

EAORC BULLETIN 1,065 – 12 November 2023

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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.

EDITORIAL INTERJECTIONS

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

ACADEMIA.EDU – Ritual Behaviour and the Origins of Modern Cognition

Cambridge Archaeological Journal 19:2, 243-256 (2011).

MATT J. ROSSANO – Ritual Behaviour and the Origins of Modern Cognition

This article argues that ritual behaviour was a critical selective force in the emergence of modern cognition. The argument is based on the following observations: (1) Upper Palaeolithic Cro-Magnons exhibited unprecedented levels of social complexity and there is evidence to suggest that this complexity may have begun even earlier in Africa, possibly connected with the Toba eruption. (2) Creating larger, more complex social arrangements, especially those that cut across traditional within-group boundaries, would have required more elaborate and demanding social rituals. (3) Ritual behaviour requiring focused attention and the inhibition of pre-potent responses places demands on areas of the brain known to be associated with working memory. (4) An enhancement of working-memory capacity was very likely necessary for the emergence of modern cognition. (5) The social rituals of traditional societies, which provide the best window on the social rituals of our ancestors, are highly demanding in terms of maintaining focused attention and inhibiting pre-potent responses. (6) Those of our ancestors best able to successfully engage in ritual behaviour would have accrued fitness advantages from increased access to resources, status enhancements and psychophysical health effects. (7) Larger working-memory capacity was very likely a characteristic of these more ritually-capable hominins.

https://www.academia.edu/97913553/Ritual_Behaviour_and_the_Origins_of_Modern_Cognition

NEWS

SCIENCE.ORG NEWS – A 5000-year-old mass grave suggests earlier origin of all-out war

Healed wounds and hints at a warrior class point to an ancient war in what today is northern Spain.

<https://www.science.org/content/article/5000-year-old-mass-grave-suggests-earlier-origin-all-out-war>

PUBLICATIONS

Biology Letters

PAPERS

PETER E. KELLER et al – Sex-related communicative functions of voice spectral energy in human chorusing

Music is a human communicative art whose evolutionary origins may lie in capacities that support cooperation and/or competition. A mixed account favouring simultaneous cooperation and competition draws on analogous interactive displays produced by collectively signalling non-human animals (e.g. crickets and frogs). In these displays, rhythmically coordinated calls serve as a beacon whereby groups of males ‘cooperatively’ attract potential female mates, while the likelihood of each male competitively attracting an actual mate depends on the precedence of his signal. Human behaviour consistent with the mixed account was previously observed in a renowned boys choir, where the basses—the oldest boys with the deepest voices—boosted their acoustic prominence by increasing energy in a high-frequency band of the vocal spectrum when girls were in an otherwise male audience. The current study tested female and male sensitivity and preferences for this subtle vocal modulation in online listening tasks. Results indicate that while female and male listeners are similarly sensitive to enhanced high-spectral energy elicited by the presence of girls in the audience, only female listeners exhibit a reliable preference for it. Findings suggest that human chorusing is a flexible form of social communicative behaviour that allows simultaneous group cohesion and sexually motivated competition.

<https://royalsocietypublishing.org/doi/10.1098/rsbl.2023.0326>

eLife

PAPERS

KRISTA BOND et al – Competing neural representations of choice shape evidence accumulation in humans

Making adaptive choices in dynamic environments requires flexible decision policies. Previously, we showed how shifts in outcome contingency change the evidence accumulation process that determines decision policies. Using *in silico* experiments to generate predictions, here we show how the cortico-basal ganglia-thalamic (CBGT) circuits can feasibly implement shifts in decision policies. When action contingencies change, dopaminergic plasticity redirects the balance of power, both within and between action representations, to divert the flow of evidence from one option to another. When competition between action representations is highest, the rate of evidence accumulation is the lowest. This prediction was validated in *in vivo* experiments on human participants, using fMRI, which showed that (1) evoked hemodynamic responses can reliably predict trial-wise choices and (2) competition between action representations, measured using a classifier model, tracked with changes in the rate of evidence accumulation. These results paint a holistic picture of how CBGT circuits manage and adapt the evidence accumulation process in mammals.

<https://elifesciences.org/articles/85223>

Frontiers in Mammal Science

PAPERS

SARA RUIZ-CABRERA et al – Expansion modes of primate nervous system structures in the light of the Prosomeric Model

The expansion of human and non-human primate central nervous system structures has been a paramount question for classic and contemporary studies in comparative vertebrate neuroanatomy. These studies can benefit from framing data analysis within the Prosomeric Model, which defines a common Bauplan for all vertebrate species, including mammals. According to this model, the vertebrate nervous system is composed of several Fundamental Morphological Units (FMUs) that are defined and delineated by characteristic gene expression profiles. Thus, the expansion of neural structures can be traced back to heterochronic neurogenesis, cell lineage specification, and axon growth in their corresponding FMUs. In the present article, we exemplify the use of the Prosomeric Model as the proper theoretical framework for analyzing the expansion of the cerebral and cerebellar cortices, the pontine nuclei, the striatum, the nigrostriatal dopaminergic system, the thalamus, and the amygdala in primates compared to rodents. We describe the quantitative (volume and neuron number) and qualitative (cytoarchitectonic and cell type differences) expansion of these structures in primates versus rodents and define different expansion modes. Then, we relate these modes to the developmental primary events of specification and secondary events of histogenesis, like neurogenesis. We conclude that the systematic analysis of the molecular regulation of primary and secondary developmental events in each FMU in rats, primates, and other mammals could provide the necessary insight to identify the causal mechanisms of the expansion modes described in the present article.

<https://www.frontiersin.org/articles/10.3389/fmamm.2023.1241573/full>

Frontiers in Psychology

PAPERS

ROBIN I. M. DUNBAR – The origins and function of musical performance

Music is widely recognised as a human universal, yet there is no agreed explanation for its function, or why and when it evolved. I summarise experimental evidence that the primary function of musicking lies in social bonding, both at the dyadic

and community levels, via the effect that performing any form of music has on the brain's endorphin system (the principal neurohormonal basis for social bonding in primates). The many other functions associated with music-making (mate choice, pleasure, coalition signalling, etc) are all better understood as derivative of this, either as secondary selection pressures or as windows of evolutionary opportunity (exaptations). If music's function is primarily as an adjunct of the social bonding mechanism (a feature it shares with laughter, feasting, storytelling and the rituals of religion), then reverse engineering the problem suggests that the capacity for music-making most likely evolved with the appearance of archaic humans. This agrees well with anatomical evidence for the capacity to sing.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1257390/full>

LING WEI – Artificial intelligence in language instruction: Impact on English learning achievement, L2 motivation, and self-regulated learning

This mixed methods study examines the effects of AI-mediated language instruction on English learning achievement, L2 motivation, and self-regulated learning among English as a Foreign Language (EFL) learners. It addresses the increasing interest in AI-driven educational technologies and their potential to revolutionize language instruction.

Two intact classes, consisting of a total of 60 university students, participated in this study. The experimental group received AI-mediated instruction, while the control group received traditional language instruction. Pre-tests and post-tests were administered to evaluate English learning achievement across various domains, including grammar, vocabulary, reading comprehension, and writing skills. Additionally, self-report questionnaires were employed to assess L2 motivation and self-regulated learning.

Quantitative analysis revealed that the experimental group achieved significantly higher English learning outcomes in all assessed areas compared to the control group. Furthermore, they exhibited greater L2 motivation and more extensive utilization of self-regulated learning strategies. These results suggest that AI-mediated instruction positively impacts English learning achievement, L2 motivation, and self-regulated learning.

Qualitative analysis of semi-structured interviews with 14 students from the experimental group shed light on the transformative effects of the AI platform. It was found to enhance engagement and offer personalized learning experiences, ultimately boosting motivation and fostering self-regulated learning. These findings emphasize the potential of AI-mediated language instruction to improve language learning outcomes, motivate learners, and promote autonomy.

This study contributes to evidence-based language pedagogy, offering valuable insights to educators and researchers interested in incorporating AI-powered platforms into language classrooms. The results support the notion that AI-mediated language instruction holds promise in revolutionizing language learning, and it highlights the positive impact of AI-driven educational technologies in the realm of language education.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1261955/full>

LAURENCE DE BACKER, RENATA ENGHELS & PATRICK GOETHALS – Metaphor analysis meets lexical strings: finetuning the metaphor identification procedure for quantitative semantic analyses

Recent years have witnessed the development of the Metaphor Identification Procedure (MIP/VU), a step-by-step protocol designed to identify metaphorically-used words in discourse. However, MIP(VU)'s merits notwithstanding, the procedure poses a problem to scholars intending to use its output as the basis for a semantic field analysis involving a quantitative component. Depending on the research question, metaphor analysts may be interested in chunks of language situated above the procedure's standardized level of analysis (i.e., the lexical unit or lexeme), including phrases and sentences. Yet, attempts to decenter the method's exclusive focus on metaphor-related words have been the target of critique, among others on the grounds of their lack of clear unit-formation guidelines and, hence, their inconsistent unit of analysis and measurement.

Drawing on data derived from a Spanish-language US-based newspaper's coverage of the migration program known as DACA (Deferred Action for Childhood Arrivals), this article describes challenges that analysts can run into when attempting to use a dataset containing atomized metaphor-related words as the input for subsequent quantitative semantic analyses. Its main methodological contribution consists in a proposal and illustration of three possible methods to extend the existing MIP(VU)-protocol in such a way as to allow it to capture metaphorical strings, on top of lexemes, in a reliable and systematic manner. The first two methods are procedural, and entail formulating a-priori grouping-directives based on the research question(s). One departs from semasiological criteria (Method 1) and the other takes an onomasiological approach (Method 2). The third method works bottom-up, involving the ad hoc grouping of lexemes and adding a descriptive parameter meant to keep track of grouping-decisions made by the analyst, thereby safeguarding transparency at all times.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1214699/full>

Journal of Human Evolution

PAPERS

MARÍA MARTINÓN-TORRES et al with MICHAEL D. PETRAGLIA – No scientific evidence that *Homo naledi* buried their dead and produced rock art

The Rising Star Cave system has yielded a stunning concentration of hominin remains estimated to belong to more than 15 individuals representing all age groups, assigned to a new species, *Homo naledi* (Berger et al., 2015; Dirks et al., 2015). Previous publications (e.g., Dirks et al., 2015; Randolph-Quinney, 2015), as well as popular interviews with the team leaders

have suggested that *H. naledi* was engaged in deliberate disposal of the dead. However, other researchers have cited geological, taphonomic and paleontological evidence to suggest that natural formation scenarios may account for skeletal accumulations, such as a natural death trap, water transport of bodies/body parts and carnivore activity (e.g., Val, 2016; Stiner, 2017; Egeland et al., 2018; Pettitt, 2022).

In June of 2023, the journal *eLife* hosted three reviewed pre-prints by the Rising Star research team claiming that the Dinaledi and Hill Antechamber skeletal remains indicate deliberate burial practices and the production of associated rock art (Berger et al., 2023a, 2023b; Fuentes et al., 2023)¹. Both the reviewed and previously unreviewed pre-prints were accompanied by a strong media campaign that quickly spread the revolutionary idea that the small-brained (~450–600 cc) hominins found deep in the Rising Star Cave system were capable of complex funerary behaviors equivalent to those attributed to larger-brained (~1400 cc) hominin species, *Homo sapiens* and *Homo neanderthalensis*. The media hype that accompanied both the unreviewed and reviewed, though currently unmodified, pre-prints at the time of this writing, triggered strong public controversy and an immediate debate about ‘modern human behavior’ but also about the way in which scientific work is communicated and perceived by the public (e.g., Gibbons, 2023; Petraglia et al., 2023; Zimmer, 2023). Here we will examine the evidence for the alleged burials and the purported rock art presented in the three reviewed pre-prints together with a consideration of the open reviews published alongside them. The peer reviews were unanimous in considering the evidence inadequate in its present form. Despite this, these versions remain available and communicated to the press and social media without yet integrating any of the referee’s comments.

Here we argue that the evidence presented so far is not compelling enough to support the deliberate burial of the dead by *H. naledi* nor that they made the purported engravings. Substantial additional documentation and scientific analyses are needed before we can rule out that natural agents and post-depositional processes are responsible for the accumulation of bodies/body parts and to prove the intentional excavation and filling of pits by *H. naledi*. Moreover, detailed analyses are needed to demonstrate that the so-called ‘engravings’ are indeed human-made marks and that, like the purported evidence of fire use, they can be securely linked to *H. naledi*. Our commentary also offers a brief insight on the state of the field regarding the importance of responsible social communication and the challenges brought by new models of scientific publication.

<https://www.sciencedirect.com/science/article/abs/pii/S0047248423001434>

Nature

NEWS

How big is science’s fake-paper problem?

An unpublished analysis suggests that there are hundreds of thousands of bogus ‘paper-mill’ articles lurking in the literature.

<https://www.nature.com/articles/d41586-023-03464-x>

Nature Communications

PAPERS

BRADY J. WILLIAMSON, HANSEL M. GREINER & DARREN S. KADIS – Virtual lesions in MEG reveal increasing vulnerability of the language network from early childhood through adolescence

In childhood, language outcomes following brain injury are inversely related to age. Neuroimaging findings suggest that extensive representation and/or topological redundancy may confer the pediatric advantage. Here, we assess whole brain and language network resilience using *in silico* attacks, for 85 children participating in a magnetoencephalography (MEG) study. Nodes are targeted based on eigenvector centrality, betweenness centrality, or at random. The size of each connected component is assessed after iterated node removal; the percolation point, or moment of dis-integration, is defined as the first instance where the second largest component peaks in size. To overcome known effects of fixed thresholding on subsequent graph and resilience analyses, we study percolation across all possible network densities, within a Functional Data Analysis (FDA) framework. We observe age-related increases in vulnerability for random and betweenness centrality-based attacks for whole-brain and stories networks (adjusted- $p < 0.05$). Here we show that changes in topology underlie increasing language network vulnerability in development.

<https://www.nature.com/articles/s41467-023-43165-7>

Nature Neuroscience

PAPERS

VINCENT B. MCGINTY & SHIRA M. LUPKIN – Behavioral read-out from population value signals in primate orbitofrontal cortex

The primate orbitofrontal cortex (OFC) has long been recognized for its role in value-based decisions; however, the exact mechanism linking value representations in the OFC to decision outcomes has remained elusive. Here, to address this question, we show, in non-human primates, that trial-wise variability in choices can be explained by variability in value signals decoded from many simultaneously recorded OFC neurons. Mechanistically, this relationship is consistent with the projection of activity within a low-dimensional value-encoding subspace onto a potentially higher-dimensional, behaviorally potent output subspace. Identifying this neural–behavioral link answers longstanding questions about the role of the OFC in

economic decision-making and suggests population-level read-out mechanisms for the OFC similar to those recently identified in sensory and motor cortex.

<https://www.nature.com/articles/s41593-023-01473-7>

Nature Reviews Neuroscience

ARTICLES

JAKE ROGERS – Reliable social switch

The neural basis of whether an observer relies on prior experience or shifts to rely on the behaviour of others when making a choice is unknown. Mahmoodi et al. have assessed how the reliability of social information influences such shifts in decision making and identified the underlying frontopolar–temporal neural circuit in non-human primates.

See ALI MAHMOODI et al – A frontopolar-temporal circuit determines the impact of social information in macaque decision making, EAORC Bulletin 1,062, [https://www.cell.com/neuron/fulltext/S0896-6273\(23\)00748-1](https://www.cell.com/neuron/fulltext/S0896-6273(23)00748-1)

<https://www.nature.com/articles/s41583-023-00771-0>

Nature Scientific Reports

PAPERS

EVELIEN HEYSELAAR – The CASA theory no longer applies to desktop computers

The Computers Are Social Actors (CASA) theory is the most important theoretical contribution that has shaped the field of human–computer interaction. The theory states that humans interact with computers as if they are human, and is the cornerstone on which all social human–machine communication (e.g., chatbots, robots, virtual agents) are designed. However, the theory itself dates back to the early 1990s, and, since then, technology and its place in society has evolved and changed drastically. Here we show, via a direct replication of the original study, that participants no longer interact with desktop computers as if they are human. This suggests that the CASA Theory may only work for emergent technology, an important concept that needs to be taken into account when designing and researching human–computer interaction.

<https://www.nature.com/articles/s41598-023-46527-9>

New Scientist

NEWS

Chimpanzees use high ground to scope out rival groups

Groups of chimpanzees patrol the edges of their territory and pause on hilltops to listen out for rivals, judging whether it is safe to venture further.

<https://www.newscientist.com/article/2400865-chimpanzees-use-high-ground-to-scope-out-rival-groups/>

Rats can use imagination to mentally recreate places they've visited

If a rat has walked through a location before, it can imagine that place, with the help of virtual reality. Some now expect all mammals to be capable of such thoughts.

<https://www.newscientist.com/article/2400887-rats-can-use-imagination-to-mentally-recreate-places-theyve-visited/>

Earliest known war in Europe was a Stone Age conflict 5000 years ago

Hundreds of human remains from one burial site hint at a prolonged conflict between Stone Age people, long before the formation of powerful states.

<https://www.newscientist.com/article/2400895-earliest-known-war-in-europe-was-a-stone-age-conflict-5000-years-ago/>

PLoS One

PAPERS

THERESA C. HAUGE, DANIEL P. FERRIS & RACHAEL D. SEIDLER – Individual differences in cooperative and competitive play strategies

Cooperation and competition are common in social interactions. It is not clear how individual differences in personality may predict performance strategies under these two contexts. We evaluated whether instructions to play cooperatively and competitively would differentially affect dyads playing a Pong video game. We hypothesized that instructions to play cooperatively would result in lower overall points scored and differences in paddle control kinematics relative to when participants were instructed to play competitively. We also predicted that higher scores in prosociality and Sportspersonship would be related to better performance during cooperative than competitive conditions.

Pairs of participants played a Pong video game under cooperative and competitive instructions. During competitive trials, participants were instructed to score more points against one another to win the game. During the cooperative trials, participants were instructed to work together to score as few points against one another as possible. After game play, each participant completed surveys so we could measure their trait prosociality and Sportspersonship.

Condition was a significant predictor of where along the paddle participants hit the ball, which controlled ball exit angles. Specifically, during cooperation participants concentrated ball contacts on the paddle towards the center to produce more consistent rebound angles. We found a significant correlation of Sex and the average points scored by participants during cooperative games, competitive games, and across all trials. Sex was also significantly correlated with paddle kinematics during cooperative games. The overall scores on the prosociality and Sportspersonship surveys were not significantly correlated with the performance outcomes in cooperative and competitive games. The dimension of prosociality assessing empathic concern was significantly correlated with performance outcomes during cooperative video game play. No Sportspersonship survey score was able to predict cooperative or competitive game performance, suggesting that Sportspersonship personality assessments are not reliable predictors of cooperative or competitive behaviors translated to a virtual game setting. Survey items and dimensions probing broader empathic concern may be more effective predictors of cooperative and competitive performance during interactive video game play. Further testing is encouraged to assess the efficacy of prosocial personality traits as predictors of cooperative and competitive video game behavior.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0293583>

EMILY COCO – Exploring the impact of mobility and selection on stone tool recycling behaviors through agent-based simulation

Recycling behaviors are becoming increasingly recognized as important parts of the production and use of stone tools in the Paleolithic. Yet, there are still no well-defined expectations for how recycling affects the appearance of the archaeological record across landscapes. Using an agent-based model of recycling in surface contexts, this study looks how the archaeological record changes under different conditions of recycling frequency, occupational intensity, mobility, and artifact selection. The simulations also show that while an increased number of recycled artifacts across a landscape does indicate the occurrence of more scavenging and recycling behaviors generally, the location of large numbers of recycled artifacts is not necessarily where the scavenging itself happened. This is particularly true when mobility patterns mean each foraging group spend more time moving around the landscape. The results of the simulations also demonstrate that recycled artifacts are typically those that have been exposed longer in surface contexts, confirming hypothesized relationships between recycling and exposure. In addition to these findings, the recycling simulation shows how archaeological record formation due to recycling behaviors is affected by mobility strategies and selection preferences. While only a simplified model of recycling behaviors, the results of this simulations give us insight into how to better interpret recycling behaviors from the archaeological record, specifically demonstrating the importance of contextualizing the occurrence of recycled artifacts on a wider landscape-level scale.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0294242>

RICKARD HAMMARÉN, STEVEN T. GOLDSTEIN & CARINA M. SCHLEBUSCH – Eurasian back-migration into Northeast Africa was a complex and multifaceted process

Recent studies have identified Northeast Africa as an important area for human movements during the Holocene. Eurasian populations have moved back into Northeastern Africa and contributed to the genetic composition of its people. By gathering the largest reference dataset to date of Northeast, North, and East African as well as Middle Eastern populations, we give new depth to our knowledge of Northeast African demographic history. By employing local ancestry methods, we isolated the Non-African parts of modern-day Northeast African genomes and identified the best putative source populations. Egyptians and Sudanese Copts bore most similarities to Levantine populations whilst other populations in the region generally had predominantly genetic contributions from the Arabian peninsula rather than Levantine populations for their Non-African genetic component. We also date admixture events and investigated which factors influenced the date of admixture and find that major linguistic families were associated with the date of Eurasian admixture. Taken as a whole we detect complex patterns of admixture and diverse origins of Eurasian admixture in Northeast African populations of today.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0290423>

DANIEL PEREIRA, CLAIRE MANEN & SOLANGE RIGAUD – The shaping of social and symbolic capital during the transition to farming in the Western Mediterranean: Archaeological network analyses of pottery decorations and personal ornaments

Storing information and circulating it between individuals and groups is a critical behaviour that signals a tipping point in our evolutionary history. Such practices enabled the preservation and consolidation of knowledge over extended periods, facilitating the accumulation of cultural innovations across generations. In this study, we used Social Network Analysis methods to explore how knowledge circulated during the transition to agriculture in the Western Mediterranean region. Previous studies have shown that specific elements of the material culture reveal distinct patterns of cultural interaction among early farming communities. Here, we investigated if two archaeological proxies, personal ornaments and pottery decorations, both with an exclusively symbolic function, reveal different network structures, and if the different degree of connexions acted equally on the transmission of styles, symbols, and network changes over time. Our results relied on cultural data recorded from 77 archaeological occupations covering Italy, France, and Spain, spanning over 1,500 years (ca. 7950~6450 cal BP). By utilizing a chronological dataset comprising 114 radiocarbon dates, we revealed that pottery decorative techniques networks exhibited stronger connexions over space and time, with nodes organized in clear cluster,

when compared to personal ornaments networks. The findings highlight the regionalization and fragmentation of cultural networks during the Early Neolithic, and that the transmission of cultural traits within each category of artefact operated through varying cultural and social mechanisms. Pottery expressed a dynamic regional identity, continuously shaped by geographical and chronological proximity, while bead-type associations contributed to enduring identities shared across vast geographical scales. These networks shed light on the multifaceted shaping of social and symbolic capital among the Mediterranean's early farmers, emphasizing the strength and quality of social ties that existed between communities and the level of reciprocity and cooperation required to foster these diverse social, economic, and cultural development strategies. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0294111>

WASILIOS HARISKOS, JAKOB NEITZEL & LAURI SÄÄKSVUORI – Fairness views and cooperation under varying levels of economic inequality

This paper investigates the impact of economic inequality on people's perceptions of fairness and willingness to cooperate. Using experimental and survey data, we distinguish people's injunctive perceptions of fairness from experimentally observed behavioral patterns. We find that impartial observers hold shared perceptions of fair contribution rules. Individuals with their own money at stake hold conflicting views over fair contribution rules. We find that contribution patterns are more scattered under strong inequality than under weak inequality. Overall, we observe that voluntary contributions are lower under strong inequality than under weak inequality. Our results contribute to the debate about the behavioral consequences of income and wealth inequalities in modern societies. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0288790>

CHI-HORNG LIAO & CHU-CHIA HSU – Exploring determinants of formation of cognitive anchors from altruistic messages: A fuzzy DEMATEL approach

Altruistic communication by non-profit organizations plays a crucial role in shaping individuals' perceptions and beliefs about altruism. One of the indicators of effective communication is the anchoring of the messages. Therefore, understanding the underlying determinants of anchoring in altruistic communication is essential. Despite the importance of anchoring in the communication of altruism, extant research has not done much to examine the determinants of anchoring in altruistic communication. This paper investigates the determinants of anchoring in non-profit organizations' altruistic communication through the lens of the dual process theory. It applies the Fuzzy Decision Making Trial and Evaluation Laboratory (F-DEMATEL) method to analyze the causal and effect factors. Data were gathered from 12 social communication experts based in Taiwan. Out of the 12 proposed determinants, three factors, namely consistency, cultural consideration, and emotional anchoring, were established as significant causal factors. Consistency had causal effects on five other factors, namely, the use of metaphors, the use of antinomies, thematic anchoring, understanding the cognitive ability of the audience, and crafting engaging information. Cultural consideration had causal effects on feedback, naming, use of antinomies, thematic anchoring, emotional anchoring, and repetition. Emotional anchoring had causal effects on thematic anchoring, use of antinomies, use of metaphors, consistency, naming, feedback, understanding the cognitive ability of the audience, and repetition. On the other hand, feedback, naming, and use of antinomies were established as significant effect factors. The study's findings offer crucial contributions to the social communication literature and provide important insights for social communication practitioners. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0293841>

Proceedings of the Royal Society B

PAPERS

ANN E. CALDWELL et al – Adolescence is characterized by more sedentary behaviour and less physical activity even among highly active forager-farmers

Over 80% of adolescents worldwide are insufficiently active, posing massive public health and economic challenges. Declining physical activity (PA) and sex differences in PA consistently accompany transitions from childhood to adulthood in post-industrialized populations and are attributed to psychosocial and environmental factors. An overarching evolutionary theoretical framework and data from pre-industrialized populations are lacking. This cross-sectional study tests hypotheses from life history theory, that adolescent PA is inversely related to age, but this association is mediated by Tanner stage, reflecting higher and sex-specific energetic demands for growth and reproductive maturation. Detailed measures of PA and pubertal maturation are assessed among Tsimane forager-farmers (age: 7–22 years; 50% female, n = 110). Most Tsimane sampled (71%) meet World Health Organization PA guidelines (greater than or equal to 60 min/day of moderate-to-vigorous PA). Like post-industrialized populations, sex differences and inverse age-activity associations were observed. Tanner stage significantly mediated age-activity associations. Adolescence presents difficulties to PA engagement that warrant further consideration in PA intervention approaches to improve public health. <https://royalsocietypublishing.org/doi/full/10.1098/rspb.2023.1764>

Quarterly Review of Biology

REVIEWS

R. PAUL THOMPSON – Understanding Human Evolution

Review of 'Understanding Human Evolution' by Ian Tattersall. Cambridge University Press (2022).

<https://www.journals.uchicago.edu/doi/abs/10.1086/727916>

Science Advances

PAPERS

ELENA A. PEARCE et al – Substantial light woodland and open vegetation characterized the temperate forest biome before Homo sapiens

The extent of vegetation openness in past European landscapes is widely debated. In particular, the temperate forest biome has traditionally been defined as dense, closed-canopy forest; however, some argue that large herbivores maintained greater openness or even wood-pasture conditions. Here, we address this question for the Last Interglacial period (129,000–116,000 years ago), before Homo sapiens-linked megafauna declines and anthropogenic landscape transformation. We applied the vegetation reconstruction method REVEALS to 96 Last Interglacial pollen records. We found that light woodland and open vegetation represented, on average, more than 50% cover during this period. The degree of openness was highly variable and only partially linked to climatic factors, indicating the importance of natural disturbance regimes. Our results show that the temperate forest biome was historically heterogeneous rather than uniformly dense, which is consistent with the dependency of much of contemporary European biodiversity on open vegetation and light woodland.

<https://www.science.org/doi/10.1126/sciadv.adi9135>

CORRECTIONS

H. HOLDEN THORP – Editorial expression of concern

On 16 August 2023, Science Advances published a Research Article "Societies of strangers do not speak less complex languages" by O. Shcherbakova et al. Following publication of this paper, the authors notified Science Advances about a problem with their analyses. Additional analyses are currently being done. By this Editorial Expression of Concern, we alert the scientific community of the errors as we examine the concerns and reanalyses.

O. Shcherbakova, S. M. Michaelis, H. J. Haynie, S. Passmore, V. Gast, R. D. Gray, S. J. Greenhill, D. E. Blasi, H. Skirgård (2023). Societies of strangers do not speak less complex languages. Science Advances 9, (2023).

In EAORC Bulletin 1,053.

<https://www.science.org/doi/10.1126/sciadv.adm8238>

Trends in Cognitive Sciences

PAPERS

IGOR GROSSMANN et al – When expert predictions fail

We examine the opportunities and challenges of expert judgment in the social sciences, scrutinizing the way social scientists make predictions. While social scientists show above-chance accuracy in predicting laboratory-based phenomena, they often struggle to predict real-world societal changes. We argue that most causal models used in social sciences are oversimplified, confuse levels of analysis to which a model applies, misalign the nature of the model with the nature of the phenomena, and fail to consider factors beyond the scientist's pet theory. Taking cues from physical sciences and meteorology, we advocate an approach that integrates broad foundational models with context-specific time series data. We call for a shift in the social sciences towards more precise, daring predictions and greater intellectual humility.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(23\)00263-2](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(23)00263-2)

NICOLAS BAUMARD et al – Cognitive fossils: using cultural artifacts to reconstruct psychological changes throughout history

Psychology is crucial for understanding human history. When aggregated, changes in the psychology of individuals – in the intensity of social trust, parental care, or intellectual curiosity – can lead to important changes in institutions, social norms, and cultures. However, studying the role of psychology in shaping human history has been hindered by the difficulty of documenting the psychological traits of people who are no longer alive. Recent developments in psychology suggest that cultural artifacts reflect in part the psychological traits of the individuals who produced or consumed them. Cultural artifacts can thus serve as 'cognitive fossils' – physical imprints of the psychological traits of long-dead people. We review the range of materials available to cognitive and behavioral scientists, and discuss the methods that can be used to recover and quantify changes in psychological traits throughout history.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(23\)00259-0](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(23)00259-0)

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