

## EAORC BULLETIN 1,112 – 6 October 2024

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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, 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.

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### EDITORIAL INTERJECTIONS

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

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### ACADEMIA.EDU – The Technological Condition of Human Evolution

*Journal of Paleolithic Archaeology* 4, 25 (2021).

#### **SHUMON TOBIAS HUSSAIN & MARIE SORESSI – The Technological Condition of Human Evolution: Lithic Studies as Basic Science**

The recent elaboration and rapid expansion of aDNA, paleoproteomics, and related fields have propelled a profound “biomolecular turn” in archaeology and fundamentally changed the topology of archaeological knowledge production. Such a transformation of the archaeological research landscape is not without consequence for long-standing research practices in the field, such as lithic analysis. This special issue derives from the session Old Stones, New Eyes? organized by the authors at the UISPP World Congress in Paris in 2018, which aimed to explore the future of lithic studies. An underlying theme of our session was the felt need to respond to the increasing marginalization of lithic research in terms of its capacity to (1) contribute to the grand narratives of early human evolution and (2) better articulate the role and significance of lithic studies in interdisciplinary human origins research. In this editorial, we briefly outline some of the questions and challenges raised by the biomolecular turn and advocate for a more self-conscious and reflexive stance among lithic experts. We argue that lithic studies fulfill all necessary requirements to act as a basic science for human origins research and that its role and status depends less on technological advances, such as, e.g., improved computing facilities, novel analytical software, or automated shape capture technologies, than on continuous work on the conceptual and methodological foundations of inquiry. We finally draw attention to the unique capability of lithic studies to shed light on the human technological condition and illustrate this potential by introducing and briefly discussing the papers included in this issue.

[https://www.academia.edu/74216876/The\\_Technological\\_Condition\\_of\\_Human\\_Evolution\\_Lithic\\_Studies\\_as\\_Basic\\_Science](https://www.academia.edu/74216876/The_Technological_Condition_of_Human_Evolution_Lithic_Studies_as_Basic_Science)

**ACADEMIA.EDU – Early hominin social learning strategies underlying bone and stone tool use**

*In Tool Use in Animals: Cognition and Ecology*, eds. Crickette Sanz, Josep Call and Christophe Boesch. Cambridge University Press, ch12, 242-285 (2013).

**MATTHEW V. CARUANA, FRANCESCO D'ERRICO & LUCINDA BACKWELL – Early hominin social learning strategies underlying the use and production of bone and stone tools**

Current trends in research toward the integration of primatological and archaeological models have provided significant insight into the emergence of tool use from a multidisciplinary perspective (e.g., Wynn & McGrew 1989; van Schaik et al., 1999; d'Errico et al., 2001; Mercader et al., 2002, 2007; van Schaik & Pradhan, 2003; Marzke, 2006; Sanz & Morgan, 2007; Lockwood et al., 2007; Backwell & d'Errico, 2001, 2008, 2009; Carvalho et al., 2008, 2009; Haslam et al., 2009; Whiten et al., 2009a; Gowlett, 2009; Visalberghi et al., 2009; Hernandez-Aguilar, 2009; Uomini, 2009; Chapter 11). Recently, this has culminated in the new “primate archaeology” sub-discipline (Haslam et al., 2009), which has effectively modeled the advantages of incorporating comparative primatological research within the study of early hominin technologies. While this approach advances a unique perspective concerning the evolution of tool use and production, the predominantly ethological focus of primate archaeology has not fully benefitted from exploring neuro-cognitive mechanisms in non-human primates and modern humans that might pertain to tool use in the deep past. Cognition remains a critical element in archaeological and paleoanthropological theories regarding the nature of early hominin technologies (e.g., Toth, 1985; Semaw, 2000; Delagnes & Roche, 2005; Stout et al., 2008; Whiten et al., 2009a). Thus, examining the cognitive capacities underlying tool use within the Order Primates is a critical pursuit toward understanding the social and cultural contexts of tool-mediated behavior, and the evolution of technology (van Schaik et al., 1999; van Schaik & Pradhan, 2003; see also Chapters 2, 3 and 10). This chapter presents and explores various primatological perspectives concerning Tool Use in Animals: Cognition and Ecology, eds. Crickette Sanz, Josep Call and Christophe Boesch.

[https://www.academia.edu/4745812/Early\\_Hominin\\_Social\\_Strategies\\_Underlying\\_the\\_Use\\_and\\_Production\\_of\\_Bone\\_and\\_Stone\\_Tools\\_by\\_Caruana\\_et\\_al\\_2013](https://www.academia.edu/4745812/Early_Hominin_Social_Strategies_Underlying_the_Use_and_Production_of_Bone_and_Stone_Tools_by_Caruana_et_al_2013)

**ACADEMIA.EDU – The co-evolution of tools and minds: cognition & material culture in hominin lineage**

*Phenomenology and the Cognitive Sciences 9, 503-520 (2010).*

**BEN JEFFARES – The co-evolution of tools and minds: cognition and material culture in the hominin lineage**

The structuring of our environment to provide cues and reminders for ourselves is common: We leave notes on the fridge, we have a particular place for our keys where we deposit them, making them easy to find. We alter our world to streamline our cognitive tasks. But how did hominins gain this capacity? What pushed our ancestors to structure their physical environment in ways that buffered thinking and began the process of using the world cognitively? I argue that the capacity to engage in these behaviours is a by-product of increased tool investment and tool curation, which in turn was necessary because of increasingly heterogeneous environments. The minute tools are carried and cared for, they begin to undergo selection for added functions, becoming available as cognitive primers and as signals. I explore the trajectory of this co-evolutionary feedback loop of hominins and their tools, and demonstrate the role tools have in shaping our thinking.

[https://www.academia.edu/3788114/The\\_co\\_evolution\\_of\\_tools\\_and\\_minds\\_cognition\\_and\\_material\\_culture\\_in\\_the\\_hominin\\_lineage](https://www.academia.edu/3788114/The_co_evolution_of_tools_and_minds_cognition_and_material_culture_in_the_hominin_lineage)

**NEWS****NATURE BRIEFING – Bowerbirds are acoustics experts**

The love nests that male great bowerbirds (*Chlamydera nuchalis*) build to tempt females are decorated with material from their surroundings — and expertly engineered for sound. The birds advertize their availability with a loud call. Ecologists joined forces with an audio expert to show that the shape of a tunnel section called an avenue amplifies their song, and the presence of decorative objects alters sound frequencies to impress females.

<https://www.science.org/content/article/male-bowerbirds-build-acoustics-their-love-shrines>

**NATURE BRIEFING – Neuroscientist's fraud allegation rocks field**

Prominent brain scientist Eliezer Masliah, who was the influential head of the Division of Neuroscience within the US National Institutes of Health (NIH), is one of the most-cited researchers in his field. But some of the studies he co-authored are “riddled with apparently falsified Western blots — images used to show the presence of proteins — and micrographs of brain tissue”, concludes aScienceinvestigation. The NIH says it has “made findings of research misconduct” in two of Masliah's publications. Masliah did not comment.

The shocking news raises concerns about the validity of certain drug-development efforts for Alzheimer's and Parkinson's diseases, particularly for an antibody called prasinezumab. “All four of the fundamental papers about prasinezumab (as cited on the web site of its developer, Prothena) are full of manipulated images,” writes medicinal chemist Derek Lowe. “This is just a horrible situation in every direction.”

<https://www.science.org/content/article/research-misconduct-finding-neuroscientist-eliezer-masliah-papers-under-suspicion>

### SCIENCE DAILY – How are pronouns processed in the memory-region of our brain?

Read the following sentence: "Donald Trump and Kamala Harris walked into the bar, she sat down at a table." We all immediately know that it was Kamala who sat at the table, not Donald. Pronouns like "she" help us to understand language, but pronouns can have multiple meanings. Depending on the context, we understand who the pronoun is referring to. But how is it that we are so good at this, and how does our brain link pronouns with their nouns?

<https://www.sciencedaily.com/releases/2024/09/240927173201.htm>

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### SCIENCE DAILY – 'Who's a good boy?' Humans use dog-specific voices for better canine comprehension

Humans slow their own speech when talking to their dogs, and this slower tempo matches their pets' receptive abilities, allowing the dogs to better understand their commands, according to a new study.

<https://www.sciencedaily.com/releases/2024/10/241001142525.htm>

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### SCIENCE.ORG NEWS – Male bowerbirds build acoustics into their love shrines

Experiments suggest bowers amplify males' songs and tweak their frequencies to woo females attending their show.

*{I guess this means bower birds are toolmakers.}*

<https://www.science.org/content/article/male-bowerbirds-build-acoustics-their-love-shrines>

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### SCIENCE.ORG NEWS – Did a top NIH official manipulate Alzheimer's and Parkinson's studies for decades?

Agency announces research misconduct finding for neuroscientist Eliezer Masliah as scores of his papers fall under suspicion.

<https://www.science.org/content/article/research-misconduct-finding-neuroscientist-eliezer-masliah-papers-under-suspicion>

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### SCIENCE.ORG NEWS – Spanish university head accused of inflating citations to his own work

Dozens of Springer Nature papers flagged for excessively citing Juan Manuel Corchado.

<https://www.science.org/content/article/spanish-university-head-accused-inflating-citations-his-own-work>

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### SCIENCE.ORG NEWS – Dolphins grin at one another when they're playing, study suggests

But questions remain about what the animals are actually communicating.

<https://www.science.org/content/article/dolphins-grin-one-another-when-they-re-playing-study-suggests>

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## PUBLICATIONS

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### Evolutionary Human Sciences

#### PAPERS

#### **RONALD J. PLANER & ROSS PAIN – Expanding the Causal Menu: An Interventionist Perspective on Explaining Human Behavioral Evolution**

Theorists of human evolution are interested in understanding major shifts in human behavioral capacities (e.g., the creation of a novel technological industry, such as the Acheulean). This task faces empirical challenges arising both from the complexity of these events and the time-depths involved. However, we also confront issues of a more philosophical nature, such as how to best think about causation and explanation. This article considers such fundamental questions from the perspective of a prominent theory of causation in the philosophy of science literature, namely, the interventionist theory of causation. A signature feature of this framework is its recognition of a family of distinct types of causes. We set out several of these causal notions and show how they can contribute to explaining transitions in human behavioral complexity. We do so, first, in a preliminary way, and then in a more detailed way, taking the origins of behavioral modernity as our extended case study. We conclude by suggesting some ways in which the approach developed here might be elaborated and extended.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/expanding-the-causal-menu-an-interventionist-perspective-on-explaining-human-behavioral-evolution/2F04DB41767ECC180128342C40582338>

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### Frontiers in Environmental Archaeology

#### PAPERS

#### **ALAN P. SULLIVAN III et al – Archaeological evidence of anthropogenic burning for food production in forested uplands of the Grand Canyon province, northern Arizona**

Despite convincing archaeological arguments about the global effects of human pyrogeography and their evolutionary significance, many of the implicated data sources are unavailable in research contexts that lack significant accumulations of charcoal or stands of fire-scarred trees. In view of the strong likelihood that hominins routinely ignited small, low-intensity landscape fires for millennia, we explore the role of cultural burning for food-production in an area of the American Southwest where anthropogenic fire has not been considered. To illustrate the virtues of a multidisciplinary approach,

informed by Formation Theory and time perspectivism, we focus on the returns from macrobotanical and palynological analyses of samples recovered from a variety of archaeological and geoarchaeological contexts in the Upper Basin, a landform located south of the Grand Canyon in northern Arizona. Previous archaeobotanical studies of samples recovered from archaeological sites (ca. AD 500–1500) in the basin's pinyon-juniper woodlands are dominated by amaranth, chenopodium, and other economic ruderals. These findings support the “fire foodway” model that posits prehistoric Indigenous populations of the Upper Basin depended on these fire-following wild plants, rather than maize, by harvesting their abundant seeds and leaves from production locations that were created by low-intensity understory fires. In this paper, we present the results of new studies of archaeobotanical remains recovered from cut-back terraces and sedimentary contexts that (i) expand the evidence base for the fire-foodway model, (ii) provide a basis for proposing several types of prehistoric cultural burning practices, and (iii) introduce the outlines of the ruderal seed-bed hypothesis. Combined, these findings provide a new archaeological perspective on upland subsistence practices in the northern American Southwest. Our study also highlights biases of modern vegetation surveys that do not include archaeological data, and contributes to an appreciation of the extent to which biodiversity has declined because of widespread fire exclusion.

<https://www.frontiersin.org/journals/environmental-archaeology/articles/10.3389/fearc.2024.1302604/full>

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## Frontiers in Human Neuroscience

### PAPERS

#### **JAMES BRITTON et al – On the influence of discourse connectives on the predictions of humans and language models**

Psycholinguistic literature has consistently shown that humans rely on a rich and organized understanding of event knowledge to predict the forthcoming linguistic input during online sentence comprehension. We, the authors, expect sentences to maintain coherence with the preceding context, making congruent sentence sequences easier to process than incongruent ones. It is widely known that discourse relations between sentences (e.g., temporal, contingency, comparison) are generally made explicit through specific particles, known as discourse connectives, (e.g., and, but, because, after). However, some relations that are easily accessible to the speakers, given their event knowledge, can also be left implicit. The goal of this paper is to investigate the importance of discourse connectives in the prediction of events in human language processing and pretrained language models, with a specific focus on concessives and contrastives, which signal to comprehenders that their event-related predictions have to be reversed. Inspired by previous work, we built a comprehensive set of story stimuli in Italian and Mandarin Chinese that differ in the plausibility and coherence of the situation being described and the presence or absence of a discourse connective. We collected plausibility judgments and reading times from native speakers for the stimuli. Moreover, we correlated the results of the experiments with the predictions given by computational modeling, using Surprisal scores obtained via Transformer-based language models. The human judgements were collected using a seven-point Likert scale and analyzed using cumulative link mixed modeling (CLMM), while the human reading times and language model surprisal scores were analyzed using linear mixed effects regression (LMER). We found that Chinese NLMs are sensitive to plausibility and connectives, although they struggle to reproduce expectation reversal effects due to a connective changing the plausibility of a given scenario; Italian results are even less aligned with human data, with no effects of either plausibility and connectives on Surprisal.

<https://www.frontiersin.org/journals/human-neuroscience/articles/10.3389/fnhum.2024.1363120/full>

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## Frontiers in Psychology

### PAPERS

#### **ELEONORA BORELLI & FRANCESCA PESCIARELLI – Are all negative words alike? Behavioral differences in processing negative words associated and not associated with physical and social pain**

Studies examining whether stimulus valence affects cognitive processing and motor responses yield mixed results, possibly due to treating negative words as a homogeneous category. Words related to pain may hold distinct status because of their relevance to survival. Thus, they offer a unique opportunity to investigate semantic influences on cognitive processing. This study aims to determine if words related to physical and social pain elicit stronger aversion than general negative words by assessing the Affective Compatibility Effect in implicit and explicit tasks. In Experiment 1, 35 participants performed a lexical decision task on 60 positive words and 60 negative words, of which 20 not related to pain, 20 related to physical pain, and 20 related to social pain. Participants held down the central key of a keyboard and released it to press a key far from the screen (avoidance condition) or close to the screen (approach condition) for words. In Experiment 2, 43 participants performed a valence evaluation task on the same words. They held down the central key and released it to press a key close to the screen for positive words and a key far from the screen for negative words (congruent condition), or the opposite (incongruent condition). In Experiment 1, we found faster RTs for social pain-related words compared to other categories. We also found faster RTs in the approach condition than in the avoidance condition, regardless of whether valence or semantics were considered as independent variables. In Experiment 2, we found faster RTs in the congruent condition than in the incongruent condition when semantics was considered as independent variable. We also found an interaction valence\*condition, with faster RTs for negative words in the congruent condition than in the incongruent condition when valence was considered as independent variable. Our findings suggest that, notwithstanding pain-related words do not affect aversive behaviors compared to negative, pain-unrelated words, they are processed faster when conveying social pain. This



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supports the hypothesis that the cognitive system differentiates and responds congruently not only based on general semantic categories, like pain, but also possibly based on nuances within it.

<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1474945/full>

### **LI ZHUO – Theory of affective pragmatics under biolinguistics**

This paper introduces a pioneering investigation into affective pragmatics through the perspective of Darwinian Biolinguistics, an interdisciplinary field at the nexus of biological and linguistic principles. Anchored in Darwin's theory of evolution and the latest developments in neurobiology, this study delves into the influence of biological factors—especially those pertaining to the brain's emotional processing on pragmatic communication. The research posits that human emotional responses, inherent in our biological constitution, profoundly influence the usage and interpretation of language in social interactions.

<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1404067/full>

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## Heliyon

### PAPERS

#### **PHILIPPE VORUZ et al – Self-other voice discrimination task: A potential neuropsychological tool for clinical assessment of self-related deficits**

Deficits in self are commonly described through different neuro-pathologies, based on clinical evaluations and experimental paradigms. However, currently available approaches lack appropriate clinical validation, making objective evaluation and discrimination of self-related deficits challenging.

We applied a statistical standardized method to assess the clinical discriminatory capacity of a Self-Other Voice Discrimination (SOVD) task. This task, validated experimentally as a marker for self-related deficits, was administered to 17 patients eligible for neurosurgery due to focal hemispheric brain tumors or epileptic lesions.

The clinical discriminatory capacity of the SOVD task was evident in three patients who exhibited impairments for self-voice perception that could not be predicted by other neuropsychological deficits. Impairments in other-voice perception were linked to inhibitory neuropsychological deficits, suggesting a potential association with executive deficits in voice recognition. This exploratory study highlights the clinical discriminatory potential of the SOVD task and suggests that it could complement the standard neuropsychological assessment, paving the way for enhanced diagnoses and tailored treatments for self-related deficits.

[https://www.cell.com/heliyon/fulltext/S2405-8440\(24\)14742-1](https://www.cell.com/heliyon/fulltext/S2405-8440(24)14742-1)

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## iScience

### PAPERS

#### **VERONICA MAGLIERI et al – Smiling underwater: Exploring playful signals and rapid mimicry in bottlenose dolphins**

Play is a widespread behavior present in phylogenetically distant taxa that, in its social form, relies on complex communication. Playful communication has been largely neglected in marine mammals. We focus on playful visual communication in bottlenose dolphins. The open mouth (OM) display was mainly emitted during social than during solitary play and occurred more frequently when the sender was in the receiver's field of view, suggesting that animals are attentive to the playmate's attentional state. Detecting an OM evoked the same facial display in the receiver, a result that strikingly matches with those obtained on cooperative social primates and carnivores. It is difficult to know whether such similarities derive from shared evolutionary pathways (homology) or from evolutionary convergence (homoplasy), as both have been suggested for play behavior. The pervasive presence of OM and rapid mimicry in the mammal phylogenetic tree indicates the relevance of visual mechanisms in shaping complex communication.

[https://www.cell.com/iscience/fulltext/S2589-0042\(24\)02191-6](https://www.cell.com/iscience/fulltext/S2589-0042(24)02191-6)

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## Nature Communications

### PAPERS

#### **IVÁN RAMÍREZ-PEDRAZA et al – Arid, mosaic environments during the Plio-Pleistocene transition and early hominin dispersals in northern Africa**

The earliest archaeological evidence from northern Africa dates to ca. 2.44 Ma. Nevertheless, the palaeoenvironmental setting of hominins living in this part of the continent at the Plio-Pleistocene transition remains poorly documented, particularly in comparison to eastern and southern Africa. The Guefaït-4 fossil site in eastern Morocco sheds light on our knowledge of palaeoenvironments in northern Africa. Our study reveals the oldest known presence of C4 plants in the northern part of the continent in a mosaic landscape that includes open grasslands, forested areas, wetlands, and seasonal aridity. This diverse landscape and resource availability likely facilitated the occupation of the region by mammals, including potentially hominins. Our regional-scale study provides a complementary perspective to global-scale studies and highlights the importance of considering the diversity of microhabitats within a given region when studying species-dispersal dynamics.

<https://www.nature.com/articles/s41467-024-52672-0>

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**DANIEL GUTIERREZ-BARRAGAN et al – Evolutionarily conserved fMRI network dynamics in the mouse, macaque, and human brain**

Evolutionarily relevant networks have been previously described in several mammalian species using time-averaged analyses of fMRI time-series. However, fMRI network activity is highly dynamic and continually evolves over timescales of seconds. Whether the dynamic organization of resting-state fMRI network activity is conserved across mammalian species remains unclear. Using frame-wise clustering of fMRI time-series, we find that intrinsic fMRI network dynamics in awake male macaques and humans is characterized by recurrent transitions between a set of 4 dominant, neuroanatomically homologous fMRI coactivation modes (C-modes), three of which are also plausibly represented in the male rodent brain. Importantly, in all species C-modes exhibit species-invariant dynamic features, including preferred occurrence at specific phases of fMRI global signal fluctuations, and a state transition structure compatible with infraslow coupled oscillator dynamics. Moreover, dominant C-mode occurrence reconstitutes the static organization of the fMRI connectome in all species, and is predictive of ranking of corresponding fMRI connectivity gradients. These results reveal a set of species-invariant principles underlying the dynamic organization of fMRI networks in mammalian species, and offer novel opportunities to relate fMRI network findings across the phylogenetic tree.

<https://www.nature.com/articles/s41467-024-52721-8>

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**Nature Communications Biology****PAPERS****CHRISTOPHER M. SMITH et al – First evolutionary insights into the human otolithic system**

The human otolithic system (utricle and saccule), housed within the bony vestibule of the inner ear, establishes our sense of balance in conjunction with the semicircular canals. Yet, while the morphological evolution of the semicircular canals is actively explored, comparative morphological analyses of the otolithic system are lacking. This is regrettable because functional links with head orientation suggest the otolithic system could be used to track postural change throughout human evolution and across primates more broadly. In this context, we present the first analysis of the evolution of the human otolithic system within an anthropoid primate setting. Using the vestibule as a morphological proxy for the utricle and saccule, we compare humans to 13 other extant anthropoid species, and use phylogenetically-informed methods to find correlations with body size, endocranial flexion, and head-neck posture. Our results, obtained through micro-CT of 136 inner ears, reveal two major evolutionary transitions in hominoids, leading to distinctive vestibular morphology in humans, characterized by otolithic morphology resembling squirrel monkeys (possibly due to reversal), with a pronounced supraovalic fossa. Finally, we find a positional signal embedded in the anthropoid bony vestibule, providing the foundation to further explore the evolution of human head-neck posture using inner ear morphology.

<https://www.nature.com/articles/s42003-024-06966-0>

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**Nature Human Behaviour****ARTICLES****FREDERIC BLUM – Word-initial lengthening of consonants in non-WEIRD languages**

We found that across a sample of 51 diverse languages, consonants at the beginning of words are on average 13 ms longer than their non-initial counterparts. Considering that this finding is robust across languages from all over the world, we argue that this effect helps to mark the boundaries of different words in the continuous stream of speech.

<https://www.nature.com/articles/s41562-024-01989-3>

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**Nature Scientific Reports****PAPERS****JOYCE F. BENENSON & HENRY MARKOVITS – Young adults' desired life tradeoffs: love first, sex last**

Every human and non-human animal must make tradeoffs in investments in terms of time, energy, and resources. The aim of this study was to extrapolate from the types of investments in survival and reproduction that non-human animals make and translate these into human motivations. 16 potential goals were presented to 851 childless, 18–23-year-old adults from 11 world regions in an online study. Each young adult was asked to weight the importance of every goal to his or her ideal life. Weights had to sum to 100, requiring tradeoffs. Results revealed striking agreement across young adults with only four goals weighted above chance: Finding a beloved romantic partner, being physically and emotionally healthy, and earning money or resources. Having lots of sexual partners was the least important goal across all world regions for both sexes. Nevertheless, men more than women valued having many sexual partners, being talented outside work, being physically strong, and having a physically attractive romantic partner. Overall, there was cultural variation in some of the less important goals. Helping young adults achieve success requires understanding their own goals, rather than focusing on popularized depictions of what young adults desire.

<https://www.nature.com/articles/s41598-024-70742-7>

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**KEVIN J. HOLMES et al – Emotion regulation elicits cross-linguistically shared and language-specific forms of linguistic distancing**

Cognitively reappraising a stressful experience—reinterpreting the situation to blunt its emotional impact—is effective for regulating negative emotions. English speakers have been shown to engage in linguistic distancing when reappraising, spontaneously using words that are more abstract or impersonal. Across two preregistered studies (N = 299), we investigated whether such shifts in language use generalize to Spanish, a language proposed to offer unique tools for expressing psychological distance. Bilingual speakers of Spanish and English and a comparison group of English monolinguals transcribed their thoughts in each of their languages while responding naturally to negative images or reappraising them. Reappraisal shifted markers of psychological distance common to both languages (e.g., reduced use of “I”/“yo”), as well as Spanish-specific markers (e.g., greater use of “estar”: “to be” for temporary states). Whether these linguistic shifts reflected successful emotion regulation depended on language experience: in exploratory analyses, the common markers were more strongly linked to reduced negative affect for late than early Spanish learners, and one Spanish-specific marker (“estar”) also predicted reduced negative affect for early learners. Our findings suggest that people distance their language in both cross-linguistically shared and language-specific ways when regulating their emotions.

<https://www.nature.com/articles/s41598-024-73440-6>

**PLoS Biology****PAPERS****ELOÏSE C. DÉAUX et al – Dog-human vocal interactions match dogs’ sensory-motor tuning**

Within species, vocal and auditory systems presumably coevolved to converge on a critical temporal acoustic structure that can be best produced and perceived. While dogs cannot produce articulated sounds, they respond to speech, raising the question as to whether this heterospecific receptive ability could be shaped by exposure to speech or remains bounded by their own sensorimotor capacity. Using acoustic analyses of dog vocalisations, we show that their main production rhythm is slower than the dominant (syllabic) speech rate, and that human–dog-directed speech falls halfway in between. Comparative exploration of neural (electroencephalography) and behavioural responses to speech reveals that comprehension in dogs relies on a slower speech rhythm tracking (delta) than humans’ (theta), even though dogs are equally sensitive to speech content and prosody. Thus, the dog audio-motor tuning differs from humans’, and we hypothesise that humans may adjust their speech rate to this shared temporal channel as means to improve communication efficacy.

<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3002789>

**PLoS One****PAPERS****YAGMUR OZBAY, SUZANNE OOSTERWIJK & EFTYCHIA STAMKOU – Beyond beauty: Does visual art facilitate social cognitive skills?**

Engaging with art can move individuals through a myriad of emotions, provoke reflective thoughts, and lead to new ideas. Could art also influence interpersonal outcomes pertaining to the ways we interact with others and navigate the social world, that is, our suite of social cognitive skills? Here, we focus on visual art to explore the effect of art engagement on personal aesthetic experience and social cognitive skills. Across two studies, using veridical paintings and matched non-art photos, we examined the effect of art engagement on emotional (e.g., awe, being moved) and eudaimonic experiences (e.g., reflective thoughts), as well as social cognitive skills pertaining to Theory of Mind (ToM) and recognition of other’s emotions. Further, we varied the depth with which participants engaged with the experiences of the characters in the artworks, to assess whether deep social information processing could boost the effect of art engagement on social cognitive skills. Our findings showed that art engagement altered personal aesthetic experience through changes in emotional and eudaimonic outcomes. However, we did not find any support for the effect of art engagement on social cognitive skills: Neither engaging with art, nor art in combination with deep social information processing, influenced performance on social cognitive skills of ToM and emotion recognition. The effect of art engagement on personal aesthetic experience and the absence of effect on social cognitive skills highlight the nuanced nature of individuals’ interactions with art. We discuss these results considering the varied ways of engagement with different artforms and in relation to different operationalizations of social cognitive skills.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0308392>

**METTE SKOVGAARD VÆVER et al – Influence of introducing a story stem in an interactive play context on maternal and their four-year-old children’s use of mental state language**

Maternal and child mental state language is associated with improved socioemotional and cognitive child development. This study examined if introducing a story stem (a narrative playing out socioemotional conflicts) in a play situation facilitated maternal and child mental state language compared to a free-play (baseline) situation, and if mothers and children with low baseline mental state language profited more from the story stem situation. Participants were 101 four-year-old children and their mothers. Maternal and child mental state language correlated and providing the story stem increased both maternal and child mental state language. Providing a story stem increased mental state language more for mothers and children groups with lowest mental state language at baseline compared to a high mental state language group. The results indicate a validation of the use of story stems to increase maternal and child mental state language within a typical population.



<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0311237>

**NANCY GARON, ELLEN DOUCET & BRONWYN INNESS – Decomposing decision-making in preschoolers: Making decisions under ambiguity versus risk**

Decision-making in the real world involves multiple abilities. The main goal of the current study was to examine the abilities underlying the Preschool Gambling task (PGT), a preschool variant of the Iowa Gambling task (IGT), in the context of an integrative decision-making framework. Preschoolers ( $n = 144$ ) were given the PGT along with four novel decision-making tasks assessing either decision-making under ambiguity or decision-making under risk. Results indicated that the ability to learn from feedback, to maintain a stable preference, and to integrate losses and gains contributed to the variance in decision-making on the PGT. Furthermore, children's awareness level on the PGT contributed additional variance, suggesting both implicit and explicit processes are involved. The results partially support the integrative decision-making framework and suggest that multiple abilities contribute to individual differences in decision-making on the PGT.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0311295>

Royal Society Open Science

PAPERS

**MENGYU LIM et al – Synchrony within, synchrony without: establishing the link between interpersonal behavioural and brain-to-brain synchrony during role-play**

Interpersonal synchrony is a crucial construct in understanding social interactions, which has been used in clinical studies to measure the quality of the therapeutic alliance. However, there is a lack of studies investigating the correlation between synchrony expressed on different levels: behavioural and neurophysiological. Furthermore, there are no studies that examine how the implementation of psychodramatic role-playing techniques, when individuals adopt the persona of a different character, may influence intrinsic biobehavioural synchrony between two parties. The present study, therefore, aims to uncover the relationship between behavioural and brain-to-brain synchrony across different role-playing techniques and elucidate the impact of these synchronies on participants' levels of anxiety and empathy. By using functional near-infrared imaging and behavioural coding in a dyadic role-playing paradigm ( $n = 41$  dyads), the study found correlations between behavioural and brain-to-brain synchrony during naturalistic conversations, but not during role-play, implying a qualitative change in interpersonal synchrony when implementing role-playing techniques. Additionally, the study noted significant contributions of both behavioural and brain-to-brain synchrony as well as peripheral factors such as dyadic sex make-up and role immersion in predicting dyadic anxiety and empathy changes. Findings call for future studies to consider role-playing scenarios as a qualitatively different form of social interaction.

<https://royalsocietypublishing.org/doi/full/10.1098/rsos.240331>

**M. BURGESS & R. I. M. DUNBAR – Causal evidence for social group sizes from Wikipedia editing data**

Human communities have self-organizing properties in which specific Dunbar Numbers may be invoked to explain group attachments. By analysing Wikipedia editing histories across a wide range of subject pages, we show that there is an emergent coherence in the size of transient groups formed to edit the content of subject texts, with two peaks averaging at around  $N=8$  for the size corresponding to maximal contention, and at around  $N=4$  as a regular team. These values are consistent with the observed sizes of conversational groups, as well as the hierarchical structuring of Dunbar graphs. We use a model of bipartite trust to derive a scaling law that fits the data and may apply to all group size distributions when these are based on attraction to a seeded group process. In addition to providing further evidence that even spontaneous communities of strangers are self-organizing, the results have important implications for the governance of the Wikipedia commons and for the security of all online social platforms and associations.

<https://royalsocietypublishing.org/doi/10.1098/rsos.240514>

Trends in Ecology and Evolution

PAPERS

**PRISCILLA M. WEHI et al – Woven languages: understanding Indigenous socioecological systems**

Language connects cultural and biological diversity and can contribute to both big data and localised approaches to improve conservation. Analysing Indigenous languages at regional level supports understanding of local ecologies and cultural revitalisation. Collated linguistic datasets can help to identify large-scale patterns, including extinctions, and forge robust multidisciplinary approaches to biocultural decision-making.

[https://www.cell.com/trends/ecology-evolution/abstract/S0169-5347\(24\)00197-6](https://www.cell.com/trends/ecology-evolution/abstract/S0169-5347(24)00197-6)

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