EAORC BULLETIN 880 – 26 April 2020

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, 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 – Your Neanderthal DNA may have surprisingly little impact on your looks, moods

If you think you got your freckles, red hair, or even narcolepsy from a Neanderthal in your family tree, think again. People around the world do carry traces of Neanderthals in their genomes. But a study of tens of thousands of Icelanders finds their Neanderthal legacy had little or no impact on most of their physical traits or disease risk.
https://www.sciencemag.org/news/2020/04/neanderthal-dna-you-carry-may-have-surprisingly-little-impact-your-looks-moods?utm_campaign=news_daily_2020-04-22&et_rid=17774313&et_cid=3298698

SCIAM NEWS – Signs of Modern Human Cognition Were Found in an Indonesian Cave

Imagining things that do not exist in nature and weaving them into narratives are unique signatures of the human psyche. These abilities are abundantly evident in the earliest example of narrative art, which was recently discovered in a cave on the Indonesian island of Sulawesi. In these newly reported images, one or more Pleistocene-epoch humans on this Southeast Asian island depicted a scene containing several figures that seem to be people. But mysteriously, some of these "humans" have snouts, another has a tail and still another has a bird's beak. The human-animal hybrids must have lived only in the imagination of their creators. Far from a literal copy of the natural world, they offer a window into the creative minds of the prehistoric artists. The images' inventive mixing of forms reveals a surprisingly modern reasoning and a sophisticated narrative imagination. At 44,000 years of age, they are the oldest known cave paintings made by modern humans.
https://www.scientificamerican.com/article/signs-of-modern-human-cognition-were-found-in-an-indonesian-cave/

BREAKING SCIENCE – Human Brain's Language Pathway Much Older than Thought

An international team of researchers led by Newcastle University Medical School has discovered an earlier evolutionary origin to the human language pathway in the brain, pushing back its origin by at least 20 million years.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/LryVuzTsWrM/human-language-pathway-08350.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – DNA is Just List of Ingredients, Researcher Says

The common view of heredity is that all information passed down from one generation to the next is stored in DNA. But University of Maryland's Dr. Antony Jose argues that DNA is just the ingredient list and that the instructions needed to build an organism are much more complicated and stored in the molecules that regulate a cell's DNA and other functioning systems.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/PtDeuqqO0Ks/heredity-framework-08360.html?utm_source=feedburner&utm_medium=email

SCIENCE DAILY – Origins of human language pathway in the brain at least 25 million years old

The human language pathway in the brain has been identified by scientists as being at least 25 million years old -- 20 million years older than previously thought.

https://www.sciencedaily.com/releases/2020/04/200420125519.htm

SCIENCE DAILY – Neolithic genomes from modern-day Switzerland indicate parallel ancient societies

Genetic research throughout Europe shows evidence of drastic population changes near the end of the Neolithic period, as shown by the arrival of ancestry related to pastoralists from the Pontic-Caspian steppe. But the timing of this change and the arrival and mixture process of these peoples, particularly in Central Europe, is little understood. In a new study, researchers analyze 96 ancient genomes, providing new insights into the ancestry of modern Europeans.
https://www.sciencedaily.com/releases/2020/04/200420084247.htm

SCIENCE DAILY – What protects minority languages from extinction?

A new study uses mathematical modelling to suggest two mechanisms through which majority and minority languages come to coexist in the same area.
https://www.sciencedaily.com/releases/2020/04/200422112301.htm

SCIENCE DAILY – Study sheds light on unique culinary traditions of prehistoric hunter-gatherers

A new study suggests the culinary tastes of ancient people were not solely dictated by the foods available in a particular area, but also influenced by the traditions and habits of cultural groups.
https://www.sciencedaily.com/releases/2020/04/200422091151.htm

SCIENCE DAILY – How birds evolved big brains

Evolutionary biologists and paleontologists have reconstructed the evolution of the avian brain using a massive dataset of brain volumes from dinosaurs, extinct birds like Archaeopteryx and the great auk, and modern birds.
https://www.sciencedaily.com/releases/2020/04/200423130506.htm

SCIENCE DAILY – Icelandic DNA jigsaw-puzzle brings new knowledge about Neanderthals

An international team of researchers has put together a new image of Neanderthals based on the genes Neanderthals left in the DNA of modern humans when they had children with them about 50,000 years ago. The researchers found the new information by trawling the genomes of more than 27,000 Icelanders. Among other things, they discovered that Neanderthal children had older mothers and younger fathers than the Homo-Sapien children in Africa did at the time.
https://www.sciencedaily.com/releases/2020/04/200423130427.htm

NATURE BRIEFING – Podcast: Our Denisovan DNA

By combing through the DNA of over 27,000 modern-day Icelanders, researchers have uncovered new insights about the ancient hominin species who interbred with Homo sapiens. Plus, the scent of lemur love, a hidden Viking trade route and ‘gargantuan’ hail.
https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=3e46be6774&e=1db4b9a19b

SAPIENS – Animal Grief Shows We Aren’t Meant to Die Alone

The coronavirus pandemic is robbing some people of a chance to come together to mourn: a practice deeply embedded in many animal species.
https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=70e8245e42&e=dc0eff6180

PUBLICATIONS

Animal Behaviour

PAPERS

BRUNO DÍAZ LÓPEZ – When personality matters: personality and social structure in wild bottlenose dolphins, Tursiops truncatus

There is increasing evidence that animal personality can affect many aspects of an individual's behaviour, life history and fitness. However, there have been few studies about the link between personality and social organization in the context of wild mammals in their own natural environments. This article reports on ecologically relevant data, linking experimental data from the wild to long-term social association data in a socially and cognitively complex mammal species (bottlenose dolphin, Tursiops truncatus). Here, I used behavioural data to describe personality differences between bottlenose dolphins and social network analysis to assess the relationship between personality and social structure. First, I measured the reaction of photo-identified individuals over time and across contexts as a trade-off between a novelty-seeking behaviour (boldness) and a novelty-averse behaviour (shyness). Second, I applied social network analysis to understand the link between the observed shy–bold continuum and social organization, while controlling for other factors that could contribute to affiliation. This study presents for the first time consistent individual differences in behavioural response to novelty, as a proxy for the shy–bold continuum, in wild bottlenose dolphins. Bold individuals had a central role in the social network with stronger associations

than shy individuals, suggesting that bold individuals may play an important role in group cohesion, group stability and the spread of information through the network. Together, these findings provide insights into how a social network is structured by personality in wild bottlenose dolphins, with potential fitness consequences. Furthermore, this study provides additional evidence of the existence of social personalities in nonhuman animals and contributes to the understanding of the role of personality in determining the extent to which mammals associate with others.
https://www.sciencedirect.com/science/article/abs/pii/S0003347220300610?dgcid=raven_sd_via_email

LAURA R. LABARGE et al – Reactive and pre-emptive spatial cohesion in a social primate
Spatial cohesion in group-living animals is assumed as a risk-sensitive characteristic. Few studies have explicitly investigated this assumption or asked whether risk-related changes in spatial cohesion operate over short-term or long-term scales. We explored whether two groups of wild samango monkeys, Cercopithecus albogularis schwarzi, would adjust cohesion in reaction to naturally occurring risk from eagles and intergroup encounters using the number of conspecific neighbours as our response. Data on these directly observed encounters were used to assess reactive responses to immediate events. GPS-recorded locations of these encounters allowed us to create relative risk landscapes to investigate whether these groups might pre-emptively increase cohesion in high risk locations, in the absence of a direct threat. Multimodel inference was used to compare support for candidate models representing biological hypotheses. We found support for changes in cohesion in reaction to immediate intergroup conflict in both study groups. In contrast, only eagle risk apparently elicited a pre-emptive response. These results suggest that spatial cohesion is risk sensitive, but that responses differ between types of risk and between groups.
https://www.sciencedirect.com/science/article/abs/pii/S0003347220300658?dgcid=raven_sd_via_email

MATTHIAS-CLAUDIO LORETTO et al with BERND HEINRICH – Contextual imitation in juvenile common ravens, Corvus corax
Social learning is a powerful mechanism of information acquisition and can be found in various species. According to the type of information transmitted, animals may change their motivation to perform actions, shift their perception/attention to relevant stimuli, associate other individuals' behaviours with particular stimuli/events or learn to perform 'novel' behaviours. The latter is referred to as imitation and has been considered a cognitively demanding mechanism necessary for high-fidelity copying, which may or may not occur in nonhuman animals. We tested the ability of 20 juvenile ravens to imitate an action demonstrated by a human experimenter. Birds of two test groups could observe a familiar human executing one of two opening techniques at an artificial fruit apparatus (horizontal or vertical hand movements directed towards the same location), whereas birds of a control group observed the human touching but not opening the apparatus. Ravens of both test groups tended to use the same direction of movements as observed, when they opened the apparatus themselves with their beak. Comparison with the control group revealed that ravens had a predisposition to manipulate the apparatus by pecking. Hence, observers of vertical hand movements most likely strengthened their initial preference for executing peck movements towards an item enclosing food, whereas observers of horizontal hand movements started to apply beak/head movements that hardly occur during foraging and are 'novel' to this context. Juvenile ravens are thus capable of imitating simple motor actions, even though they may use a different body part to execute the behaviours than human demonstrators.
https://www.sciencedirect.com/science/article/pii/S0003347220300671?dgcid=raven_sd_via_email

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Current Biology

PAPERS

CATERINA MARINO, CARLINE BERNARD & JUDIT GERVAIN – Word Frequency Is a Cue to Lexical Category for 8-Month-Old Infants
The linguistic distinction between function words (functors) (e.g., the, he, that, on…), signaling grammatical structure, and content words (e.g., house, blue, carry…), carrying meaning, is universal across the languages of the world. These two lexical categories also differ in their phonological makeup (functors being shorter and more minimal) and frequency of occurrence (individual functors being much more frequent than most content words). The frequency-based discrimination of the two categories could constitute a powerful mechanism for infants to acquire the basic building blocks of language. As functors constitute closed classes and content words come in open classes, we examined whether 8-month-old monolingual infants relied on word frequency to categorize and track functors and content words. In six artificial grammar-learning experiments, we have found that infants process frequent words as belonging to closed classes, and infrequent words as belonging to open classes, and they map the relative order of these categories following the basic word order of their native language. These findings provide the earliest evidence that infants use word frequency as a cue to lexical categories and combine them to build rudimentary representations of grammar.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)30114-7?dgcid=raven_jbs_etoc_email

DANIEL T. KSEPKA et al – Tempo and Pattern of Avian Brain Size Evolution
Relative brain sizes in birds can rival those of primates, but large-scale patterns and drivers of avian brain evolution remain elusive. Here, we explore the evolution of the fundamental brain-body scaling relationship across the origin and evolution of birds. Using a comprehensive dataset sampling> 2,000 modern birds, fossil birds, and theropod dinosaurs, we infer patterns of brain-body co-variation in deep time. Our study confirms that no significant increase in relative brain size accompanied the

trend toward miniaturization or evolution of flight during the theropod-bird transition. Critically, however, theropods and basal birds show weaker integration between brain size and body size, allowing for rapid changes in the brain-body relationship that set the stage for dramatic shifts in early crown birds. We infer that major shifts occurred rapidly in the aftermath of the Cretaceous-Paleogene mass extinction within Neoaves, in which multiple clades achieved higher relative brain sizes because of a reduction in body size. Parrots and corvids achieved the largest brains observed in birds via markedly different patterns. Parrots primarily reduced their body size, whereas corvids increased body and brain size simultaneously (with rates of brain size evolution outpacing rates of body size evolution). Collectively, these patterns suggest that an early adaptive radiation in brain size laid the foundation for subsequent selection and stabilization.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)30430-9?dgcid=raven_jbs_aip_email

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Frontiers in Communication

PAPERS

ALAN RUMSEY, LAUREN W. REED & FRANCESCA MERLAN – Ku Waru Clause Chaining and the Acquisition of Complex Syntax

How do children learn to understand and use complex syntactic constructions? In English, Diessel (2004) shows that they do so in two different ways. Complex sentences with dependent clauses (e.g., “Peter promised that he would come”) develop out of simple sentences that are gradually expanded into multi-clause ones. Complex sentences with coordinate clauses (e.g., “He tried hard, but he failed”) develop by integrating two independent sentences into a single two-clause unit. Here we expand on that research by focusing on the acquisition of a kind of complex syntactic structure which involves both dependency and coordination—the clause chain—in Ku Waru, a Papuan language spoken in the Western Highlands of Papua New Guinea. Clause chains are constructions coordinating multiple clauses in sequence, where the non-final or “medial” clauses are in a dependent relationship with the final clause. One function of clause chains, which is often taken to be the prototypical one, is to refer to a series of events in sequence. Some Ku Waru clause chains do refer to sequential events. Other Ku Waru clause chains containing particular verbs refer to single events, sometimes with the particular verb providing aspectual or adverbial qualification (“keep doing,” “do quickly,” etc.). In this article, we track the acquisition of several different kinds of clause chains based on longitudinal recordings of four children acquiring Ku Waru as their first language between the ages of 1½ and 5. We show that, although there are differences among the children in the ages at which they acquire the various kinds of clause chain, all four of them follow the same series of steps in doing so. In conclusion, we compare our findings to Diessel's for English. We find that they are similar in some ways and different in others, which may be related to the differences between subordinate constructions, coordinate non-dependent constructions and coordinate-dependent constructions.
https://www.frontiersin.org/articles/10.3389/fcomm.2020.00019/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1306575_14_Commun_20200421_arts_A

Nature

PAPERS

LAURITS SKOV et al – The nature of Neanderthal introgression revealed by 27,566 Icelandic genomes

Human evolutionary history is rich with the interbreeding of divergent populations. Most humans outside of Africa trace about 2% of their genomes to admixture from Neanderthals, which occurred 50–60 thousand years ago1. Here we examine the effect of this event using 14.4 million putative archaic chromosome fragments that were detected in fully phased whole-genome sequences from 27,566 Icelanders, corresponding to a range of 56,388–112,709 unique archaic fragments that cover 38.0–48.2% of the callable genome. On the basis of the similarity with known archaic genomes, we assign 84.5% of fragments to an Altai or Vindija Neanderthal origin and 3.3% to Denisovan origin; 12.2% of fragments are of unknown origin. We find that Icelanders have more Denisovan-like fragments than expected through incomplete lineage sorting. This is best explained by Denisovan gene flow, either into ancestors of the introgressing Neanderthals or directly into humans. A within-individual, paired comparison of archaic fragments with syntenic non-archaic fragments revealed that, although the overall rate of mutation was similar in humans and Neanderthals during the 500 thousand years that their lineages were separate, there were differences in the relative frequencies of mutation types—perhaps due to different generation intervals for males and females. Finally, we assessed 271 phenotypes, report 5 associations driven by variants in archaic fragments and show that the majority of previously reported associations are better explained by non-archaic variants.
https://www.nature.com/articles/s41586-020-2225-9

Nature Communications

PAPERS

YIZHEN ZHANG et al – Connecting concepts in the brain by mapping cortical representations of semantic relations

In the brain, the semantic system is thought to store concepts. However, little is known about how it connects different concepts and infers semantic relations. To address this question, we collected hours of functional magnetic resonance imaging data from human subjects listening to natural stories. We developed a predictive model of the voxel-wise response and further applied it to thousands of new words. Our results suggest that both semantic categories and relations are represented by spatially overlapping cortical patterns, instead of anatomically segregated regions. Semantic relations that

reflect conceptual progression from concreteness to abstractness are represented by cortical patterns of activation in the default mode network and deactivation in the frontoparietal attention network. We conclude that the human brain uses distributed networks to encode not only concepts but also relationships between concepts. In particular, the default mode network plays a central role in semantic processing for abstraction of concepts.
https://www.nature.com/articles/s41467-020-15804-w

Nature Neuroscience

PAPERS

FABIEN BALEZEAU et al with ANGELA D. FRIEDERICI – Primate auditory prototype in the evolution of the arcuate fasciculus

The human arcuate fasciculus pathway is crucial for language, interconnecting posterior temporal and inferior frontal areas. Whether a monkey homolog exists is controversial and the nature of human-specific specialization unclear. Using monkey, ape and human auditory functional fields and diffusion-weighted MRI, we identified homologous pathways originating from the auditory cortex. This discovery establishes a primate auditory prototype for the arcuate fasciculus, reveals an earlier phylogenetic origin and illuminates its remarkable transformation.
https://www.nature.com/articles/s41593-020-0623-9

Nature Scientific Reports

PAPERS

MAITE ARILLA, JORDI ROSELL & RUTH BLASCO – A neo-taphonomic approach to human campsites modified by carnivores

Skeletal profiles at archaeological bone assemblages can bear little resemblance to original hominin discarded bone elements. Resulting patterns might originate from different taphonomic problems, such as hominin-carnivore activities in alternate visits, and lead to interpretation issues. In this paper, we present a study of predepositional scattering activities caused by small-sized carnivores on simulated short-term hominin campsites. Their disrupting actions affect skeletal element survival considerably and, to a lesser extent, the spatial distribution of hearth-related assemblages. The results of this study demonstrate that small-sized carnivores might cause as much disruption as large-sized ones. Thus, being able to recognize these taphonomic processes and their consequences is critical when discerning between human and non-human behaviour.
https://www.nature.com/articles/s41598-020-63431-8

SAGE K. IWAMOTO et al – Mindfulness Meditation Activates Altruism

Clinical evidence suggests that mindfulness meditation reduces anxiety, depression, and stress, and improves emotion regulation due to modulation of activity in neural substrates linked to the regulation of emotions and social preferences. However, less was known about whether mindfulness meditation might alter pro-social behavior. Here we examined whether mindfulness meditation activates human altruism, a component of social cooperation. Using a simple donation game, which is a real-world version of the Dictator's Game, we randomly assigned 326 subjects to a mindfulness meditation online session or control and measured their willingness to donate a portion of their payment for participation as a charitable donation. Subjects who underwent the meditation treatment donated at a 2.61 times higher rate than the control ($p = 0.005$), after controlling for socio-demographics. We also found a larger treatment effect of meditation among those who did not go to college ($p < 0.001$) and those who were under 25 years of age ($p < 0.001$), with both subject groups contributing virtually nothing in the control condition. Our results imply high context modularity of human altruism and the development of intervention approaches including mindfulness meditation to increase social cooperation, especially among subjects with low baseline willingness to contribute.
https://www.nature.com/articles/s41598-020-62652-1

PeerJ

PAPERS

MARIO PRIETO et al – Data-driven classification of the certainty of scholarly assertions

The grammatical structures scholars use to express their assertions are intended to convey various degrees of certainty or speculation. Prior studies have suggested a variety of categorization systems for scholarly certainty; however, these have not been objectively tested for their validity, particularly with respect to representing the interpretation by the reader, rather than the intention of the author. In this study, we use a series of questionnaires to determine how researchers classify various scholarly assertions, using three distinct certainty classification systems. We find that there are three distinct categories of certainty along a spectrum from high to low. We show that these categories can be detected in an automated manner, using a machine learning model, with a cross-validation accuracy of 89.2% relative to an author-annotated corpus, and 82.2% accuracy against a publicly-annotated corpus. This finding provides an opportunity for contextual metadata related to certainty to be captured as a part of text-mining pipelines, which currently miss these subtle linguistic cues. We provide an exemplar machine-accessible representation—a Nanopublication—where certainty category is embedded as metadata in a formal, ontology-based manner within text-mined scholarly assertions.
https://peerj.com/articles/8871/

MENGJIE LI, WENTING ZHANG & XIAOYI ZHOU – Identification of genes involved in the evolution of human intelligence through combination of inter-species and intra-species genetic variations
Understanding the evolution of human intelligence is an important undertaking in the science of human genetics. A great deal of biological research has been conducted to search for genes which are related to the significant increase in human brain volume and cerebral cortex complexity during hominid evolution. However, genetic changes affecting intelligence in hominid evolution have remained elusive. We supposed that a subset of intelligence-related genes, which harbored intra-species variations in human populations, may also be evolution-related genes which harbored inter-species variations between humans (Homo sapiens) and great apes (including Pan troglodytes and Pongo abelii). Here we combined inter-species and intra-species genetic variations to discover genes involved in the evolution of human intelligence. Information was collected from published GWAS works on intelligence and a total of 549 genes located within the intelligence-associated loci were identified. The intelligence-related genes containing human-specific variations were detected based on the latest high-quality genome assemblies of three human's closest species. Finally, we identified 40 strong candidates involved in human intelligence evolution. Expression analysis using RNA-Seq data revealed that most of the genes displayed a relatively high expression in the cerebral cortex. For these genes, there is a distinct expression pattern between humans and other species, especially in neocortex tissues. Our work provided a list of strong candidates for the evolution of human intelligence, and also implied that some intelligence-related genes may undergo inter-species evolution and contain intra-species variation.
https://peerj.com/articles/8912/

Philosophical Transactions of the Royal Society B

PAPERS

BENOIST SCHAAL et al – Olfaction scaffolds the developing human from neonate to adolescent and beyond
The impact of the olfactory sense is regularly apparent across development. The fetus is bathed in amniotic fluid (AF) that conveys the mother's chemical ecology. Transnatal olfactory continuity between the odours of AF and milk assists in the transition to nursing. At the same time, odours emanating from the mammary areas provoke appetitive responses in newborns. Odours experienced from the mother's diet during breastfeeding, and from practices such as pre-mastication, may assist in the dietary transition at weaning. In parallel, infants are attracted to and recognize their mother's odours; later, children are able to recognize other kin and peers based on their odours. Familiar odours, such as those of the mother, regulate the child's emotions, and scaffold perception and learning through non-olfactory senses. During juvenility and adolescence, individuals become more sensitive to some bodily odours, while the timing of adolescence itself has been speculated to draw from the chemical ecology of the family unit. Odours learnt early in life and within the family niche continue to influence preferences as mate choice becomes relevant. Olfaction thus appears significant in turning on, sustaining and, in cases when mother odour is altered, disturbing adaptive reciprocity between offspring and carer during the multiple transitions of development between birth and adolescence.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0261

OFER PERL et al – Are humans constantly but subconsciously smelling themselves?
All primates, including humans, engage in self-face-touching at very high frequency. The functional purpose or antecedents of this behaviour remain unclear. In this hybrid review, we put forth the hypothesis that self-face-touching subserves self-smelling. We first review data implying that humans touch their faces at very high frequency. We then detail evidence from the one study that implicated an olfactory origin for this behaviour: This evidence consists of significantly increased nasal inhalation concurrent with self-face-touching, and predictable increases or decreases in self-face-touching as a function of subliminal odourant tainting. Although we speculate that self-smelling through self-face-touching is largely an unconscious act, we note that in addition, humans also consciously smell themselves at high frequency. To verify this added statement, we administered an online self-report questionnaire. Upon being asked, approximately 94% of approximately 400 respondents acknowledged engaging in smelling themselves. Paradoxically, we observe that although this very prevalent behaviour of self-smelling is of concern to individuals, especially to parents of children overtly exhibiting self-smelling, the behaviour has nearly no traction in the medical or psychological literature. We suggest psychological and cultural explanations for this paradox, and end in suggesting that human self-smelling become a formal topic of investigation in the study of human social olfaction.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0372

PLoS One

PAPERS

EGLANTINE JULLE-DANIÈRE et al – Are there non-verbal signals of guilt?
Guilt is a complex emotion with a potentially important social function of stimulating cooperative behaviours towards and from others, but whether the feeling of guilt is associated with a recognisable pattern of nonverbal behaviour is unknown. We examined the production and perception of guilt in two different studies, with a total of 238 participants with various places of origin. Guilt was induced experimentally, eliciting patterns of movement that were associated with both the

participants' self-reported feelings of guilt and judges' impressions of their guilt. Guilt was most closely associated with frowning and neck touching. While there were differences between self-reported guilt and perception of guilt the findings suggest that there are consistent patterns that could be considered a non-verbal signal of guilt in humans.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0231756

ARIANNA CURIONI et al – The engaging nature of interactive gestures
The social interactions that we experience from early infancy often involve actions that are not strictly instrumental but engage the recipient by eliciting a (complementary) response. Interactive gestures may have privileged access to our perceptual and motor systems either because of their intrinsically engaging nature or as a result of extensive social learning. We compared these two hypotheses in a series of behavioral experiments by presenting individuals with interactive gestures that call for motor responses to complement the interaction ('hand shaking', 'requesting', 'high-five') and with communicative gestures that are equally socially relevant and salient, but do not strictly require a response from the recipient ('Ok', 'Thumbs up', 'Peace'). By means of a spatial compatibility task, we measured the interfering power of these task-irrelevant stimuli on the behavioral responses of individuals asked to respond to a target. Across three experiments, our results showed that the interactive gestures impact on response selection and reduce spatial compatibility effects as compared to the communicative (non-interactive) gestures. Importantly, this effect was independent of the activation of specific social scripts that may interfere with response selection. Overall, our results show that interactive gestures have privileged access to our perceptual and motor systems, possibly because they entail an automatic preparation to respond that involuntary engages the motor system of the observers. We discuss the implications from a developmental and neurophysiological point of view.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0232128

MARKKU OINONEN et al – Buried in water, burdened by nature—Resilience carried the Iron Age people through Fimbulvinter
Levänluhta is a unique archaeological site with the remains of nearly a hundred Iron Age individuals found from a water burial in Ostrobothnia, Finland. The strongest climatic downturn of the Common Era, resembling the great Fimbulvinter in Norse mythology, hit these people during the 6th century AD. This study establishes chronological, dietary, and livelihood synthesis on this population based on stable carbon and nitrogen isotopic and radiocarbon analyses on human remains, supported by multidisciplinary evidence. Extraordinarily broad stable isotopic distribution is observed, indicating three subgroups with distinct dietary habits spanning four centuries. This emphasizes the versatile livelihoods practiced at this boundary of marine, freshwater, and terrestrial ecosystems. While the impact of the prolonged cold darkness of the 6th century was devastating for European communities relying on cultivation, the broad range of livelihoods provided resilience for the Levänluhta people to overcome the abrupt climatic decline.
{For the Norse mythologists.}
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0231787

ELIEN VANDERVEREN, PATRICIA BIJTTEBIER & DIRK HERMANS – Autobiographical memory coherence in emotional disorders: The role of rumination, cognitive avoidance, executive functioning, and meaning making
The ability to construct coherent narratives about significant personal experiences, commonly referred to as autobiographical memory coherence, has been related to various emotional disorders, though insight regarding mechanisms that might underlie this relation is scarce. The present study contributes to this growing body of research by examining the relation between memory coherence and both depression and PTSD and by investigating the role of rumination, cognitive avoidance, executive functioning, and meaning making in that relation in a large-scale community sample. The negative relation between memory coherence and both depression and PTSD could not be replicated, nor could the hypothesized negative relation between memory coherence and both rumination and cognitive avoidance be confirmed. In contrast, results indicated more memory coherence to be related to more rumination. Additional analyses in light of these surprising findings revealed that there was a significant indirect relation between memory coherence and both depression and PTSD-related symptoms through rumination. When the latter was controlled for, memory coherence was predictive of PTSD diagnosis and the hypothesized negative association with cognitive avoidance could be confirmed. In line with predictions, both executive functioning and meaning making were positively related to memory coherence. Theoretical and clinical implications are discussed.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0231862

PNAS

PAPERS

DAPHNE MAURER et al with JANET F. WERKER – Reduced perceptual narrowing in synesthesia
Synesthesia is a neurologic trait in which specific inducers, such as sounds, automatically elicit additional idiosyncratic percepts, such as color (thus "colored hearing"). One explanation for this trait—and the one tested here—is that synesthesia results from unusually weak pruning of cortical synaptic hyperconnectivity during early perceptual development. We tested the prediction from this hypothesis that synesthetes would be superior at making discriminations from nonnative categories that are normally weakened by experience-dependent pruning during a critical period early in development—namely,

discrimination among nonnative phonemes (Hindi retroflex /ɖa/ and dental /ḍa/), among chimpanzee faces, and among inverted human faces. Like the superiority of 6-mo-old infants over older infants, the synesthetic groups were significantly better than control groups at making all the nonnative discriminations across five samples and three testing sites. The consistent superiority of the synesthetic groups in making discriminations that are normally eliminated during infancy suggests that residual cortical connectivity in synesthesia supports changes in perception that extend beyond the specific synesthetic percepts, consistent with the incomplete pruning hypothesis.
https://www.pnas.org/content/early/2020/04/21/1914668117.abstract?etoc

Proceedings of the Royal Society B

PAPERS

BAILEY R. HOUSE et al with JOAN B. SILK – Social norms and cultural diversity in the development of third-party punishment

Human cooperation is probably supported by our tendency to punish selfishness in others. Social norms play an important role in motivating third-party punishment (TPP), and also in explaining societal differences in prosocial behaviour. However, there has been little work directly linking social norms to the development of TPP across societies. In this study, we explored the impact of normative information on the development of TPP in 603 children aged 4–14, across six diverse societies. Children began to perform TPP during middle childhood, and the developmental trajectories of this behaviour were similar across societies. We also found that social norms began to influence the likelihood of performing TPP during middle childhood in some of these societies. Norms specifying the punishment of selfishness were generally more influential than norms specifying the punishment of prosocial behaviour. These findings support the view that TPP of selfishness is important in all societies, and its development is shaped by a shared psychology for responding to normative information. Yet, the results also highlight the important role that children's prior knowledge of local norms may play in explaining societal variation in the development of both TPP and prosociality.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2019.2794

ALEX R. DECASIEN et al – Greater variability in chimpanzee (Pan troglodytes) brain structure among males

Across the animal kingdom, males tend to exhibit more behavioural and morphological variability than females, consistent with the 'greater male variability hypothesis'. This may reflect multiple mechanisms operating at different levels, including selective mechanisms that produce and maintain variation, extended male development, and X chromosome effects. Interestingly, human neuroanatomy shows greater male variability, but this pattern has not been demonstrated in any other species. To address this issue, we investigated sex-specific neuroanatomical variability in chimpanzees by examining relative and absolute surface areas of 23 cortical sulci across 226 individuals (135F/91M), using permutation tests of the male-to-female variance ratio of residuals from MCMC generalized linear mixed models controlling for relatedness. We used these models to estimate sulcal size heritability, simulations to assess the significance of heritability, and Pearson correlations to examine inter-sulcal correlations. Our results show that: (i) male brain structure is relatively more variable; (ii) sulcal surface areas are heritable and therefore potentially subject to selection; (iii) males exhibit lower heritability values, possibly reflecting longer development; and (iv) males exhibit stronger inter-sulcal correlations, providing indirect support for sex chromosome effects. These results provide evidence that greater male neuroanatomical variability extends beyond humans, and suggest both evolutionary and developmental explanations for this phenomenon.
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AHMAD M. ABU-AKEL et al – Re-imaging the intentional stance

The commonly used paradigm to investigate Dennet's 'intentional stance' compares neural activation when participants compete with a human versus a computer. This paradigm confounds whether the opponent is natural or artificial and whether it is intentional or an automaton. This functional magnetic resonance imaging study is, to our knowledge, the first to investigate the intentional stance by orthogonally varying perceptions of the opponents' intentionality (responding actively or passively according to a script) and embodiment (human or a computer). The mere perception of the opponent (whether human or computer) as intentional activated the mentalizing network: the temporoparietal junction (TPJ) bilaterally, right temporal pole, anterior paracingulate cortex (aPCC) and the precuneus. Interacting with humans versus computers induced activations in a more circumscribed right lateralized subnetwork within the mentalizing network, consisting of the TPJ and the aPCC, possibly reflective of the tendency to spontaneously attribute intentionality to humans. The interaction between intentionality (active versus passive) and opponent (human versus computer) recruited the left frontal pole, possibly in response to violations of the default intentional stance towards humans and computers. Employing an orthogonal design is important to adequately capture Dennett's conception of the intentional stance as a mentalizing strategy that can apply equally well to humans and other intentional agents.
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