

## CONTENTS

<b>NOTICES</b> .....	<b>2</b>
PUBLICATION ALERTS.....	2
SCIENCE NEWS – This gnarled pile of fossils was once a giant structure—made of Ice Age mammoths.....	2
SOCIETY FOR SCIENCE – This is one of the largest Ice Age structures made of mammoth bones.....	2
BREAKING SCIENCE – 3.67-Million-Year-Old Fossil Unveils More about Australopithecus prometheus.....	2
SCIENCE DAILY – 'Little Foot' skull reveals how human ancestor more than 3 million years old lived.....	2
SCIENCE DAILY – Mysterious bone circles made from the remains of mammoths.....	2
SCIENCE DAILY – Global human genomes reveal rich genetic diversity shaped by evolutionary history.....	2
ACADEMIA.EDU – Symbolic material culture in human evolution.....	2
MICHELLE C. LANGLEY – Symbolic material culture in human evolution: Use in prehistory, appearance in the archaeological record and taphonomy.....	3
ACADEMIA.EDU – From Hominid to Human: The Role of Human Wisdom.....	3
MARC KISSEL & AGUSTÍN FUENTES – From Hominid to Human: The Role of Human Wisdom and Distinctiveness in the Evolution of Modern Humans.....	3
OTHER NEWS – exploring the impact of lecture capture on student attendance.....	3
MARTIN R. EDWARDS & MICHAEL E. CLINTON – A study exploring the impact of lecture capture availability and lecture capture usage on student attendance and attainment.....	3
<b>PUBLICATIONS</b> .....	<b>3</b>
Frontiers in Psychology.....	3
<b>PAPERS</b> .....	<b>3</b>
ELIZABETH B. GROSS & SARA E. MEDINA-DEVILLIERS – Cognitive Processes Unfold in a Social Context: A Review and Extension of Social Baseline Theory.....	3
TOM G. E. DAMEN, RICK B. VAN BAAREN & AP DIJKSTERHUIS – Time for Action: Verbal Action Cues Influence Temporal Binding.....	4
PIOTR K. OLEŚ et al – Types of Inner Dialogues and Functions of Self-Talk: Comparisons and Implications.....	4
EVELINA LEIVADA & MARIT WESTERGAARD – Acceptable Ungrammatical Sentences, Unacceptable Grammatical Sentences, and the Role of the Cognitive Parser.....	4
Nature.....	4
<b>NEWS</b> .....	<b>4</b>
Mischief-making bots attacked my scientific survey.....	4
Nature Human Behaviour.....	5
<b>ARTICLES</b> .....	<b>5</b>
CHRISTIAN WELZEL – A cultural theory of regimes.....	5
<b>PAPERS</b> .....	<b>5</b>
DAMIAN J. RUCK et al with QUENTIN D. ATKINSON – The cultural foundations of modern democracies.....	5
Nature Scientific Reports.....	5
<b>PAPERS</b> .....	<b>5</b>
JOAO M. CORREIA et al – Phonatory and articulatory representations of speech production in cortical and subcortical fMRI responses.....	5
TAMAS DAVID-BARRETT – Herding Friends in Similarity-Based Architecture of Social Networks.....	5
ROBIN E. MORRISON et al – Western gorilla space use suggests territoriality.....	5
AMÉLIE BEAUDET et al – The atlas of StW 573 and the late emergence of human-like head mobility and brain metabolism.....	6
CAMILLE DAUJEARD et al with JEAN-JACQUES HUBLIN – Earliest African evidence of carcass processing and consumption in cave at 700 ka, Casablanca, Morocco.....	6
FEDERICA AMICI et al – Innovation in wild Barbary macaques ( <i>Macaca sylvanus</i> ).....	6
MIGUEL ARENAS et al – The Early Peopling of the Philippines based on mtDNA.....	6
DARIO MADEO & CHIARA MOCENNI – Self-regulation versus social influence for promoting cooperation on networks.....	7
New Scientist.....	7
<b>NEWS</b> .....	<b>7</b>
Our ancestors may have run a million years earlier than we thought.....	7
'Bonehege': Stone Age structure of mammoth bones discovered in Russia.....	7
PeerJ.....	7
<b>PAPERS</b> .....	<b>7</b>
BRIANNE BEISNER et al – A multiplex centrality metric for complex social networks: sex, social status, and family structure predict multiplex centrality in rhesus macaques.....	7
GENEVIEVE M. MCARTHUR et al – Self-concept in poor readers: a systematic review and meta-analysis.....	8

PNAS.....	8
PAPERS.....	8
GAËTAN SANCHEZ et al – Decoding across sensory modalities reveals common supramodal signatures of conscious perception.....	8
<b>To subscribe to the EAORC Bulletin .....</b>	<b>8</b>
<b>To unsubscribe from the EAORC Bulletin .....</b>	<b>8</b>
<b>Produced by and for the EAORC email group .....</b>	<b>8</b>

## 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 – This gnarled pile of fossils was once a giant structure—made of Ice Age mammoths

Some 25,000 years ago, a circular wall of bone and ivory rose like a macabre mirage from a snowbound plain 500 kilometers south of present-day Moscow. The ring—built from the bones of at least 60 mammoths—was thought to shelter people living on the treeless expanse during the coldest part of the last ice age. Now, a new study reveals the ring, discovered in 2014, is 12.5 meters in diameter—likely too large to have been roofed. Archaeologists also failed to find any remains from animals other than mammoths, making it unlikely that humans lived there for any length of time.

[https://www.sciencemag.org/news/2020/03/gnarled-pile-fossils-was-once-giant-structure-made-ice-age-mammoths?utm\\_campaign=news\\_daily\\_2020-03-17&et rid=17774313&et cid=3249121](https://www.sciencemag.org/news/2020/03/gnarled-pile-fossils-was-once-giant-structure-made-ice-age-mammoths?utm_campaign=news_daily_2020-03-17&et rid=17774313&et cid=3249121)

### SOCIETY FOR SCIENCE – This is one of the largest Ice Age structures made of mammoth bones

A massive ring of mammoth bones, built by hunter-gatherers during the Ice Age, offers a peek at life 25,000 years ago.

<http://click.societyforscience-email.com/?qs=73d290051775d6d56432f403d60326a51e20b153706df11c9afab071dde488b14a24106231d8d0bde71d0038970132508c105484acd8ad5>

### BREAKING SCIENCE – 3.67-Million-Year-Old Fossil Unveils More about Australopithecus prometheus

An international team of paleoanthropologists led by the University of the Witwatersrand has examined the first cervical vertebra (atlas) of the ‘Little Foot,’ a 3.67 million-year-old Australopithecus prometheus specimen from the Sterkfontein cave in South Africa comprised of a skull and associated postcranial skeleton.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/ULDU8LauPW8/little-foot-atlas-08234.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/ULDU8LauPW8/little-foot-atlas-08234.html?utm_source=feedburner&utm_medium=email)

### SCIENCE DAILY – ‘Little Foot’ skull reveals how human ancestor more than 3 million years old lived

High-resolution micro-CT scanning of the skull of the fossil specimen known as ‘Little Foot’ has revealed some aspects of how this Australopithecus species used to live more than 3 million years ago.

<https://www.sciencedaily.com/releases/2020/03/200317103821.htm>

### SCIENCE DAILY – Mysterious bone circles made from the remains of mammoths

Mysterious bone circles made from the remains of dozens of mammoths have revealed clues about how ancient communities survived Europe's ice age.

<https://www.sciencedaily.com/releases/2020/03/200316204633.htm>

### SCIENCE DAILY – Global human genomes reveal rich genetic diversity shaped by evolutionary history

A new study has provided the most comprehensive analysis of human genetic diversity to date, after the sequencing of 929 human genomes. The study uncovers a large amount of previously undescribed genetic variation and provides new insights into our evolutionary past, highlighting the complexity of the process through which our ancestors diversified, migrated and mixed throughout the world.

<https://www.sciencedaily.com/releases/2020/03/200319141026.htm>

### ACADEMIA.EDU – Symbolic material culture in human evolution

*Barbora Putová & Václav Soukup (eds.), 2015, The Genesis of Creativity and the Origin of the Human Mind. Karolinum Press: Prague, Czechia, ch5.*

## **MICHELLE C. LANGLEY – Symbolic material culture in human evolution: Use in prehistory, appearance in the archaeological record and taphonomy**

People all over the world use material culture to transmit information about themselves to observers every day. This was no exception in the past. At some point in human prehistory, either owing to changes in the environment, population densities or some other cause, the cognition and behaviour of Modern Human populations in Africa, and perhaps Neanderthals in Eurasia, developed and changed so that artefacts were invested with abstract meanings and symbolic values for the first time in human prehistory (Mithen 1996), rather than being manufactured solely for utilitarian purposes (Bisson 2001). When this ability to use material culture to transmit information developed in human evolution is a topic that has been heatedly debated (e.g. Bouzouggar, Barton, Vanhaeren et al. 2007, Brumm, Moore 2005, Conard 2008, d'Errico 2003, Henshilwood, Marean 2003, Henshilwood, d'Errico, Vanhaeren et al. 2004, Henshilwood 2007, Klein 2000, Mellars 2005, Wadley 2001). Through focusing on four specific material culture categories – body ornamentation, hunting weaponry, mobiliary art and rock art – this paper will not only outline how symbolic material culture may have been used during the late Pleistocene by human communities but also highlight the problems associated in interpreting their presence (and absence) from the archaeological record.

[https://www.academia.edu/15125212/Symbolic material culture in human evolution Use in prehistory appearance in the archaeological record and taphonomy?email work card=view-paper](https://www.academia.edu/15125212/Symbolic_material_culture_in_human_evolution_Use_in_prehistory_appearance_in_the_archaeological_record_and_taphonomy?email_work_card=view-paper)

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## **ACADEMIA.EDU – From Hominid to Human: The Role of Human Wisdom**

*2016. Philosophy, Theology and the Sciences 3:2, 217-244.*

### **MARC KISSEL & AGUSTÍN FUENTES – From Hominid to Human: The Role of Human Wisdom and Distinctiveness in the Evolution of Modern Humans**

While anthropology is often concerned with the question of how humans make meaning in the world, paleoanthropologists tend to avoid questions of human distinctiveness. This is not to say that there are not many hypotheses explaining human origins, only that there is a tendency to see the answer in terms of a specific evolutionary change. This research agenda is often couched in terms of the origins of 'behavioral modernity' as the key event making 'us' human. Here we present a brief overview of how researchers have used the concept of a 'symbol' to contextualize the debate. Then, we move to examining the archaeological record for indicators of when members of the human lineage began to produce and expand their cultural niche via symbolic means. Over the course of our evolution humans developed distinctive capacities to navigate social networks, live in complex communities, and interact with the biotic and abiotic world through symbol making. We propose that this process, in part, can be described as the evolution of human wisdom.

[https://www.academia.edu/29471532/From Hominid to Human The Role of Human Wisdom and Distinctiveness in the Evolution of Modern Humans?email work card=view-paper](https://www.academia.edu/29471532/From_Hominid_to_Human_The_Role_of_Human_Wisdom_and_Distinctiveness_in_the_Evolution_of_Modern_Humans?email_work_card=view-paper)

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## **OTHER NEWS – exploring the impact of lecture capture on student attendance**

*Higher Education 77, 403-421 (2019)*

### **MARTIN R. EDWARDS & MICHAEL E. CLINTON – A study exploring the impact of lecture capture availability and lecture capture usage on student attendance and attainment**

Lecture capture is widely used within higher education as a means of recording lecture material for online student viewing. However, there is some uncertainty around whether this is a uniformly positive development for students. The current study examines the impact of lecture capture introduction and usage in a compulsory second year research methods module in an undergraduate BSc degree. Data collected from a matched cohort before (N = 161) and after (N = 160) lecture capture introduction showed that attendance substantially dropped in three matched lectures after capture became available. Attendance, which predicts higher attainment (controlling for students' previous grade and gender), mediates a negative relationship between lecture capture availability and attainment. Lecture capture viewing shows no significant relationship with attainment whilst factoring in lecture attendance; capture viewing also fails to compensate for the impact that low attendance has on attainment. Thus, the net effect of lecture capture introduction on the cohort is generally negative; the study serves as a useful example (that can be communicated to students) of the pitfalls of an over-reliance on lecture capture as a replacement for lecture attendance.

[https://link.springer.com/article/10.1007/s10734-018-0275-9?utm\\_source=sn&utm\\_medium=referral&utm\\_content=null&utm\\_campaign=BSSS\\_4\\_US01\\_SN\\_EDU\\_Articles](https://link.springer.com/article/10.1007/s10734-018-0275-9?utm_source=sn&utm_medium=referral&utm_content=null&utm_campaign=BSSS_4_US01_SN_EDU_Articles)

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## **PUBLICATIONS**

**Frontiers in Psychology**

### **PAPERS**

#### **ELIZABETH B. GROSS & SARA E. MEDINA-DEVILLIERS – Cognitive Processes Unfold in a Social Context: A Review and Extension of Social Baseline Theory**

Psychologists often assume that social and cognitive processes operate independently, an assumption that prompts research into how social context influences cognitive processes. We propose that social and cognitive processes are not necessarily separate, and that social context is innate to resource dependent cognitive processes. We review the research supporting social baseline theory, which argues that our default state in physiological, cognitive, and neural processing is to incorporate

the relative costs and benefits of acting in our social environment. The review extends social baseline theory by applying social baseline theory to basic cognitive processes such as vision, memory, and attention, incorporating individual differences into the theory, reviewing environmental influences on social baselines, and exploring the dynamic effects of social interactions. The theoretical and methodological implications of social baseline theory are discussed, and future research endeavors into social cognition should consider that cognitive processes are situated within our social environments.

[https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00378/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_1272702\\_69\\_Psycho\\_20200317\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00378/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1272702_69_Psycho_20200317_arts_A)

### **TOM G. E. DAMEN, RICK B. VAN BAAREN & AP DIJKSTERHUIS – Time for Action: Verbal Action Cues Influence Temporal Binding**

Prior research has shown that our perception of time is compressed when we volitionally perform actions, a phenomenon referred to as temporal binding. In three studies, we investigated the degree to which contextual cues that signaled other agents and related to actions would influence binding, given that those cues may affect individual's feelings of independent action performance. Participants heard action verbalizations that did or did not match actions that participants had already begun performing. Participants' time estimates of the intervals between action initiations and action effects were higher on trials in which they heard verbalizations that matched their ongoing actions, and lower on trials in which the verbalizations and actions did not match. Such effects did not occur when participants passively observed actions and effects being caused by the computer. These results show that the compatibility of action cues with ongoing actions influences temporal binding effects, suggesting that they influence our feelings of having been an independent agent.

[https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00160/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_1272702\\_69\\_Psycho\\_20200317\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00160/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1272702_69_Psycho_20200317_arts_A)

### **PIOTR K. OLEŚ et al – Types of Inner Dialogues and Functions of Self-Talk: Comparisons and Implications**

Intrapersonal communication occurs in several modes including inner dialogue and self-talk. The Dialogical Self Theory (Hermans, 1996) postulates a polyphonic self that is comprised of a multiplicity of inner voices. Internal dialogical activity implies an exchange of thoughts or ideas between at least two so-called "I-positions" representing specific points of view. Among the functions served by self-talk are self-criticism, self-reinforcement, self-management, and social assessment (Brinthaup et al., 2009). This paper explores the relationships among different types of internal dialogues and self-talk functions. Participants included college students from Poland (n = 181) and the United States (n = 119) who completed two multidimensional measures of inner dialogue and self-talk. Results indicated moderately strong relationships between inner dialogue types and self-talk functions, suggesting that there is a significant overlap between the two modes of communication. We discuss several implications of these findings for exploring similarities and differences among varieties of intrapersonal communication.

[https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00227/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_1272702\\_69\\_Psycho\\_20200317\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00227/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1272702_69_Psycho_20200317_arts_A)

### **EVELINA LEIVADA & MARIT WESTERGAARD – Acceptable Ungrammatical Sentences, Unacceptable Grammatical Sentences, and the Role of the Cognitive Parser**

A search for the terms "acceptability judgment tasks" and "language" and "grammaticality judgment tasks" and "language" produces results which report findings that are based on the exact same elicitation technique. Although certain scholars have argued that acceptability and grammaticality are two separable notions that refer to different concepts, there are contexts in which the two terms are used interchangeably. The present work reaffirms that these two notions and their scales do not coincide: there are sentences that are acceptable, even though they are ungrammatical, and sentences that are unacceptable, despite being grammatical. First, we adduce a number of examples for both cases, including grammatical illusions, violations of Identity Avoidance, and sentences that involve a level of processing complexity that overloads the cognitive parser and tricks it into (un)acceptability. We then discuss whether the acceptability of grammatically ill-formed sentences entails that we assign a meaning to them. Last, it is shown that there are n ways of unacceptability, and two ways of ungrammaticality, in the absolute and the relative sense. Since the use of the terms "acceptable" and "grammatical" is often found in experiments that constitute the core of the evidential base of linguistics, disentangling their various uses is likely to aid the field reach a better level of terminological clarity.

[https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00364/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_1272702\\_69\\_Psycho\\_20200317\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00364/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1272702_69_Psycho_20200317_arts_A)

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## Nature

### NEWS

#### **Mischief-making bots attacked my scientific survey**

A barrage of fake responses to her online questionnaire prompted psychologist Melissa Simone to ferret out the culprits.

<https://www.nature.com/articles/d41586-020-00768-0>

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## Nature Human Behaviour

### ARTICLES

#### **CHRISTIAN WELZEL – A cultural theory of regimes**

There is a longstanding debate about whether culture shapes regimes or regimes shape culture. New research by Ruck et al. resolves the debate in favor of culture's causal primacy.

<https://www.nature.com/articles/s41562-019-0790-4>

### PAPERS

#### **DAMIAN J. RUCK et al with QUENTIN D. ATKINSON – The cultural foundations of modern democracies**

National democracy is a rare thing in human history and its stability has long been tied to the cultural values of citizens. Yet it has not been established whether changing cultural values made modern democracy possible or whether those values were a response to democratic institutions. Here we combine longitudinal data and cohort information of nearly 500,000 individuals from 109 nations to track the co-evolution of democratic values and institutions over the last century. We find that cultural values of openness towards diversity predict a shift towards democracy and that nations with low institutional confidence are prone to political instability. In addition, the presence of democratic institutions did not predict any substantive changes in the measured cultural values. These results hold accounting for other factors, including gross domestic product per capita and non-independence between nations due to shared cultural ancestry. Cultural values lead to, rather than follow, the emergence of democracy. This indicates that current stable democracies will be under threat, should cultural values of openness to diversity and institutional confidence substantially decline.

<https://www.nature.com/articles/s41562-019-0769-1>

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## Nature Scientific Reports

### PAPERS

#### **JOAO M. CORREIA et al – Phonatory and articulatory representations of speech production in cortical and subcortical fMRI responses**

Speaking involves coordination of multiple neuromotor systems, including respiration, phonation and articulation. Developing non-invasive imaging methods to study how the brain controls these systems is critical for understanding the neurobiology of speech production. Recent models and animal research suggest that regions beyond the primary motor cortex (M1) help orchestrate the neuromotor control needed for speaking, including cortical and sub-cortical regions. Using contrasts between speech conditions with controlled respiratory behavior, this fMRI study investigates articulatory gestures involving the tongue, lips and velum (i.e., alveolars versus bilabials, and nasals versus orals), and phonatory gestures (i.e., voiced versus whispered speech). Multivariate pattern analysis (MVPA) was used to decode articulatory gestures in M1, cerebellum and basal ganglia. Furthermore, apart from confirming the role of a mid-M1 region for phonation, we found that a dorsal M1 region, linked to respiratory control, showed significant differences for voiced compared to whispered speech despite matched lung volume observations. This region was also functionally connected to tongue and lip M1 seed regions, underlying its importance in the coordination of speech. Our study confirms and extends current knowledge regarding the neural mechanisms underlying neuromotor speech control, which hold promise to study neural dysfunctions involved in motor-speech disorders non-invasively.

<https://www.nature.com/articles/s41598-020-61435-y>

#### **TAMAS DAVID-BARRETT – Herding Friends in Similarity-Based Architecture of Social Networks**

Although friendship as a social behaviour is an evolved trait that shares many similarities with kinship, there is a key difference: to choose friends, one must select few from many. Homophily, i.e., a similarity-based friendship choice heuristic, has been shown to be the main factor in selecting friends. Its function has been associated with the efficiency of collective action via synchronised mental states. Recent empirical results question the general validity of this explanation. Here I offer an alternative hypothesis: similarity-based friendship choice is an individual-level adaptive response to falling clustering coefficient of the social network typical during urbanisation, falling fertility, increased migration. The mathematical model shows how homophily as a friend-choice heuristic affects the network structure: (1) homophilic friendship choice increases the clustering coefficient; (2) network proximity-based and similarity-based friendship choices have additive effects on the clustering coefficient; and (3) societies that face falling fertility, urbanisation, and migration, are likely go through a u-shaped transition period in terms of clustering coefficient. These findings suggest that social identity can be seen as an emergent phenomenon and is the consequence, rather than the driver of, homophilic social dynamics, and offer an alternative explanation for the rise of "fake news" as a societal phenomenon.

<https://www.nature.com/articles/s41598-020-61330-6>

#### **ROBIN E. MORRISON et al – Western gorilla space use suggests territoriality**

The evolutionary origins of how modern humans share and use space are often modelled on the territorial-based violence of chimpanzees, with limited comparison to other apes. Gorillas are widely assumed to be non-territorial due to their large home ranges, extensive range overlap, and limited inter-group aggression. Using large-scale camera trapping, we monitored western gorillas in Republic of Congo across 60 km<sup>2</sup>. Avoidance patterns between groups were consistent with an

understanding of the “ownership” of specific regions, with greater avoidance of their neighbours the closer they were to their neighbours’ home range centres. Groups also avoided larger groups’ home ranges to a greater extent, consistent with stronger defensive responses from more dominant groups. Our results suggest that groups may show territoriality, defending core regions of their home ranges against neighbours, and mirror patterns common across human evolution, with core areas of resident dominance and larger zones of mutual tolerance. This implies western gorillas may be a key system for understanding how humans have evolved the capacity for extreme territorial-based violence and warfare, whilst also engaging in the strong affiliative inter-group relationships necessary for large-scale cooperation.

<https://www.nature.com/articles/s41598-020-60504-6>

### **AMÉLIE BEAUDET et al – The atlas of StW 573 and the late emergence of human-like head mobility and brain metabolism**

Functional morphology of the atlas reflects multiple aspects of an organism’s biology. More specifically, its shape indicates patterns of head mobility, while the size of its vascular foramina reflects blood flow to the brain. Anatomy and function of the early hominin atlas, and thus, its evolutionary history, are poorly documented because of a paucity of fossilized material. Meticulous excavation, cleaning and high-resolution micro-CT scanning of the StW 573 (‘Little Foot’) skull has revealed the most complete early hominin atlas yet found, having been cemented by breccia in its displaced and flipped over position on the cranial base anterolateral to the foramen magnum. Description and landmark-free morphometric analyses of the StW 573 atlas, along with other less complete hominin atlases from Sterkfontein (StW 679) and Hadar (AL 333-83), confirm the presence of an arboreal component in the positional repertoire of Australopithecus. Finally, assessment of the cross-sectional areas of the transverse foramina of the atlas and the left carotid canal in StW 573 further suggests there may have been lower metabolic costs for cerebral tissues in this hominin than have been attributed to extant humans and may support the idea that blood perfusion of these tissues increased over the course of hominin evolution.

<https://www.nature.com/articles/s41598-020-60837-2>

### **CAMILLE DAUJEARD et al with JEAN-JACQUES HUBLIN – Earliest African evidence of carcass processing and consumption in cave at 700 ka, Casablanca, Morocco**

To date, in Africa, evidence for animal processing and consumption in caves routinely used as living spaces is only documented in the late Middle Pleistocene of the North and South of the continent and postdates the Middle Pleistocene in East Africa. Here we report the earliest evidence in a North-African cave (Grotte des Rhinocéros at Casablanca, Morocco) of cut, percussion and human gnawing marks on faunal remains directly associated with lithic knapping activities in the same space and in a well-documented stratified context. Ages for this Acheulean site are provided by the dating of herbivorous teeth to 690–720 ka and 520–550 ka (lower and upper sets) by combined Electron Spin Resonance (ESR) and U-series techniques. Traces of butchery on gazelle, alcelaphin, and zebra bones demonstrate that hominins had primary access to herbivore carcasses. Hominins brought and consumed meat in the cave, as documented by herbivore bones bearing human tooth marks concentrated in a circumscribed area of the excavation. In Africa, this site provides the earliest evidence for in situ carcass processing and meat-eating in cave, directly associated with lithic production and demonstrates the recurrent use by early Middle Pleistocene hominins of a North African cave site 400 000 years before that by *Homo sapiens* at Jebel Irhoud (Morocco).

<https://www.nature.com/articles/s41598-020-61580-4>

### **FEDERICA AMICI et al – Innovation in wild Barbary macaques (*Macaca sylvanus*)**

Innovation is the ability to solve novel problems or find novel solutions to familiar problems, and it is known to affect fitness in both human and non-human animals. In primates, innovation has been mostly studied in captivity, although differences in living conditions may affect individuals’ ability to innovate. Here, we tested innovation in a wild group of Barbary macaques (*Macaca sylvanus*). In four different conditions, we presented the group with several identical foraging boxes containing food. To understand which individual characteristics and behavioural strategies best predicted innovation rate, we measured the identity of the individuals manipulating the boxes and retrieving the food, and their behaviour during the task. Our results showed that success in the novel task was mainly affected by the experimental contingencies and the behavioural strategies used during the task. Individuals were more successful in the 1-step conditions, if they participated in more trials, showed little latency to approach the boxes and mainly manipulated functional parts of the box. In contrast, we found no effect of inhibition, social facilitation and individual characteristics like sex, age, rank, centrality, neophobia and reaction to humans, on the individuals’ ability to innovate.

<https://www.nature.com/articles/s41598-020-61558-2>

### **MIGUEL ARENAS et al – The Early Peopling of the Philippines based on mtDNA**

Despite the efforts made to reconstruct the history of modern humans, there are still poorly explored regions that are key for understanding the phylogeography of our species. One of them is the Philippines, which is crucial to unravel the colonization of Southeast Asia and Oceania but where little is known about when and how the first humans arrived. In order to shed light into this settlement, we collected samples from 157 individuals of the Philippines with the four grandparents belonging to the same region and mitochondrial variants older than 20,000 years. Next, we analyzed the hypervariable I mtDNA region by approximate Bayesian computation based on extensive spatially explicit computer simulations to select among several

migration routes towards the Philippines and to estimate population genetic parameters of this colonization. We found that the colonization of the Philippines occurred more than 60,000 years ago, with long-distance dispersal and from both north and south migration routes. Our results also suggest an environmental scenario especially optimal for humans, with large carrying capacity and population growth, in comparison to other regions of Asia. In all, our study suggests a rapid expansion of modern humans towards the Philippines that could be associated with the establishment of maritime technologies and favorable environmental conditions.

<https://www.nature.com/articles/s41598-020-61793-7>

### **DARIO MADEO & CHIARA MOCENNI – Self-regulation versus social influence for promoting cooperation on networks**

Cooperation is a relevant and controversial phenomenon in human societies. Indeed, although it is widely recognized essential for tackling social dilemmas, finding suitable policies for promoting cooperation can be arduous and expensive. More often, it is driven by pre-established schemas based on norms and punishments. To overcome this paradigm, we highlight the interplay between the influence of social interactions on networks and spontaneous self-regulating mechanisms on individuals behavior. We show that the presence of these mechanisms in a prisoner's dilemma game, may oppose the willingness of individuals to defect, thus allowing them to behave cooperatively, while interacting with others and taking conflicting decisions over time. These results are obtained by extending the Evolutionary Game Equations over Networks to account for self-regulating mechanisms. Specifically, we prove that players may partially or fully cooperate whether self-regulating mechanisms are sufficiently stronger than social pressure. The proposed model can explain unconditional cooperation (strong self-regulation) and unconditional defection (weak self-regulation). For intermediate self-regulation values, more complex behaviors are observed, such as mutual defection, recruiting (cooperate if others cooperate), exploitation of cooperators (defect if others cooperate) and altruism (cooperate if others defect). These phenomena result from dynamical transitions among different game structures, according to changes of system parameters and cooperation of neighboring players. Interestingly, we show that the topology of the network of connections among players is crucial when self-regulation, and the associated costs, are reasonably low. In particular, a population organized on a random network with a Scale-Free distribution of connections is more cooperative than on a network with an Erdős-Rényi distribution, and, in turn, with a regular one. These results highlight that social diversity, encoded within heterogeneous networks, is more effective for promoting cooperation.

<https://www.nature.com/articles/s41598-020-61634-7>

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## New Scientist

### NEWS

#### **Our ancestors may have run a million years earlier than we thought**

The ancient human species *Australopithecus afarensis* may have been the earliest hominin to run on two legs. Although it had relatively short, ape-like legs, *A. afarensis* may have had a long Achilles' tendon just like modern humans do – a feature that helps us to run more efficiently.

<https://www.newscientist.com/article/2237361-our-ancestors-may-have-run-a-million-years-earlier-than-we-thought/#ixzz6HA0MFgHa>

#### **'Bonehenge': Stone Age structure of mammoth bones discovered in Russia**

A prehistoric circle made almost entirely of mammoth bones has been found in Russia. The "bonehenge" was built near the peak of the last glacial period, but it isn't clear why.

<https://www.newscientist.com/article/2237336-bonehenge-stone-age-structure-of-mammoth-bones-discovered-in-russia/#ixzz6HA0b63fq>

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## PeerJ

### PAPERS

#### **BRIANNE BEISNER et al – A multiplex centrality metric for complex social networks: sex, social status, and family structure predict multiplex centrality in rhesus macaques**

Members of a society interact using a variety of social behaviors, giving rise to a multi-faceted and complex social life. For the study of animal behavior, quantifying this complexity is critical for understanding the impact of social life on animals' health and fitness. Multilayer network approaches, where each interaction type represents a different layer of the social network, have the potential to better capture this complexity than single layer approaches. Calculating individuals' centrality within a multilayer social network can reveal keystone individuals and more fully characterize social roles. However, existing measures of multilayer centrality do not account for differences in the dynamics and functionality across interaction layers. Here we validate a new method for quantifying multiplex centrality called consensus ranking by applying this method to multiple social groups of a well-studied nonhuman primate, the rhesus macaque. Consensus ranking can suitably handle the complexities of animal social life, such as networks with different properties (sparse vs. dense) and biological meanings (competitive vs. affiliative interactions). We examined whether individuals' attributes or socio-demographic factors (sex, age, dominance rank and certainty, matriline size, rearing history) were associated with multiplex centrality. Social networks were constructed for five interaction layers (i.e., aggression, status signaling, conflict policing, grooming and huddling) for seven

social groups. Consensus ranks were calculated across these five layers and analyzed with respect to individual attributes and socio-demographic factors. Generalized linear mixed models showed that consensus ranking detected known social patterns in rhesus macaques, showing that multiplex centrality was greater in high-ranking males with high certainty of rank and females from the largest families. In addition, consensus ranks also showed that females from very small families and mother-reared (compared to nursery-reared) individuals were more central, showing that consideration of multiple social domains revealed individuals whose social centrality and importance might otherwise have been missed.

<https://peerj.com/articles/8712/>

#### **GENEVIEVE M. MCARTHUR et al – Self-concept in poor readers: a systematic review and meta-analysis**

The aims of this systematic review and meta-analyses were to determine if there is a statistically reliable association between poor reading and poor self-concept, and if such an association is moderated by domain of self-concept, type of reading impairment, or contextual factors including age, gender, reading instruction, and school environment.

We searched 10 key databases for published and unpublished studies, as well as reference lists of included studies, and studies that cited included studies. We calculated standardised mean differences (SMDs) and 95% confidence intervals for one primary outcome (average self-concept) and 10 secondary outcomes (10 domains of self-concept). We assessed the data for risk of bias, heterogeneity, sensitivity, reporting bias, and quality of evidence.

Thirteen studies with 3,348 participants met our selection criteria. Meta-analyses revealed statistically significant SMDs for average self-concept (-0.57) and five domains of self-concept (reading/writing/spelling: -1.03; academic: -0.67; math: -0.64; behaviour: -0.32; physical appearance: -0.28). The quality of evidence for the primary outcome was moderate, and for secondary outcomes was low, due to lack of data.

These outcomes suggest a probable moderate association between poor reading and average self-concept; a possible strong association between poor reading and reading-writing-spelling self-concept; and possible moderate associations between poor reading and self-concept in the self-concept domains of academia, mathematics, behaviour, and physical appearance.

<https://peerj.com/articles/8772/>

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## PNAS

### PAPERS

#### **GAËTAN SANCHEZ et al – Decoding across sensory modalities reveals common supramodal signatures of conscious perception**

An increasing number of studies highlight common brain regions and processes in mediating conscious sensory experience. While most studies have been performed in the visual modality, it is implicitly assumed that similar processes are involved in other sensory modalities. However, the existence of supramodal neural processes related to conscious perception has not been convincingly shown so far. Here, we aim to directly address this issue by investigating whether neural correlates of conscious perception in one modality can predict conscious perception in a different modality. In two separate experiments, we presented participants with successive blocks of near-threshold tasks involving subjective reports of tactile, visual, or auditory stimuli during the same magnetoencephalography (MEG) acquisition. Using decoding analysis in the poststimulus period between sensory modalities, our first experiment uncovered supramodal spatiotemporal neural activity patterns predicting conscious perception of the feeble stimulation. Strikingly, these supramodal patterns included activity in primary sensory regions not directly relevant to the task (e.g., neural activity in visual cortex predicting conscious perception of auditory near-threshold stimulation). We carefully replicate our results in a control experiment that furthermore show that the relevant patterns are independent of the type of report (i.e., whether conscious perception was reported by pressing or withholding a button press). Using standard paradigms for probing neural correlates of conscious perception, our findings reveal a common signature of conscious access across sensory modalities and illustrate the temporally late and widespread broadcasting of neural representations, even into task-unrelated primary sensory processing regions.

<https://www.pnas.org/content/early/2020/03/16/1912584117.abstract?etoc>

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