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References

Aktuell

Adler 2015

Nancy E. Adler, *Disadvantage, self-control, and health*. PNAS **112** (2015), 10078–10079.

It is likely that the link between self-regulation and health will be weaker than with cognitive and social outcomes. However, it would be surprising to find a negative impact of self-regulation on health. This makes the results reported by Miller et al., showing a possible negative effect of self-control on health, so intriguing.

Using one metric, more disadvantaged adolescents with greater selfcontrol showed more epigenetic age acceleration than those with less control, whereas degree of self-control had little influence on epigenetic age acceleration in the less disadvantaged. Using the other metric, self-control had no significant influence on epigenetic aging among the more disadvantaged, whereas among the less disadvantaged, those with greater control showed significantly less epigenetic aging than those with less control. Viewed one way, this inconsistency raises questions about the robustness of the measure. However, if the metrics are intended to capture different aspects of epigenetic aging, these differences can potentially be informative.

Horne 2015

Zachary Horne, Derek Powell, John E. Hummel & Keith J. Holyoak, *Countering antivaccination attitudes*. PNAS **112** (2015), 10321–10324.

Three times as many cases of measles were reported in the United States in 2014 as in 2013. The reemergence of measles has been linked to a dangerous trend: parents refusing vaccinations for their children. Efforts have been made to counter people's antivaccination attitudes by providing scientific evidence refuting vaccination myths, but these interventions have proven ineffective. This study shows that highlighting factual information about the dangers of communicable diseases can positively impact people's attitudes to vaccination. This method outperformed alternative interventions aimed at undercutting vaccination myths.

Keywords: vaccination | belief revision | attitude change | science education

Significance: Myths about the safety of vaccinations have led to a decline in vaccination rates and the reemergence of measles in the United States, calling for effective provaccine messages to curb this dangerous trend. Prior research on vaccine attitude change suggests that it is difficult to persuade vaccination skeptics and that direct attempts to do so can even backfire. Here, we successfully countered people's antivaccination attitudes by making them appreciate the consequences of failing to vaccinate their children (using information provided by the Centers for Disease Control and Prevention). This intervention outperformed another that aimed to undermine widespread vaccination myths.

Miller 2015

Gregory E. Miller, Tianyi Yu, Edith Chen & Gene H. Brody, *Self-control forecasts better psychosocial outcomes but faster epigenetic aging in low-SES youth*. PNAS **112** (2015), 10325–10330.

pnas112-10325-Supplement.xls

There are persistent socioeconomic disparities in many aspects of child development in America. Relative to their affluent peers, children of low socioeconomic status (SES) complete fewer years of education, have a higher prevalence of health problems, and are convicted of more criminal offenses. Based on research indicating that low self-control underlies some of these disparities, policymakers have begun incorporating character-skills training into school curricula and social services. However, emerging data suggest that for low-SES youth, self-control may act as a "double-edged sword," facilitating academic success and psychosocial adjustment, while at the same time undermining physical health. Here, we examine this hypothesis in a five-wave study of 292 African American teenagers from rural Georgia. From ages 17 to 20 y, we assessed SES and self-control annually, along with depressive symptoms, substance use, aggressive behavior, and internalizing problems. At age 22 y, we obtained DNA methylation profiles of subjects' peripheral blood mononuclear cells. These data were used to measure epigenetic aging, a methylationderived biomarker reflecting the disparity between biological and chronological aging. Among high-SES youth, better mid-adolescent self-control presaged favorable psychological and methylation outcomes. However, among low-SES youth, self-control had divergent associations with these outcomes. Self-control forecasted lower rates of depressive symptoms, substance use, aggressive behavior, and internalizing problems but faster epigenetic aging. These patterns suggest that for low-SES youth, resilience is a "skin-deep" phenomenon, wherein outward indicators of success can mask emerging problems with health. These findings have conceptual implications for models of resilience, and practical implications for interventions aimed at ameliorating social and racial disparities.

Keywords: health disparities | resilience | stress | poverty | aging

Significance: Most childhood outcomes pattern by socioeconomic status (SES). Children from low-SES families complete less education, have worse health, and are convicted of more crimes. To ameliorate these disparities, policymakers are incorporating character-skills training into school curricula and social services. Among other goals, these programs attempt to improve selfcontrol, or the ability to resist temptations that interfere with long-term aspirations. However, data suggest that self-control has unforeseen consequences for the health of low-SES youth. Here, we follow 292 African American teenagers as they transition into adulthood. Among low-SES youth, self-control forecasted better psychosocial outcomes, including less depression, substance use, and aggression. However, it also forecasted more rapid immune cell aging, highlighting the potential health costs of successful adjustment for disadvantaged youth.

Anthropologie

Fu 2015

Qiaomei Fu et al., *An early modern human from Romania with a recent Neanderthal ancestor*. nature **524** (2015), 216–219.

n524-0216-Supplement.pdf

Qiaomei Fu, Mateja Hajdinjak, Oana Teodora Moldovan, Silviu Constantin, Swapan Mallick, Pontus Skoglund, Nick Patterson, Nadin Rohland, Iosif Lazaridis, Birgit Nickel, Bence Viola, Kay Prüfer, Matthias Meyer, Janet Kelso, David Reich & Svante Pääbo

Neanderthals are thought to have disappeared in Europe approximately 39,000–41,000 years ago but they have contributed 1–3 % of the DNA of present-day people in Eurasia1. Here we analyse DNA from a 37,000–42,000-year-old2 modern human from PesÕtera cu Oase, Romania. Although the specimen contains small amounts of human DNA, we use an enrichment strategy to isolate sites that are

informative about its relationship to Neanderthals and present-day humans. We find that on the order of 6–9 % of the genome of the Oase individual is derived from Neanderthals, more than any other modern human sequenced to date. Three chromosomal segments of Neanderthal ancestry are over 50 centimorgans in size, indicating that this individual had a Neanderthal ancestor as recently as four to six generations back. However, the Oase individual does not share more alleles with later Europeans than with East Asians, suggesting that the Oase population did not contribute substantially to later humans in Europe.

Groucutt 2015

Huw S. Groucutt et al., *Rethinking the Dispersal of Homo sapiens out of Africa*. Evolutionary Anthropology **24** (2015), 149–164.

Huw S. Groucutt, Michael D. Petraglia, Geoff Bailey, Eleanor M. L. Scerri, Ash Parton, Laine Clark-Balzan, Richard P. Jennings, Laura Lewis, James Blinkhorn, Nick A. Drake, Paul S. Breeze, Robyn H. Inglis, Maud H. Devès, Matthew Meredith-Williams, Nicole Boivin, Mark G. Thomas, and Aylwyn Scally

Current fossil, genetic, and archeological data indicate that Homo sapiens originated in Africa in the late Middle Pleistocene. By the end of the Late Pleistocene, our species was distributed across every continent except Antarctica, setting the foundations for the subsequent demographic and cultural changes of the Holocene. The intervening processes remain intensely debated and a key theme in hominin evolutionary studies. We review archeological, fossil, environmental, and genetic data to evaluate the current state of knowledge on the dispersal of Homo sapiens out of Africa. The emerging picture of the dispersal process suggests dynamic behavioral variability, complex interactions between populations, and an intricate genetic and cultural legacy. This evolutionary and historical complexity challenges simple narratives and suggests that hybrid models and the testing of explicit hypotheses are required to understand the expansion of Homo sapiens into Eurasia.

Kramer 2015

Karen L. Kramer & Andrew F. Russell, *Was Monogamy a Key Step on the Hominin Road? Reevaluating the Monogamy Hypothesis in the Evolution of Cooperative Breeding*. Evolutionary Anthropology **24** (2015), 73–83.

Because human mothers routinely rely on others to help raise their young, humans have been characterized as cooperative breeders.1–9 Several largescale phylogenetic analyses have presented compelling evidence that monogamy preceded the evolution of cooperative breeding in a wide variety of nonhuman animals.10–14 These studies have suggested that monogamy provides a general rule (the monogamy hypothesis) for explaining evolutionary transitions to cooperative breeding.15 Given the prevalence of cooperative breeding in contemporary human societies, we evaluate whether this suggests a monogamous hominin past.

Rae 2014

Todd C. Rae & Thomas Koppe, *Sinuses and Flotation, Does the Aquatic Ape Theory Hold Water?* Evolutionary Anthropology **23** (2014), 60–64.

The idea that people went through an aquatic phase at some time in their evolutionary past is currently undergoing a popular resurgence (see Foley & Lahr). This idea has even started to gain some traction in more learned circles; the late paleoanthropologist Phillip Tobias wrote in support of aspects of it in an edited e-book and a conference on the topic held recently in London was endorsed by

celebrities such as the television presenter Sir David Attenborough. Despite (or perhaps because of) the lack of interest within the academic community, advocates of the concept continue to fill the media (and blogosphere) with challenges to the "savannah hypothesis" of the origins of people and to bemoan the fact that their views are not taken seriously by mainstream academia.

Renz-Polster 2009

Herbert Renz-Polster, *Kinder verstehen*, *Born to be wild: Wie die Evolution unsere Kinder prägt.* (München 2009).

Hinter vielen typischen Familienschwierigkeiten stecken keine Erziehungsfehler. Vielmehr passt das evolutionäre Gepäck, mit dem Kinder auf die Welt kommen, nicht mehr zu den veränderten Lebensbedingungen unserer modernen Welt. Mit einem neuen Verständnis für kindliche Entwicklung können wir Wege finden, um den Bedürfnissen von Eltern *und* Kindern gerecht zu werden.

In der Erziehung blicken Eltern in die Zukunft. Sie wollen ihren Kindern ja einen Weg weisen. Dabei vergessen sie leicht die Vergangenheit. Kinder treten aber mit einer Geschichte ins Leben – mit einer von der Evolution geschriebenen Geschichte. Wenn wir diese Geschichte kennen, können wir unsere Kinder besser verstehen.

Denn Kinder entwickeln sich so, wie sie sich entwickeln, weil es einmal gut für ihr Überleben war. Ihr Verhalten war eine Stärke, kein Defekt. Hätten Kleinkinder früherer Jahrhunderte auf der Wiese wahllos grüne Blätter in den Mund gesteckt, hätten sie nicht lange überlebt. Kein Wunder, dass Kinder auch heute noch Gemüse skeptisch beäugen! Und dass kleine Kinder nicht gerne alleine einschlafen, war früher eine Art Lebensversicherung: Wer gerne alleine im Wald geschlafen hätte, wäre bald schon tot gewesen. Das Buch Kinder verstehen betrachtet die Entwicklung der Kinder konsequent aus evolutionsbiologischer Sicht. Denn wer den "Sinn" hinter dem kindlichen Verhalten versteht, wird ihre Entwicklung auch heute gelassener begleiten können.

Kultur

Morris 2015

Ian Morris, *War – what is it good for? The role of conflict in civilisation, from primates to robots.* (London 2015).

War is one of the greatest human evils. It has ruined livelihoods, provoked unspeakable atrocities and left countless millions dead. It has caused economic chaos and widespread deprivation. And the misery it causes poisons foreign policy for future generations. But, argues bestselling historian Ian Morris, in the very long term, war has in fact been a good thing. In his trademark style combining interdisciplinary insights, scientific methods and fascinating stories, Morris shows that, paradoxically, war is the only human invention that has allowed us to construct peaceful societies. Without war, we would never have built the huge nation-states which now keep us relatively safe from random acts of violence, and which have given us previously unimaginable wealth. It is thanks to war that we live longer and more comfortable lives than ever before. And yet, if we continue waging war with ever-more deadly weaponry, we will destroy everything we have achieved; so our struggles to manage warfare make the coming decades the most decisive in the history of our civilisation. In War: What Is It Good For? Morris brilliantly dissects humanity's history of warfare to draw startling conclusions about our future.

Richerson 2005

Peter Richerson & Robert Boyd, *Not by genes alone, How culture transformed human evolution.* (Chicago 2005).

Humans are a striking anomaly in the natural world. While we are similar to other mammals in many ways, our behavior sets us apart. Our unparalleled ability to adapt has allowed us to occupy virtually every habitat on earth, and our societies are larger, more complex, and more cooperative than any other mammal's. In "Not by Genes Alone", Peter J. Richerson and Robert Boyd argue that only a Darwinian theory of cultural evolution can explain these unique characteristics.

"Not by Genes Alone" offers a radical interpretation of human evolution, arguing that our ecological dominance and our singular social systems stem from a psychology uniquely adapted to create complex culture. Richerson and Boyd consider culture to be essential to human adaptation, as much a part of human biology as bipedal locomotion. Drawing on work in the fields of anthropology, political science, sociology, and economics – and building their case with such fascinating examples as kayaks, clever knots, and yams that require twelve men to carry them – Richerson and Boyd convincingly demonstrate that culture and biology are inextricably linked.

In abandoning the nature-versus-nurture debate as fundamentally misconceived, "Not by Genes Alone" is a truly original and groundbreaking theory of the role of culture in evolution and a book to be reckoned with for generations to come.

Metallzeiten

Cline 2014

Eric Cline, *1177 B.C. The year civilization collapsed.* Turning Points in Ancient History (Princeton 2014).

In 1177 B.C., marauding groups known only as the "Sea Peoples" invaded Egypt. The pharaoh's army and navy managed to defeat them, but the victory so weakened Egypt that it soon slid into decline, as did most of the surrounding civilizations. After centuries of brilliance, the civilized world of the Bronze Age came to an abrupt and cataclysmic end. Kingdoms fell like dominoes over the course of just a few decades. No more Minoans or Mycenaeans. No more Trojans, Hittites, or Babylonians. The thriving economy and cultures of the late second millennium B.C., which had stretched from Greece to Egypt and Mesopotamia, suddenly ceased to exist, along with writing systems, technology, and monumental architecture. But the Sea Peoples alone could not have caused such widespread breakdown. How did it happen? In this major new account of the causes of this "First Dark Ages," Eric Cline tells the gripping story of how the end was brought about by multiple interconnected failures, ranging from invasion and revolt to earthquakes, drought, and the cutting of international trade routes. Bringing to life the vibrant multicultural world of these great civilizations, he draws a sweeping panorama of the empires and globalized peoples of the Late Bronze Age and shows that it was their very interdependence that hastened their dramatic collapse and ushered in a dark age that lasted centuries. A compelling combination of narrative and the latest scholarship, 1177 B.C. sheds new light on the complex ties that gave rise to, and ultimately destroyed, the flourishing civilizations of the Late Bronze Age—and that set the stage for the emergence of classical Greece.

Politik

Epstein 2015

Robert Epstein & Ronald E. Robertson, *The search engine manipulation effect (SEME) and its possible impact on the outcomes of elections*. PNAS **112** (2015), E4512–E4521.

pnas112-E4512-Supplement.xls

Internet search rankings have a significant impact on consumer choices, mainly because users trust and choose higher-ranked results more than lower-ranked results. Given the apparent power of search rankings, we asked whether they could be manipulated to alter the preferences of undecided voters in democratic elections. Here we report the results of five relevant double-blind, randomized controlled experiments, using a total of 4,556 undecided voters representing diverse demographic characteristics of the voting populations of the United States and India. The fifth experiment is especially notable in that it was conducted with eligible voters throughout India in the midst of India's 2014 Lok Sabha elections just before the final votes were cast. The results of these experiments demonstrate that (i) biased search rankings can shift the voting preferences of undecided voters by 20 % or more, (ii) the shift can be much higher in some demographic groups, and (iii) search ranking bias can be masked so that people show no awareness of the manipulation. We call this type of influence, which might be applicable to a variety of attitudes and beliefs, the search engine manipulation effect. Given that many elections are won by small margins, our results suggest that a search engine company has the power to influence the results of a substantial number of elections with impunity. The impact of such manipulations would be especially large in countries dominated by a single search engine company.

Keywords: search engine manipulation effect | search rankings | Internet influence | voter manipulation | digital bandwagon effect

Significance: We present evidence from five experiments in two countries suggesting the power and robustness of the search engine manipulation effect (SEME). Specifically, we show that (i) biased search rankings can shift the voting preferences of undecided voters by 20 % or more, (ii) the shift can be much higher in some demographic groups, and (iii) such rankings can be masked so that people show no awareness of the manipulation. Knowing the proportion of undecided voters in a population who have Internet access, along with the proportion of those voters who can be influenced using SEME, allows one to calculate the win margin below which SEME might be able to determine an election outcome.

Story or Book

Derrible 2015

Sybil Derrible, *Inside the mind of an engineer*. science **349** (2015), 484.

Engaging anecdotes of er readers a glimpse into the problem-solving processes employed by engineers.

Applied Minds. How Engineers Think. Guru Madhavan. Norton, 2015. 267 pp.

Although insightful, the ensemble of stories leaves the reader with a desire to know more substantive information about how engineers solve problems. Indeed, the book does not explain why or whether "applied minds" are inherently different and whether it is possible to train oneself to think like an engineer, although perhaps it is just my own engineering mind-set that makes me want to see more data and technical details.

As a result, despite the fact that the book was clearly written for a broad audience, it is difficult to identify the type of people who will most benefit from it. Teenagers and young adults may find it useful for determining whether engineering is a career path for them. Practicing engineers and history buffs will likely enjoy these engaging vignettes as well.

Dunbar 2004

Robin Dunbar, *Beyond the culture shock*. nature **432** (2004), 951–952.

Culture is a key ingredient in the development of human societies.

Not by Genes Alone: How Culture Transformed Human Evolution. by Peter J. Richerson & Robert Boyd. Chicago University Press: 2004. 344 pp. $ 30, £ 21

Richerson and Boyd's position, in a nutshell, is that culture is as good a candidate for darwinian treatment as behaviour and morphology. Genetic processes and individual learning provide mechanisms whereby successful phenotypes can be passed on from one generation to the next. In humans, and possibly in other species, including apes and cetaceans, culture provides another such mechanism for behavioural phenotypes.

All this is a build-up to the big story of the book, which is how to explain hierarchical group structures in traditional human societies, and the forms of indiscriminate altruism that often accompany them. (Richerson and Boyd seem to want to use the word 'always' here but, in a rare lapse of concentration, I think they seriously overstep the evidence.)

In many ways, this book is really addressed to social scientists, who, as Richerson and Boyd remark, learned their evolutionary biology from the mischievous writings of Steven Jay Gould, but failed to realize that his seductive polemics have little empirical support. Functional explanations for natural phenomena are, they remind us, often difficult to see without a great deal of hard empirical work. Gouldian arguments of 'spandrels as non-adaptation' are, they remind us, usually at least as much 'just so stories' as adaptationist explanations — if not more so, as they are rarely backed by anything resembling empirical evidence.

In many ways, this book is a plea to the social sciences to take seriously what evolutionary biology has to offer—to see it not as a threat intent on cannibalizing the social-science niche, but rather as a source of useful techniques and conceptual devices that can be applied within a conventional social-sciences framework, asking conventional social-science questions. It is a book full of good sense and the kinds of intellectual rigour and clarity of writing that we have come to expect from the Boyd-Richerson stable.

Kiser 2015

Barbara Kiser, *Applied Minds: How Engineers Think*. nature **524** (2015), 159.

Applied Minds: How Engineers Think. Guru Madhavan. W.W.Norton (2015)

In a feat of reverse engineering, he shows how engineers' methodology—rigorous analysis, testing and orientation towards solutions—is bedded in modular systems thinking, a mindset strong on visualizing structure, designing under constraints and weeding out weak goals in trade-offs.