EAORC BULLETIN 700 – 13 November 2016

CONTENTS

NOTICES

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.
If there is a journal you feel I should be tracking on a regular basis, do let me know.
And if you have any other ideas for extending the "EAORC experience", please contact me.

Issue 700, and a change to the bulletin

Yay! We reached 700! Time for a change!

Actually, just a small one: the dates against the publications have become increasingly meaningless as prepublication, ad hoc publication, daily publishing, special issues and god knows what else are being thrown at us by publishers. The interweb has changed the rules; so, because I'm tired of running as fast as I can just to stay still, I'm removing the dates from the publication list. You can always click on the link if you want an exact date, and it's one less thing for me to get wrong.

The produce is still guaranteed[1] fresh, but I'm not giving "sell by" dates any more.

[1] *A guarantee is a promise and should not be taken as informative, useful or binding. All guarantees are intended as political guarantees.*

SCIAM NEWS – Monkeys Can Make Stone Tools, Too

When these monkeys bang rocks together, they make stone flakes that resemble those archaeologists believe humans made two million to three million years ago.
https://www.scientificamerican.com/video/monkeys-can-make-stone-tools-too/?WT.mc_id=SA_EVO_20161107

SCIAM NEWS – Reading Neandertal Minds

Analyses of anatomy, DNA and cultural remains have yielded tantalizing insights into the inner lives of our mysterious extinct cousins
https://www.scientificamerican.com/article/reading-neandertal-minds/?WT.mc_id=SA_EVO_20161107

SCI-NEWS.COM – Chimps Discovered Using Tools to Fish for Algae

Chimpanzees in Guinea are regularly using long and robust tools to fish for algae, reveals new research published this month in the American Journal of Primatology. Chimpanzees (Pan troglodytes) often use tools to extract or consume food but which tools they choose for which purpose can differ depending on where they live.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/IGOWiopunW8/chimps-using-tools-fish-algae-04351.html?utm_source=feedburner&utm_medium=email

SCI-NEWS.COM – Natural Selection Removed Many Neanderthal Genes from Human Genome

According to a team of researchers at the University of California, Davis, only a very small percentage of Neanderthal DNA is present in the genomes of modern humans because, after interbreeding, natural selection removed large numbers of 'bad' Neanderthal gene variants.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/wU3FBWWI8Ok/natural-selection-removed-neanderthal-genes-04358.html?utm_source=feedburner&utm_medium=email

SCIENCE DAILY – Insight into the seat of human consciousness

For millennia, philosophers have struggled to define human consciousness. Now, a team of researchers has pinpointed the regions of the brain that may play a role maintaining it.

https://www.sciencedaily.com/releases/2016/11/161104190535.htm

SCIENCE DAILY – Aging bonobos in the wild could use reading glasses too

As people age, they often find that it's more difficult to see things up close. Reading a newspaper suddenly requires a good pair of reading glasses or bifocals. Now, researchers find that the same goes for bonobos, one of human's closest primate relatives along with chimpanzees, even though they obviously don't read.

https://www.sciencedaily.com/releases/2016/11/161108085429.htm

SCIENCE DAILY – When do speech difficulties in children matter for literacy?

Speech difficulties are linked with difficulties in learning to read when children first start school, but these effects are no longer apparent at 8 years of age, new research suggests.

https://www.sciencedaily.com/releases/2016/11/161107113006.htm

SCIENCE DAILY – Evolution purged many Neanderthal genes from human genome

Larger populations allowed humans to shed weakly deleterious gene variants that were widespread in Neanderthals, new research indicates.

https://www.sciencedaily.com/releases/2016/11/161108145257.htm

SCIENCE DAILY – Archaeologists study earliest recorded human burial site in Ireland

Archaeologists have shed new light on the belief systems of early Mesolithic hunter-gatherers after analyzing cremated remains and artifacts given as grave offerings from the earliest recorded human burial site in Ireland.

https://www.sciencedaily.com/releases/2016/11/161108131907.htm

SCIENCE DAILY – How human brains do language: One system, two channels

Currently there is a debate as to what role sign language has played in language evolution, and whether the structure of sign language share similarities with spoken language. New research shows that our brain detects some deep similarities between speech and sign language.

https://www.sciencedaily.com/releases/2016/11/161108100759.htm

SCIENCE DAILY – Mammalian bone gene may be repurposed to fuel cognition in humans

A gene that regulates bone growth and muscle metabolism in mammals may take on an additional role as a promoter of brain maturation, cognition and learning in human and nonhuman primates, according to neurobiologists.

https://www.sciencedaily.com/releases/2016/11/161109133630.htm

SCIENCE DAILY –Primitive reward-driven behaviors may bias the information people choose to sample

The way people make decisions often seems irrational. One explanation for this behavior is that they seek evidence that confirms what they already believe, a phenomenon called 'confirmation bias'. But new research suggests that confirmation bias may not be the only factor that influences how people sample information. The tendency to choose items associated with rewards -- known as 'Pavlovian approach' -- can also bias the information people choose to sample, according to new research.

https://www.sciencedaily.com/releases/2016/11/161111132351.htm

SCIENCE DAILY – Neanderthal inheritance helped humans adapt to life outside of Africa

As the ancestors of modern humans made their way out of Africa to other parts of the world many thousands of years ago, they met up and in some cases had children with other forms of humans, including the Neanderthals and Denisovans. Scientists know this because traces of those meetings remain in the human genome. Now, researchers find more evidence that those encounters have benefited humans over the years.

https://www.sciencedaily.com/releases/2016/11/161110153149.htm

OTHER NEWS – Frontiers e-books

A new resource has come to my attention – it's probably old news to some of you: Frontiers has published a series of e-book anthologies, free resources with reputable authors. See http://www.frontiersin.org/books/all_books?utm_source=F-NLT&utm_medium=EMLF&utm_campaign=MRK_FRTOP_20161100_124439_eBooksText to get started.

Some I have identified (I have so far downloaded 32 books):

- Umberto Ansaldo & N. J. Enfield (2016). IS THE LANGUAGE FACULTY NONLINGUISTIC?
- Iris Berent & Susan Goldin-Meadow (2015). LANGUAGE BY MOUTH AND BY HAND
- Cedric Boeckx & Antonio Benítez-Burraco (2016). COMPONENTS OF THE LANGUAGE-READY BRAIN
- Seana Coulson & Vicky T. Lai (2016). THE METAPHORICAL BRAIN
- Jordan Grafman & Chad E. Forbes (2013). BRAINS, GENES, AND THE FOUNDATIONS OF HUMAN SOCIETY
- Asifa Majid, Alice Gaby & Lera Boroditsky (2014). TIME IN TERMS OF SPACE
- Fernando Martinez-Garcia et al (2014). ADAPTIVE FUNCTION AND BRAIN EVOLUTION
- Constance Scharff, Angela D. Friederici & Michael Petrides (2013). NEUROBIOLOGY OF HUMAN LANGUAGE AND ITS EVOLUTION: PRIMATE AND NONPRIMATE PERSPECTIVES

PUBLICATIONS

Philosophical Transactions of the Royal Society B

NOTHING OF INTEREST

New Scientist

ARTICLES

ALISON GEORGE – Code hidden in stone age art may be the root of human writing

A painstaking investigation of europe's cave art has revealed 32 shapes and lines that crop up again and again and could be the world's oldest code
https://www.newscientist.com/article/mg23230990-700-in-search-of-the-very-first-coded-symbols/?cmpid=nlc%7cnsns%7c2016-1011-newglobal&utm_medium=nlc&utm_source=nsns

Science

NOTHING OF INTEREST

Science Express

NOTHING OF INTEREST

Science Advances

NOTHING OF INTEREST

Nature

NEWS

Old apes can't see up close

The discovery that bonobos lose their close vision with age, as humans do, offers clues to the cause of this visual decline.
http://www.nature.com/nature/journal/v539/n7628/full/539143d.html

ARTICLES

JUSTINE KUPFERMAN & FRANCK POLLEUX – Genomic remodelling in the primate brain

In many mammals, the gene Ostn is expressed in muscles and bones. The discovery that the primate OSTN gene has been repurposed to also act in neurons provides clues to how humans evolved their cognitive abilities.
http://www.nature.com/nature/journal/v539/n7628/full/539171a.html

PAPERS

BULENT ATAMAN et al – Evolution of Osteocrin as an activity-regulated factor in the primate brain

Sensory stimuli drive the maturation and function of the mammalian nervous system in part through the activation of gene expression networks that regulate synapse development and plasticity. These networks have primarily been studied in mice, and it is not known whether there are species- or clade-specific activity-regulated genes that control features of brain development and function. Here we use transcriptional profiling of human fetal brain cultures to identify an activity-

dependent secreted factor, Osteocrin (OSTN), that is induced by membrane depolarization of human but not mouse neurons. We find that OSTN has been repurposed in primates through the evolutionary acquisition of DNA regulatory elements that bind the activity-regulated transcription factor MEF2. In addition, we demonstrate that OSTN is expressed in primate neocortex and restricts activity-dependent dendritic growth in human neurons. These findings suggest that, in response to sensory input, OSTN regulates features of neuronal structure and function that are unique to primates.
http://www.nature.com/nature/journal/v539/n7628/full/nature20111.html

Nature Communications

NOTHING OF INTEREST

Nature Scientific Reports

PAPERS

NATHAN K. THAVARAJAH et al – The peacock train does not handicap cursorial locomotor performance

Exaggerated traits, like the peacock train, are recognized as classic examples of sexual selection. The evolution of sexual traits is often considered paradoxical as, although they enhance reproductive success, they are widely presumed to hinder movement and survival. Many exaggerated traits represent an additional mechanical load that must be carried by the animal and therefore may influence the metabolic cost of locomotion and constrain locomotor performance. Here we conducted respirometry experiments on peacocks and demonstrate that the exaggerated sexually selected train does not compromise locomotor performance in terms of the metabolic cost of locomotion and its kinematics. Indeed, peacocks with trains had a lower absolute and mass specific metabolic cost of locomotion. Our findings suggest that adaptations that mitigate any costs associated with exaggerated morphology are central in the evolution of sexually selected traits.
http://www.nature.com/articles/srep36512?WT.ec_id=SREP-20161108&spMailingID=52715612&spUserID=ODY4NjU1NzU3NQS2&spJobID=1043765998&spReportId=MTA0Mzc2NTk5OAS2

DAWSON CLARY & DEBBIE M. KELLY – Graded Mirror Self-Recognition by Clark's Nutcrackers

The traditional 'mark test' has shown some large-brained species are capable of mirror self-recognition. During this test a mark is inconspicuously placed on an animal's body where it can only be seen with the aid of a mirror. If the animal increases the number of actions directed to the mark region when presented with a mirror, the animal is presumed to have recognized the mirror image as its reflection. However, the pass/fail nature of the mark test presupposes self-recognition exists in entirety or not at all. We developed a novel mirror-recognition task, to supplement the mark test, which revealed gradation in the self-recognition of Clark's nutcrackers, a large-brained corvid. To do so, nutcrackers cached food alone, observed by another nutcracker, or with a regular or blurry mirror. The nutcrackers suppressed caching with a regular mirror, a behavioural response to prevent cache theft by conspecifics, but did not suppress caching with a blurry mirror. Likewise, during the mark test, most nutcrackers made more self-directed actions to the mark with a blurry mirror than a regular mirror. Both results suggest self-recognition was more readily achieved with the blurry mirror and that self-recognition may be more broadly present among animals than currently thought.
http://www.nature.com/articles/srep36459?WT.ec_id=SREP-20161108&spMailingID=52715612&spUserID=ODY4NjU1NzU3NQS2&spJobID=1043765998&spReportId=MTA0Mzc2NTk5OAS2

PLoS One

PAPERS

ROSALBA MORESE et al – Group Membership Modulates the Neural Circuitry Underlying Third Party Punishment

This research aims to explore the neural correlates involved in altruistic punishment, parochial altruism and anti-social punishment, using the Third-Party Punishment (TPP) game. In particular, this study considered these punishment behaviors in in-group vs. out-group game settings, to compare how people behave with members of their own national group and with members of another national group. The results showed that participants act altruistically to protect in-group members. This study indicates that norm violation in in-group (but not in out-group) settings results in increased activity in the medial prefrontal cortex and temporo-parietal junction, brain regions involved in the mentalizing network, as the third-party attempts to understand or justify in-group members' behavior. Finally, exploratory analysis during anti-social punishment behavior showed brain activation recruitment of the ventromedial prefrontal cortex, an area associated with altered regulation of emotions.
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0166357

KARIN HEIDLMAYR et al – Multiple Language Use Influences Oculomotor Task Performance: Neurophysiological Evidence of a Shared Substrate between Language and Motor Control

In the present electroencephalographical study, we asked to which extent executive control processes are shared by both the language and motor domain. The rationale was to examine whether executive control processes whose efficiency is reinforced by the frequent use of a second language can lead to a benefit in the control of eye movements, i.e. a non-linguistic activity. For this purpose, we administrated to 19 highly proficient late French-German bilingual participants and to

a control group of 20 French monolingual participants an antisaccade task, i.e. a specific motor task involving control. In this task, an automatic saccade has to be suppressed while a voluntary eye movement in the opposite direction has to be carried out. Here, our main hypothesis is that an advantage in the antisaccade task should be observed in the bilinguals if some properties of the control processes are shared between linguistic and motor domains. ERP data revealed clear differences between bilinguals and monolinguals. Critically, we showed an increased N2 effect size in bilinguals, thought to reflect better efficiency to monitor conflict, combined with reduced effect sizes on markers reflecting inhibitory control, i.e. cue-locked positivity, the target-locked P3 and the saccade-locked presaccadic positivity (PSP). Moreover, effective connectivity analyses (dynamic causal modelling; DCM) on the neuronal source level indicated that bilinguals rely more strongly on ACC-driven control while monolinguals rely on PFC-driven control. Taken together, our combined ERP and effective connectivity findings may reflect a dynamic interplay between strengthened conflict monitoring, associated with subsequently more efficient inhibition in bilinguals. Finally, L2 proficiency and immersion experience constitute relevant factors of the language background that predict efficiency of inhibition. To conclude, the present study provided ERP and effective connectivity evidence for domain-general executive control involvement in handling multiple language use, leading to a control advantage in bilingualism.
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0165029

PLoS Biology

NOTHING OF INTEREST

PLoS Genetics

PAPERS

IVAN JURIC, SIMON AESCHBACHER & GRAHAM COOP – The Strength of Selection against Neanderthal Introgression

Hybridization between humans and Neanderthals has resulted in a low level of Neanderthal ancestry scattered across the genomes of many modern-day humans. After hybridization, on average, selection appears to have removed Neanderthal alleles from the human population. Quantifying the strength and causes of this selection against Neanderthal ancestry is key to understanding our relationship to Neanderthals and, more broadly, how populations remain distinct after secondary contact. Here, we develop a novel method for estimating the genome-wide average strength of selection and the density of selected sites using estimates of Neanderthal allele frequency along the genomes of modern-day humans. We confirm that East Asians had somewhat higher initial levels of Neanderthal ancestry than Europeans even after accounting for selection. We find that the bulk of purifying selection against Neanderthal ancestry is best understood as acting on many weakly deleterious alleles. We propose that the majority of these alleles were effectively neutral—and segregating at high frequency—in Neanderthals, but became selected against after entering human populations of much larger effective size. While individually of small effect, these alleles potentially imposed a heavy genetic load on the early-generation human–Neanderthal hybrids. This work suggests that differences in effective population size may play a far more important role in shaping levels of introgression than previously thought.
http://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1006340

PNAS

PAPERS

ALEXANDER J. STEWART, TODD L. PARSONS & JOSHUA B. PLOTKIN – Evolutionary consequences of behavioral diversity

Access to a diversity of behavioral choices makes social dynamics rich and difficult to analyze. Individuals are rarely constrained to a binary choice between “cooperate” or “defect,” as many theoretical treatments assume. Here we use game theory to ask what social behaviors will emerge in populations as the number of behavioral choices grows. We show that simple strategies, where players do not vary their behavior much at all, can nonetheless be successful, and that access to a broader range of behavioral choices can cause a population to evolve toward lower levels of cooperation. Finally, we show that access to greater choice in rock–paper–scissors games inevitably leads to behavioral diversity, with players using strategies that make use of all possible choices.
http://www.pnas.org/content/113/45/E7003.abstract

YUJIANG WANG et al – Universality in human cortical folding in health and disease

Despite of the enormous diversity in size and function of the mammalian cerebral cortex, it has been shown that the cortices of different species fold according to a simple universal law. In this study, we investigate if this law also applies to variation within a single species—our own. Specifically, we examine how the law is affected by sex, age, or the presence of Alzheimer’s disease. By investigating and quantifying what remains invariant and what changes in each case, we shed some light on the underlying mechanisms through which the cortex changes in health and disease and argue that morphological complexity could emerge from a few simple rules.
http://www.pnas.org/content/113/45/12820.abstract

Frontiers in Psychology

PAPERS

ERIN ROBY & ROSE M. SCOTT – Rethinking the Relationship between Social Experience and False-Belief Understanding: A Mentalistic Account

It was long assumed that the capacity to represent false beliefs did not emerge until at least age four, as evidenced by children's performance on elicited-response tasks. However, recent evidence that infants appear to demonstrate false-belief understanding when tested with alternative, non-elicited-response measures has led some researchers to conclude that the capacity to represent beliefs emerges in the 1st year of life. This mentalistic view has been criticized for failing to offer an explanation for the well-established positive associations between social factors and preschoolers' performance on elicited-response false-belief tasks. In this paper, we address this criticism by offering an account that reconciles these associations with the mentalistic claim that false-belief understanding emerges in infancy. We propose that rather than facilitating the emergence of the capacity to represent beliefs, social factors facilitate the use of this ability via effects on attention, inference, retrieval, and response production. Our account predicts that the relationship between social factors and false-belief understanding should not be specific to preschoolers' performance in elicited-response tasks: this relationship should be apparent across the lifespan in a variety of paradigms. We review an accumulating body of evidence that supports this prediction.
http://journal.frontiersin.org/article/10.3389/fpsyg.2016.01721/full?utm_source=newsletter&utm_medium=email&utm_campaign=Psychology-w46-2016

CONSTANCE VISSERS & SOPHIEKE KOOLEN – Theory of Mind Deficits and Social Emotional Functioning in Preschoolers with Specific Language Impairment

Children with Specific Language Impairment (SLI) often experience emotional and social difficulties. In general, problems in social emotional functioning can be cognitively explained in terms of Theory of Mind (ToM). In this mini-review, an overview is provided of studies on social-emotional functioning and ToM in preschoolers (average age from 2.3 to 6.2 years) with SLI. It is concluded that, similar to school-aged children with SLI, preschoolers with SLI have several social-emotional problems and that both cognitive and affective aspects of ToM are impaired in those children. Based hereon, three possible causal models for the interrelation between language, ToM and social emotional functioning are put forward. It is proposed that future research on the construct and measurement of early ToM, social emotional functioning and language development in preschoolers with SLI is needed to achieve early detection, tailored treatment, and ultimately insight into the pathogenesis of SLI.
http://journal.frontiersin.org/article/10.3389/fpsyg.2016.01734/full?utm_source=newsletter&utm_medium=email&utm_campaign=Psychology-w46-2016

LJILJANA PROGOVAC – A Gradualist Scenario for Language Evolution: Precise Linguistic Reconstruction of Early Human (and Neandertal) Grammars

In making an argument for the antiquity of language, based on comparative evidence, Dediu and Levinson (2013) express hope that some combinations of structural features will prove so conservative that they will allow deep linguistic reconstruction. I propose that the earliest stages of syntax/grammar as reconstructed in Progovac (2015a), based on a theoretical and data-driven linguistic analysis, provide just such a conservative platform, which would have been commanded also by Neandertals and the common ancestor. I provide a fragment of this proto-grammar, which includes flat verb-noun compounds used for naming and insult (e.g., rattle-snake, cry-baby, scatter-brain), and paratactic (loose) combinations of such flat structures (e.g., Come one, come all; You seek, you find). This flat, binary, paratactic platform is found in all languages, and can be shown to serve as foundation for any further structure building. However, given the degree and nature of variation across languages in elaborating syntax beyond this proto-stage, I propose that hierarchical syntax did not emerge once and uniformly in all its complexity, but rather multiple times, either within Africa, or after dispersion from Africa. If so, then, under the uniregional hypothesis, our common ancestor with Neandertals, H. heidelbergensis, could not have commanded hierarchical syntax, but "only" the proto-grammar. Linguistic reconstructions of this kind are necessary for formulating precise and testable hypotheses regarding language evolution. In addition to the hominin timeline, this reconstruction can also engage, and negotiate between, the fields of neuroscience and genetics, as I illustrate with one specific scenario involving FOXP2 gene.
http://journal.frontiersin.org/article/10.3389/fpsyg.2016.01714/full?utm_source=newsletter&utm_medium=email&utm_campaign=Psychology-w46-2016

Frontiers in Neuroscience

NOTHING OF INTEREST

Frontiers in Ecology & Evolution

NOTHING OF INTEREST

PeerJ

PAPERS

GENEVIEVE MCARTHUR et al – Low self-concept in poor readers: prevalence, heterogeneity, and risk

There is evidence that poor readers are at increased risk for various types of low self-concept—particularly academic self-concept. However, this evidence ignores the heterogeneous nature of poor readers, and hence the likelihood that not all poor readers have low self-concept. The aim of this study was to better understand which types of poor readers have low self-concept. We tested 77 children with poor reading for their age for four types of self-concept, four types of reading, three types of spoken language, and two types of attention. We found that poor readers with poor attention had low academic self-concept, while poor readers with poor spoken language had low general self-concept in addition to low academic self-concept. In contrast, poor readers with typical spoken language and attention did not have low self-concept of any type. We also discovered that academic self-concept was reliably associated with reading and receptive spoken vocabulary, and that general self-concept was reliably associated with spoken vocabulary. These outcomes suggest that poor readers with multiple impairments in reading, language, and attention are at higher risk for low academic and general self-concept, and hence need to be assessed for self-concept in clinical practice. Our results also highlight the need for further investigation into the heterogeneous nature of self-concept in poor readers.
https://peerj.com/articles/2669/