such reflections will demonstrate the need for further inquiry into the relationship between climate and demographic/cultural change in order to better understand the mechanisms of cultural transmission at work in Neanderthals and early *Homo sapiens* populations.

[https://www.academia.edu/4994307/Evolution\\_revolution\\_or\\_saltation\\_scenario\\_for\\_the\\_emergence\\_of\\_modern\\_cultures?email\\_work\\_card=title](https://www.academia.edu/4994307/Evolution_revolution_or_saltation_scenario_for_the_emergence_of_modern_cultures?email_work_card=title)

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## PUBLICATIONS

### American Journal of Physical Anthropology

#### PAPERS

#### JOHN C. WILLMAN et al with ISABELLE CREVECOEUR – Biocultural diversity in Late Pleistocene/Early Holocene Africa: Olduvai Hominid 1 (OH1) biological affinity and intentional body modification

The dentition of Olduvai Hominid 1 (OH1) exhibits an anomalous pattern of dental wear that was originally attributed to either intentional cultural modification (filing) or plant processing behaviors. A differential diagnosis of the wear and assessment of the biological affinity of OH1 is presented.

Macroscopic and microscopic observations of all labial and buccal tooth surfaces were undertaken to assess wear patterns. A multivariate analysis of mandibular morphology of OH1 compared to other Late Pleistocene, Holocene, and recent modern humans was used to ascertain biological affinity.

Our findings suggest that the expression of social identities through intentional body modification is more diverse than previously documented elsewhere in Africa during the Late Pleistocene (i.e., ablation) and Early Holocene (i.e., ablation, chipping, and filing).

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24007?campaign=wolearlyview>

## **LAURA MARTÍN-FRANCÉS et al with JOSÉ MARÍA BERMÚDEZ DE CASTRO – Ectopic maxillary third molar in Early Pleistocene Homo antecessor from Atapuerca-Gran Dolina site (Burgos, Spain)**

The fossil remains from the TD6.2 level of the Gran Dolina site (about 170 specimens) are assigned to Homo antecessor. Different geochronological methods place these hominins in the oxygen isotopic stage 21, between 0.8 and 0.85 million years ago (Ma). The immature individual H3 is represented by an almost complete midface (ATD6-69), preserving various teeth in situ. We used high-resolution microtomography (mCT) to investigate the abnormal position of the left M3, virtually reconstruct M2, and M3 as well as assessing the development stage of these. Finally, we compare this case with extinct and extant populations.

Based on the identified signs, we suggest that individual H3 suffered from a unilateral impaction of the M2 as a result of the ectopic position of the developing M3.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24010?campaign=wolearlyview>

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## Current Biology

### PAPERS

#### **DÉSIRÉE BRUCKS & AUGUSTE M.P. VON BAYERN – Parrots Voluntarily Help Each Other to Obtain Food Rewards**

Helping others to obtain benefits, even at a cost to oneself, poses an evolutionary puzzle [1]. While kin selection explains such “selfless” acts among relatives, only reciprocity (paying back received favors) entails fitness benefits for unrelated individuals [2]. So far, experimental evidence for both prosocial helping (providing voluntary assistance for achieving an action-based goal) and reciprocity has been reported in a few mammals but no avian species [3]. In order to gain insights into the evolutionary origins of these behaviors, the capacity of non-mammalian species for prosociality and for reciprocity needs to be investigated. We tested two parrot species in an instrumental-helping paradigm involving “token transfer.” Here, actors could provide tokens to their neighbor, who could exchange them with an experimenter for food. To verify whether the parrots understood the task’s contingencies, we systematically varied the presence of a partner and the possibility for exchange. We found that African grey parrots voluntarily and spontaneously transferred tokens to conspecific partners, whereas significantly fewer transfers occurred in the control conditions. Transfers were affected by the strength of the dyads’ affiliation and partially by the receivers’ attention-getting behaviors. Furthermore, the birds reciprocated the help once the roles were reversed. Blue-headed macaws, in contrast, transferred hardly any tokens. Species differences in social tolerance might explain this discrepancy. These findings show that instrumental helping based on a prosocial attitude, accompanied but potentially not sustained by reciprocity, is present in parrots, suggesting that this capacity evolved convergently in this avian group and mammals.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(19\)31469-1?dgcid=raven\\_jbs\\_etoc\\_email](https://www.cell.com/current-biology/fulltext/S0960-9822(19)31469-1?dgcid=raven_jbs_etoc_email)

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## Frontiers in Psychology

### PAPERS

#### **CINDY BEAUDOIN et al – Systematic Review and Inventory of Theory of Mind Measures for Young Children**

Theory of mind (TOM), the ability to infer mental states to self and others, has been a pervasive research theme across many disciplines including developmental, educational, neuro-, and social psychology, social neuroscience and speech therapy. TOM abilities have been consistently linked to markers of social adaptation and have been shown to be affected in a broad range of clinical conditions. Despite the wealth and breadth of research dedicated to TOM, identifying appropriate assessment tools for young children remains challenging. This systematic review presents an inventory of TOM measures for children aged 0–5 years and provides details on their content and characteristics. Electronic databases (1983–2019) and 9 test publisher catalogs were systematically reviewed. In total, 220 measures, identified within 830 studies, were found to assess the understanding of seven categories of mental states and social situations: emotions, desires, intentions, percepts, knowledge, beliefs and mentalistic understanding of non-literal communication, and pertained to 39 types of TOM sub-abilities. Information on the measures’ mode of presentation, number of items, scoring options, and target populations were extracted, and psychometric details are listed in summary tables. The results of the systematic review are summarized in a visual framework “Abilities in Theory of Mind Space” (ATOMS) which provides a new taxonomy of TOM sub-domains. This review highlights the remarkable variety of measures that have been created to assess TOM, but also the numerous methodological and psychometric challenges associated with developing and choosing appropriate measures, including issues related to the limited range of sub-abilities targeted, lack of standardization across studies and paucity of psychometric information provided.

[https://www.frontiersin.org/articles/10.3389/fpsyg.2019.02905/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_1220521\\_69\\_Psycho\\_20200123\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fpsyg.2019.02905/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1220521_69_Psycho_20200123_arts_A)

#### **INA BORNKESSEL-SCHLESEWSKY et al – Language Processing as a Precursor to Language Change: Evidence from Icelandic**

One of the main characteristics of human languages is that they are subject to fundamental changes over time. However, because of the long transitional periods involved, the internal dynamics of such changes are typically inaccessible. Here, we present a new approach to examining language change via its connection to language comprehension. By means of an EEG experiment on Icelandic, a prominent current example of a language in transition, we show that the neurophysiological

responses of native speakers already reflect projected changes that are not yet apparent in their overt behavior. Neurocognitive measures thus offer a means of predicting, rather than only retracing, language change.

[https://www.frontiersin.org/articles/10.3389/fpsyg.2019.03013/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_1220521\\_69\\_Psycho\\_20200123\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fpsyg.2019.03013/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1220521_69_Psycho_20200123_arts_A)

### **ANDREW B. BARRON & BRIAN HARE – Prosociality and a Sociosexual Hypothesis for the Evolution of Same-Sex Attraction in Humans**

Human same-sex sexual attraction (SSSA) has long been considered to be an evolutionary puzzle. The trait is clearly biological: it is widespread and has a strong additive genetic basis, but how SSSA has evolved remains a subject of debate. Of itself, homosexual sexual behavior will not yield offspring, and consequently individuals expressing strong SSSA that are mostly or exclusively homosexual are presumed to have lower fitness and reproductive success. How then did the trait evolve, and how is it maintained in populations? Here we develop a novel argument for the evolution of SSSA that focuses on the likely adaptive social consequences of SSSA. We argue that same sex sexual attraction evolved as just one of a suite of traits responding to strong selection for ease of social integration or prosocial behavior. A strong driver of recent human behavioral evolution has been selection for reduced reactive aggression, increased social affiliation, social communication, and ease of social integration. In many prosocial mammals sex has adopted new social functions in contexts of social bonding, social reinforcement, appeasement, and play. We argue that for humans the social functions and benefits of sex apply to same-sex sexual behavior as well as heterosexual behavior. As a consequence we propose a degree of SSSA, was selected for in recent human evolution for its non-conceptive social benefits. We discuss how this hypothesis provides a better explanation for human sexual attractions and behavior than theories that invoke sexual inversion or single-locus genetic models.

[https://www.frontiersin.org/articles/10.3389/fpsyg.2019.02955/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_1220521\\_69\\_Psycho\\_20200123\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fpsyg.2019.02955/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1220521_69_Psycho_20200123_arts_A)

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## Nature

### PAPERS

#### **MARK LIPSON et al with DAVID REICH – Ancient West African foragers in the context of African population history**

Our knowledge of ancient human population structure in sub-Saharan Africa, particularly prior to the advent of food production, remains limited. Here we report genome-wide DNA data from four children—two of whom were buried approximately 8,000 years ago and two 3,000 years ago—from Shum Laka (Cameroon), one of the earliest known archaeological sites within the probable homeland of the Bantu language group. One individual carried the deeply divergent Y chromosome haplogroup A00, which today is found almost exclusively in the same region. However, the genome-wide ancestry profiles of all four individuals are most similar to those of present-day hunter-gatherers from western Central Africa, which implies that populations in western Cameroon today—as well as speakers of Bantu languages from across the continent—are not descended substantially from the population represented by these four people. We infer an Africa-wide phylogeny that features widespread admixture and three prominent radiations, including one that gave rise to at least four major lineages deep in the history of modern humans.

<https://www.nature.com/articles/s41586-020-1929-1>

#### **SEPP KOLLMORGEN, RICHARD H. R. HAHNLOSER & VALERIO MANTE – Nearest neighbours reveal fast and slow components of motor learning**

Changes in behaviour resulting from environmental influences, development and learning are commonly quantified on the basis of a few hand-picked features (for example, the average pitch of acoustic vocalizations), assuming discrete classes of behaviours (such as distinct vocal syllables). However, such methods generalize poorly across different behaviours and model systems and may miss important components of change. Here we present a more-general account of behavioural change that is based on nearest-neighbour statistics, and apply it to song development in a songbird, the zebra finch. First, we introduce the concept of ‘repertoire dating’, whereby each rendition of a behaviour (for example, each vocalization) is assigned a repertoire time, reflecting when similar renditions were typical in the behavioural repertoire. Repertoire time isolates the components of vocal variability that are congruent with long-term changes due to vocal learning and development, and stratifies the behavioural repertoire into ‘regressions’, ‘anticipations’ and ‘typical renditions’. Second, we obtain a holistic, yet low-dimensional, description of vocal change in terms of a stratified ‘behavioural trajectory’, revealing numerous previously unrecognized components of behavioural change on fast and slow timescales, as well as distinct patterns of overnight consolidation across the behavioral repertoire. We find that diurnal changes in regressions undergo only weak consolidation, whereas anticipations and typical renditions consolidate fully. Because of its generality, our nonparametric description of how behaviour evolves relative to itself—rather than to a potentially arbitrary, experimenter-defined goal—appears well suited for comparing learning and change across behaviours and species, as well as biological and artificial systems.

<https://www.nature.com/articles/s41586-019-1892-x>

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## Nature Communications

### PAPERS

#### **MICHA HEILBRON et al with PETER HAGOORT – Word contexts enhance the neural representation of individual letters in early visual cortex**

Visual context facilitates perception, but how this is neurally implemented remains unclear. One example of contextual facilitation is found in reading, where letters are more easily identified when embedded in a word. Bottom-up models explain this word advantage as a post-perceptual decision bias, while top-down models propose that word contexts enhance perception itself. Here, we arbitrate between these accounts by presenting words and nonwords and probing the representational fidelity of individual letters using functional magnetic resonance imaging. In line with top-down models, we find that word contexts enhance letter representations in early visual cortex. Moreover, we observe increased coupling between letter information in visual cortex and brain activity in key areas of the reading network, suggesting these areas may be the source of the enhancement. Our results provide evidence for top-down representational enhancement in word recognition, demonstrating that word contexts can modulate perceptual processing already at the earliest visual regions.

<https://www.nature.com/articles/s41467-019-13996-4>

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## Nature Scientific Reports

### PAPERS

#### **BART DE BOER et al with CEDRIC BOECKX – Evolutionary Dynamics Do Not Motivate a Single-Mutant Theory of Human Language**

One of the most controversial hypotheses in cognitive science is the Chomskyan evolutionary conjecture that language arose instantaneously in humans through a single mutation. Here we analyze the evolutionary dynamics implied by this hypothesis, which has never been formalized before. The hypothesis supposes the emergence and fixation of a single mutant (capable of the syntactic operation Merge) during a narrow historical window as a result of frequency-independent selection under a huge fitness advantage in a population of an effective size no larger than ~15 000 individuals. We examine this proposal by combining diffusion analysis and extreme value theory to derive a probabilistic formulation of its dynamics. We find that although a macro-mutation is much more likely to go to fixation if it occurs, it is much more unlikely a priori than multiple mutations with smaller fitness effects. The most likely scenario is therefore one where a medium number of mutations with medium fitness effects accumulate. This precise analysis of the probability of mutations occurring and going to fixation has not been done previously in the context of the evolution of language. Our results cast doubt on any suggestion that evolutionary reasoning provides an independent rationale for a single-mutant theory of language.

<https://www.nature.com/articles/s41598-019-57235-8>

#### **GEORGETTE ARGIRIS et al – Neurosurgical lesions to sensorimotor cortex do not impair action verb processing**

There is ongoing debate regarding the role that sensorimotor regions play in conceptual processing, with embodied theories supporting their direct involvement in processing verbs describing body part movements. Patient lesion studies examining a causal role for sensorimotor activation in conceptual task performance have suffered the caveat of lesions being largely diffuse and extensive beyond sensorimotor cortices. The current study addresses this limitation in reporting on 20 pre-operative neurosurgical patients with focal lesion to the pre- and post-central area corresponding to somatotopic representations. Patients were presented with a battery of neuropsychological tests and experimental tasks tapping into motor imagery and verbal conceptual verb processing in addition to neurophysiological measures including DTI, fMRI, and MEP being measured. Results indicated that left tumor patients who presented with a lesion at or near somatotopic hand representations performed significantly worse on the mental rotation hand task and that performance correlated with MEP amplitudes in the upper limb motor region. Furthermore, performance on tasks of verbal processing was within the normal range. Taken together, while our results evidence the involvement of the motor system in motor imagery processes, they do not support the embodied view that sensorimotor regions are necessary to tasks of action verb processing.

<https://www.nature.com/articles/s41598-019-57361-3>

#### **YOONJUNG YI et al – Information transfer through food from parents to offspring in wild Javan gibbons**

The adaptive functions of food transfer from parents to their offspring have been explained mainly by two mutually non-exclusive hypotheses: the nutritional and informational hypotheses. In this study, we examined the functions of food transfer in wild Javan gibbons (*Hylobates moloch*) by testing these hypotheses from both infants' and mothers' perspectives. We observed 83 cases of food solicitations that resulted in 54 occasions of food transfers in three groups over a 19-month period in Gunung Halimun-Salak National Park, Indonesia. Infants initiated all solicitations directed at their mothers with one solicitation towards a father. Food solicitation rate decreased as infant age increased and ceased before weaning. As predicted by the informational hypothesis, infants solicited more food items difficult to obtain and preferred by their parents. On the contrary to the nutritional hypothesis, infants solicited low-quality items more often than high-quality items. Mothers did not change probability of food transfer according to the food characteristics or infant age. Hence, our results suggest that the primary function of food transfer from mother to infant Javan gibbons seems to be information transfer rather than nutritional aids, similarly to great apes.

<https://www.nature.com/articles/s41598-019-57021-6>

### **J. A. MUÑOZ-REYES et al – The Male Warrior Hypothesis: Testosterone-related Cooperation and Aggression in the Context of Intergroup Conflict**

The Male Warrior Hypothesis (MWH) establishes that men's psychology has been shaped by inter-group competition to acquire and protect reproductive resources. In this context, sex-specific selective pressures would have favored cooperation with the members of one's group in combination with hostility towards outsiders. We investigate the role of developmental testosterone, as measured indirectly through static markers of prenatal testosterone (2D:4D digit ratio) and pubertal testosterone (body musculature and facial masculinity), on both cooperation and aggressive behavior in the context of intergroup conflict among men. Supporting the MWH, our results show that the intergroup conflict scenario promotes cooperation within group members and aggression toward outgroup members. Regarding the hormonal underpinnings of this phenomenon, we find that body musculature is positively associated with aggression and cooperation, but only for cooperation when context (inter-group competition) is taken into account. Finally, we did not find evidence that the formidability of the group affected individual rates of aggression or cooperation, controlling for individual characteristics. <https://www.nature.com/articles/s41598-019-57259-0>

### **PATRICK NEILANDS et al – Watching eyes do not stop dogs stealing food: evidence against a general risk-aversion hypothesis for the watching-eye effect**

The presence of pictures of eyes reduces antisocial behaviour in humans. It has been suggested that this 'watching-eye' effect is the result of a uniquely human sensitivity to reputation-management cues. However, an alternative explanation is that humans are less likely to carry out risky behaviour in general when they feel like they are being watched. This risk-aversion hypothesis predicts that other animals should also show the watching-eye effect because many animals behave more cautiously when being observed. Dogs are an ideal species to test between these hypotheses because they behave in a risk-averse manner when being watched and attend specifically to eyes when assessing humans' attentional states. Here, we examined if dogs were slower to steal food in the presence of pictures of eyes compared to flowers. Dogs showed no difference in the latency to steal food between the two conditions. This finding shows that dogs are not sensitive to watching-eyes and is not consistent with a risk-aversion hypothesis for the watching-eye effect. <https://www.nature.com/articles/s41598-020-58210-4>

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## **New Scientist**

### **ARTICLES**

#### **SIMON INGS – Man raised alongside chimps says it should never happen again**

Nick Lehane's performance piece, Chimpanzee, in London for the first time, reveals how tragedy stalked the amazing achievement of raising chimps in human families

<https://www.newscientist.com/article/2230566-man-raised-alongside-chimps-says-it-should-never-happen-again/#ixzz6BqgmIckx>

#### **GRAHAM LAWTON – Stone age sailors**

Some 65,000 years ago, early humans washed up on the lost continent of Sahul, which contained Australia. New clues hint it was no accident but rather the first great maritime expedition.

<https://newscientist.us3.list-manage.com/track/click?u=6710b48697068ec8e08d69abf&id=886516da92&e=c07cfd7395>

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## **PeerJ**

### **PAPERS**

#### **JULIA RIEDEL et al with CHRISTOPHE BOESCH – Social rank overrides environmental and community fluctuations in determining meat access by female chimpanzees in the Taï National Park, Côte d'Ivoire**

Meat, long hypothesized as an important food source in human evolution, is still a substantial component of the modern human diet, with some humans relying entirely on meat during certain times of the year. Understanding the socio-ecological context leading to the successful acquisition and consumption of meat by chimpanzees (*Pan troglodytes*), our closest living relative, can provide insight into the emergence of this trait because humans and chimpanzees are unusual among primates in that they both (i) hunt mammalian prey, (ii) share meat with community members, and (iii) form long-term relationships and complex social hierarchies within their communities. However, females in both human hunter-gatherer societies as well as chimpanzee groups rarely hunt, instead typically accessing meat via males that share meat with group members. In general, female chimpanzee dominance rank affects feeding competition, but so far, the effect of female dominance rank on meat access found different results within and across studied chimpanzee groups. Here we contribute to the debate on how female rank influences meat access while controlling for several socio-ecological variables. Multivariate analyses of 773 separate meat-eating events collected over more than 25 years from two chimpanzee communities located in the Taï National Park, Côte d'Ivoire, were used to test the importance of female dominance rank for being present at, and for acquiring meat, during meat-eating events. We found that high-ranking females were more likely to be present during a meat-eating event and, in addition, were more likely to eat meat compared to the subordinates. These findings were robust to both large demographic changes (decrease of community size) and seasonal ecological changes (fruit abundance

dynamics). In addition to social rank, we found that other female properties had a positive influence on presence to meat-eating events and access to meat given presence, including oestrus status, nursing of a small infant, and age. Similar to findings in other chimpanzee populations, our results suggest that females reliably acquire meat over their lifetime despite rarely being active hunters. The implication of this study supports the hypothesis that dominance rank is an important female chimpanzee property conferring benefits for the high-ranking females.

<https://peerj.com/articles/8283/>

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## PLoS Biology

### PAPERS

#### **ASHLEY L. COMER et al – Increased expression of schizophrenia-associated gene C4 leads to hypoconnectivity of prefrontal cortex and reduced social interaction**

Schizophrenia is a severe mental disorder with an unclear pathophysiology. Increased expression of the immune gene C4 has been linked to a greater risk of developing schizophrenia; however, it is not known whether C4 plays a causative role in this brain disorder. Using confocal imaging and whole-cell electrophysiology, we demonstrate that overexpression of C4 in mouse prefrontal cortex neurons leads to perturbations in dendritic spine development and hypoconnectivity, which mirror neuropathologies found in schizophrenia patients. We find evidence that microglia-mediated synaptic engulfment is enhanced with increased expression of C4. We also show that C4-dependent circuit dysfunction in the frontal cortex leads to decreased social interactions in juvenile and adult mice. These results demonstrate that increased expression of the schizophrenia-associated gene C4 causes aberrant circuit wiring in the developing prefrontal cortex and leads to deficits in juvenile and adult social behavior, suggesting that altered C4 expression contributes directly to schizophrenia pathogenesis.

<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000604#pbio.3000604.ref005>

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## PNAS

### ARTICLES

#### **AUGUSTE M. P. VON BAYERN, IVO JACOBS & MATHIAS OSVATH – Tool-using puffins prick the puzzle of cognitive evolution**

In PNAS, Fayet et al. report on two cases of tool use in a seabird. In two distant populations they recorded Arctic puffins (*Fratercula arctica*) using sticks to scratch themselves. The documentation of tool use in this species expands the ever-growing list of tool-using birds through rare observations under natural conditions. Although it is neither the first observation of tool use in wild seabirds, nor the first of stick-tool use outside of a foraging context in wild birds, these findings contribute to the debate on the evolutionary and cognitive origins of tool use.

<https://www.pnas.org/content/early/2020/01/21/1922117117?etoc=>

### PAPERS

#### **JOHN E. KUTZBACH et al – African climate response to orbital and glacial forcing in 140,000-y simulation with implications for early modern human environments**

A climate/vegetation model simulates episodic wetter and drier periods at the 21,000-y precession period in eastern North Africa, the Arabian Peninsula, and the Levant over the past 140,000 y. Large orbitally forced wet/dry extremes occur during interglacial time, ~130 to 80 ka, and conditions between these two extremes prevail during glacial time, ~70 to 15 ka. Orbital precession causes high seasonality in Northern Hemisphere (NH) insolation at ~125, 105, and 83 ka, with stronger and northward extended summer monsoon rains in North Africa and the Arabian Peninsula and increased winter rains in the Mediterranean Basin. The combined effects of these two seasonally distinct rainfall regimes increase vegetation and narrow the width of the Saharan–Arabian desert and semidesert zones. During the opposite phase of the precession cycle (~115, 95, and 73 ka), NH seasonality is low, and decreased summer insolation and increased winter insolation cause monsoon and storm track rains to decrease and the width of the desert zone to increase. During glacial time (~70 to 15 ka), forcing from large ice sheets and lowered greenhouse gas concentrations combine to increase winter Mediterranean storm track precipitation; the southward retreat of the northern limit of summer monsoon rains is relatively small, thereby limiting the expansion of deserts. The lowered greenhouse gas concentrations cause the near-equatorial zone to cool and reduce convection, causing drier climate with reduced forest cover. At most locations and times, the simulations agree with environmental observations. These changing regional patterns of climate/vegetation could have influenced the dispersal of early humans through expansions and contractions of well-watered corridors.

<https://www.pnas.org/content/early/2020/01/15/1917673117.abstract?etoc=>

#### **MICHAEL HAHN, DAN JURAFSKY & RICHARD FUTRELL – Universals of word order reflect optimization of grammars for efficient communication**

The universal properties of human languages have been the subject of intense study across the language sciences. We report computational and corpus evidence for the hypothesis that a prominent subset of these universal properties—those related to word order—result from a process of optimization for efficient communication among humans, trading off the need to reduce complexity with the need to reduce ambiguity. We formalize these two pressures with information-theoretic and neural-network models of complexity and ambiguity and simulate grammars with optimized word-order parameters on

large-scale data from 51 languages. Evolution of grammars toward efficiency results in word-order patterns that predict a large subset of the major word-order correlations across languages.

<https://www.pnas.org/content/early/2020/01/16/1910923117.abstract?etoc>

### **KENJI ITAO & KUNIIHIKO KANEKO – Evolution of kinship structures driven by marriage tie and competition**

The family unit and kinship structures form the basis of social relationships in indigenous societies. Families constitute a cultural group, a so-called clan, within which marriage is prohibited by the incest taboo. The clan attribution governs the mating preference and descent relationships by certain rules. Such rules form various kinship structures, including generalized exchange, an indirect exchange of brides among more than two clans, and restricted exchange, a direct exchange of brides with the flow of children to different clans. These structures are distributed in different areas and show different cultural consequences. However, it is still unknown how they emerge or what conditions determine different structures. Here, we build a model of communities consisting of lineages and family groups and introduce social cooperation among kin and mates and conflict over mating. Each lineage has parameters characterizing the trait and mate preference, which determines the possibility of marriage and the degree of cooperation and conflict among lineages. Lineages can cooperate with those having similar traits to their own or mates', whereas lineages with similar preferences compete for brides. In addition, we introduce community-level selection by eliminating communities with smaller fitness and follow the so-called hierarchical Moran process. We numerically demonstrate that lineages are clustered in the space of traits and preferences, resulting in the emergence of clans with the incest taboo. Generalized exchange emerges when cooperation is strongly needed, whereas restricted exchange emerges when the mating conflict is strict. This may explain the geographical distribution of kinship structures in indigenous societies.

<https://www.pnas.org/content/early/2020/01/15/1917716117.abstract?etoc>

### **EDMOND AWAD et al – Universals and variations in moral decisions made in 42 countries by 70,000 participants**

When do people find it acceptable to sacrifice one life to save many? Cross-cultural studies suggested a complex pattern of universals and variations in the way people approach this question, but data were often based on small samples from a small number of countries outside of the Western world. Here we analyze responses to three sacrificial dilemmas by 70,000 participants in 10 languages and 42 countries. In every country, the three dilemmas displayed the same qualitative ordering of sacrifice acceptability, suggesting that this ordering is best explained by basic cognitive processes rather than cultural norms. The quantitative acceptability of each sacrifice, however, showed substantial country-level variations. We show that low relational mobility (where people are more cautious about not alienating their current social partners) is strongly associated with the rejection of sacrifices for the greater good (especially for Eastern countries), which may be explained by the signaling value of this rejection. We make our dataset fully available as a public resource for researchers studying universals and variations in human morality.

<https://www.pnas.org/content/early/2020/01/14/1911517117.abstract?etoc>

### **ANNETTE L. FAYET, ERPUR SNÆR HANSEN & DORA BIRO – Evidence of tool use in a seabird**

Documenting novel cases of tool use in wild animals can inform our understanding of the evolutionary drivers of the behavior's emergence in the natural world. We describe a previously unknown tool-use behavior for wild birds, so far only documented in the wild in primates and elephants. We observed 2 Atlantic puffins at their breeding colonies, one in Wales and the other in Iceland (the latter captured on camera), spontaneously using a small wooden stick to scratch their bodies. The importance of these observations is 3-fold. First, while to date only a single form of body-care-related tool use has been recorded in wild birds (anting), our finding shows that the wild avian tool-use repertoire is wider than previously thought and extends to contexts other than food extraction. Second, we expand the taxonomic breadth of tool use to include another group of birds, seabirds, and a different suborder (Lari). Third, our independent observations span a distance of more than 1,700 km, suggesting that occasional tool use may be widespread in this group, and that seabirds' physical cognition may have been underestimated.

<https://www.pnas.org/content/117/3/1277.abstract?etoc>

### **KATHLEEN M. ROSE, EZRA M. MARKOWITZ & DOMINIQUE BROSSARD – Scientists' incentives and attitudes toward public communication**

In an era of large-scale science-related challenges and rapid advancements in groundbreaking science with major societal implications, communicating about science is critical. The profile of science communication has increased over the last few decades, with multiple sectors calling for such activities. As scientists respond to calls for public-facing communication, we need to evaluate where the scientific community stands. We conducted a unique census of science faculty at land-grant universities across the United States intended to spur the next generation of science communicators and research. Despite scientists' strong approval of science communication efforts, potential areas of tension, attributable to lack of institutional support and confidence in communication skills, constrain these efforts.

<https://www.pnas.org/content/117/3/1274.abstract?etoc>

### **SARA E. MILLER et al – Evolutionary dynamics of recent selection on cognitive abilities**

Cognitive abilities can vary dramatically among species. The relative importance of social and ecological challenges in shaping cognitive evolution has been the subject of a long-running and recently renewed debate, but little work has sought to understand the selective dynamics underlying the evolution of cognitive abilities. Here, we investigate recent selection related to cognition in the paper wasp *Polistes fuscatus*—a wasp that has uniquely evolved visual individual recognition abilities. We generate high quality de novo genome assemblies and population genomic resources for multiple species of paper wasps and use a population genomic framework to interrogate the probable mode and tempo of cognitive evolution. Recent, strong, hard selective sweeps in *P. fuscatus* contain loci annotated with functions in long-term memory formation, mushroom body development, and visual processing, traits which have recently evolved in association with individual recognition. The homologous pathways are not under selection in closely related wasps that lack individual recognition. Indeed, the prevalence of candidate cognition loci within the strongest selective sweeps suggests that the evolution of cognitive abilities has been among the strongest selection pressures in *P. fuscatus*' recent evolutionary history. Detailed analyses of selective sweeps containing candidate cognition loci reveal multiple cases of hard selective sweeps within the last few thousand years on de novo mutations, mainly in noncoding regions. These data provide unprecedented insight into some of the processes by which cognition evolves.

<https://www.pnas.org/content/early/2020/01/23/1918592117.abstract?etoc>

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## Science Advances

### PAPERS

### **T. FERNÁNDEZ-CRESPO et al – Multi-isotope evidence for the emergence of cultural alterity in late Neolithic Europe**

The coexistence of cultural identities and their interaction is a fundamental topic of social sciences that is not easily addressed in prehistory. Differences in mortuary treatment can help approach this issue. Here, we present a multi-isotope study to track both diet and mobility through the life histories of 32 broadly coeval late Neolithic individuals interred in caves and in megalithic graves of a restricted region of northern Iberia. The results show significant differences in infant- and child-rearing practices, in subsistence strategies, and in landscape use between burial locations. From this, we posit that the presence of communities with distinct lifestyles and cultural backgrounds is a primary reason for late Neolithic variability in burial location in western Europe and provides evidence of an early “them and us” scenario. We argue that this differentiation could have played a role in the building of lasting structures of socioeconomic inequality and, occasionally, violent conflict.

[https://advances.sciencemag.org/content/6/4/eaay2169?utm\\_campaign=toc\\_advances\\_2020-01-24&et rid=17774313&et cid=3177850](https://advances.sciencemag.org/content/6/4/eaay2169?utm_campaign=toc_advances_2020-01-24&et rid=17774313&et cid=3177850)

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