

References

Aktuell

BRADY 2017

William J. Brady, Julian A. Wills, John T. Jost, Joshua A. Tucker & Jay J. van Bavel, *Emotion shapes the diffusion of moralized content in social networks*. [PNAS 114 \(2017\), 7313–7318](#).

Political debate concerning moralized issues is increasingly common in online social networks. However, moral psychology has yet to incorporate the study of social networks to investigate processes by which some moral ideas spread more rapidly or broadly than others. Here, we show that the expression of moral emotion is key for the spread of moral and political ideas in online social networks, a process we call “moral contagion.” Using a large sample of social media communications about three polarizing moral/political issues ($n = 563,312$), we observed that the presence of moral-emotional words in messages increased their diffusion by a factor of 20% for each additional word. Furthermore, we found that moral contagion was bounded by group membership; moral-emotional language increased diffusion more strongly within liberal and conservative networks, and less between them. Our results highlight the importance of emotion in the social transmission of moral ideas and also demonstrate the utility of social network methods for studying morality. These findings offer insights into how people are exposed to moral and political ideas through social networks, thus expanding models of social influence and group polarization as people become increasingly immersed in social media networks.

Keywords: morality | emotion | politics | social networks | social media

Significance: Twitter and other social media platforms are believed to have altered the course of numerous historical events, from the Arab Spring to the US presidential election. Online social networks have become a ubiquitous medium for discussing moral and political ideas. Nevertheless, the field of moral psychology has yet to investigate why some moral and political ideas spread more widely than others. Using a large sample of social media communications concerning polarizing issues in public policy debates (gun control, same-sex marriage, climate change), we found that the presence of moral-emotional language in political messages substantially increases their diffusion within (and less so between) ideological group boundaries. These findings offer insights into how moral ideas spread within networks during real political discussion.

CHAO 2017

Matthew Chao, *Demotivating incentives and motivation crowding out in charitable giving*. [PNAS 114 \(2017\), 7301–7306](#).

Research has shown that extrinsic incentives can crowd out intrinsic motivation in many contexts. Despite this, many nonprofits offer conditional thank-you gifts, such as mugs or tote bags, in exchange for donations. In collaboration with a nonprofit, this study implements a direct mail field experiment and demonstrates that thank-you gifts reduced donation rates in a fundraising campaign. Attention-based multiattribute choice models suggest that this is because prospective donors shift attention to the salient gift offer, causing them to underweight less salient intrinsic motives. Attention to the gift may also cause individuals to adopt a more

cost–benefit mindset, further de-emphasizing intrinsic motives. Consistent with these hypotheses, crowding out was driven by those who donated higher amounts in the previous year (i.e., those who likely had higher intrinsic motivation). In a complementary online experiment, thank-you gifts also reduced donation rates but only when the gift was visually salient. This corroborates the mediating role of attention in crowding out. Taken together, the laboratory and field results demonstrate that this fundraising technique can be demotivating in some contexts and that this may occur through an attention-based mechanism.

Keywords: motivation crowding out | charitable giving | multiattribute choice | attention | saliency

Significance: Many nonprofits solicit contributions by offering thank-you gifts, such as mugs, in exchange for donations. However, these gifts may have counterproductive effects by drawing a prospective donor’s attention away from altruistic motives and leading him or her to use a more cost–benefit mindset. This study tests for the effect of thank-you gifts during a nonprofit’s direct-mail fundraising campaign and finds that gifts reduced donation rates in this campaign. A complementary online experiment confirms that thank-you gifts can reduce donation rates but only when the gift is visually salient and thus more likely to occupy the donor’s attention. Nonprofits should consider their donor’s psychological incentives carefully before implementing these types of extrinsic incentives.

CHOI 2017

Jiyoun Choi, Mirjam Broersma & Anne Cutler, *Early phonology revealed by international adoptees’ birth language retention*. [PNAS 114 \(2017\), 7307–7312](#).

Until at least 6 mo of age, infants show good discrimination for familiar phonetic contrasts (i.e., those heard in the environmental language) and contrasts that are unfamiliar. Adult-like discrimination (significantly worse for nonnative than for native contrasts) appears only later, by 9–10 mo. This has been interpreted as indicating that infants have no knowledge of phonology until vocabulary development begins, after 6 mo of age. Recently, however, word recognition has been observed before age 6 mo, apparently decoupling the vocabulary and phonology acquisition processes. Here we show that phonological acquisition is also in progress before 6 mo of age. The evidence comes from retention of birth-language knowledge in international adoptees. In the largest ever such study, we recruited 29 adult Dutch speakers who had been adopted from Korea when young and had no conscious knowledge of Korean language at all. Half were adopted at age 3–5 mo (before nativespecific discrimination develops) and half at 17 mo or older (after word learning has begun). In a short intensive training program, we observe that adoptees (compared with 29 matched controls) more rapidly learn tripartite Korean consonant distinctions without counterparts in their later-acquired Dutch, suggesting that the adoptees retained phonological knowledge about the Korean distinction. The advantage is equivalent for the younger-adopted and the older-adopted groups, and both groups not only acquire the tripartite distinction for the trained consonants but also generalize it to untrained consonants. Although infants younger than 6 mo can still discriminate unfamiliar phonetic distinctions, this finding indicates that native-language phonological knowledge is nonetheless being acquired at that age.

Keywords: language acquisition | adoption | phonology | language memory

Significance: Dutch adults who, as international adoptees, had heard Korean early in life but had forgotten it learned to identify an unfamiliar three-way Korean consonant distinction significantly faster than controls without such experience. Even adoptees who had been adopted at 3–5 mo of age showed the learning

advantage. Thus, early exposure to spoken language, even in the first half-year of life, leaves traces that can facilitate later relearning. Before 6 mo, infants often discriminate foreign-language phonological contrasts better than adults can. This has been widely held to mean that infants younger than 6 mo have no native-language phonological knowledge to capture spoken input. Our findings are significant because they indicate that phonological knowledge is indeed in place before age 6 mo.

GOODWIN 2017

Shikha Jain Goodwin, *My lessons in mentorship*. *science* **356** (2017), 1302.

When I started formally mentoring undergraduate and graduate students almost 2 years ago, I was excited about the opportunity to help young scientists grow, but I was also nervous about the responsibility. As a postdoc, I was teaching a class in which students could conduct independent research projects under my guidance, and I wanted to make sure that my students would have positive experiences and develop strong foundations for their careers. I needed to come up with a mentorship philosophy. My approach was to reflect on my own experiences, positive and negative, as a mentee.

LANGERGRABER 2017

Kevin E. Langergraber, David P. Watts, Linda Vigilant & John C. Mitani, *Group augmentation, collective action, and territorial boundary patrols by male chimpanzees*. *PNAS* **114** (2017), 7337–7342.

How can collective action evolve when individuals benefit from cooperation regardless of whether they pay its participation costs? According to one influential perspective, collective action problems are common, especially when groups are large, but may be solved when individuals who have more to gain from the collective good or can produce it at low costs provide it to others as a byproduct. Several results from a 20-y study of one of the most striking examples of collective action in nonhuman animals, territorial boundary patrolling by male chimpanzees, are consistent with these ideas. Individuals were more likely to patrol when (i) they had more to gain because they had many offspring in the group; (ii) they incurred relatively low costs because of their high dominance rank and superior physical condition; and (iii) the group size was relatively small. However, several other findings were better explained by group augmentation theory, which proposes that individuals should bear the short-term costs of collective action even when they have little to gain immediately if such action leads to increases in group size and long-term increases in reproductive success. In support of this theory, (i) individual patrolling effort was higher and less variable than participation in intergroup aggression in other primate species; (ii) males often patrolled when they had no offspring or maternal relatives in the group; and (iii) the aggregate patrolling effort of the group did not decrease with group size. We propose that group augmentation theory deserves more consideration in research on collective action.

Keywords: chimpanzees | Pan troglodytes | collective action | cooperation | territoriality

Significance: Many animals, especially humans, carry out activities collectively because the benefits of doing so exceed those that can be achieved individually. But how can collective action evolve when individuals receive the benefits of cooperation regardless of whether they pay the costs of participation? Collective action may be especially difficult to achieve when groups are large, because each individual's contribution has a small effect on the outcome. We show that group augmentation theory helps explain one of the most striking examples of collective

action in nonhuman primates, territorial boundary patrolling by male chimpanzees: Males bear the short-term costs of patrolling even when they have little to gain immediately because patrolling enhances group size, increasing the male's chances of future reproduction.

MARTIN 2017

Nathan D. Martin, Davide Rigoni & Kathleen D. Vohs, *Free will beliefs predict attitudes toward unethical behavior and criminal punishment*. *PNAS* **114** (2017), 7325–7330.

Do free will beliefs influence moral judgments? Answers to this question from theoretical and empirical perspectives are controversial. This study attempted to replicate past research and offer theoretical insights by analyzing World Values Survey data from residents of 46 countries (n = 65,111 persons). Corroborating experimental findings, free will beliefs predicted intolerance of unethical behaviors and support for severe criminal punishment. Further, the link between free will beliefs and intolerance of unethical behavior was moderated by variations in countries' institutional integrity, defined as the degree to which countries had accountable, corruptionfree public sectors. Free will beliefs predicted intolerance of unethical behaviors for residents of countries with high and moderate institutional integrity, but this correlation was not seen for countries with low institutional integrity. Free will beliefs predicted support for criminal punishment regardless of countries' institutional integrity. Results were robust across different operationalizations of institutional integrity and with or without statistical control variables.

Keywords: free will beliefs | morality | criminal punishment | transparent governance | corruption

Significance: Understanding the bases of moral judgment has been a longstanding goal of social science. Factors undergirding morality are argued to be both globally uniform and regionally variable. The current study found evidence of both. For residents of countries with low levels of corruption and transparent systems of governance, free will beliefs predicted greater support for harsh criminal punishment and an intolerance of unethical behavior. For residents of countries beset with corruption and obfuscation, free will beliefs predicted greater support for criminal punishment but were decoupled from judgments of unethical behavior. These findings confirm causal conclusions from experimental research about the influence of free will beliefs on moral judgments and demonstrate variation by sociopolitical context.

Anthropologie

MARGARYAN 2017

Ashot Margaryan et al., *Eight Millennia of Matrilineal Genetic Continuity in the South Caucasus*. *Current Biology* **27** (2017), 2023–2028.

CurrBiol27-2023-Supplement2.xlsx, CurrBiol27-2023-Supplement3.xlsx, CurrBiol27-2023-Supplement4.xlsx, CurrBiol27-2023-Supplement5.xlsx, CurrBiol27-2023-Supplement6.xlsx

Ashot Margaryan, Miroslava Derenko, Hrant Hovhannisyan, Boris Malyarchuk, Rasmus Heller, Zaruhi Khachatryan, Pavel Avetisyan, Ruben Badalyan, Arsen Bobokhyan, Varduhi Melikyan, Gagik Sargsyan, Ashot Piliposyan, Hakob Simonyan, Ruzan Mkrtchyan, Galina Denisova, Levon Yepiskoposyan, Eske Willerslev & Morten E. Allentoft

The South Caucasus, situated between the Black and Caspian Seas, geographically links Europe with the Near East and has served as a crossroad for human

migrations for many millennia [1–7]. Despite a vast archaeological record showing distinct cultural turnovers, the demographic events that shaped the human populations of this region is not known [8, 9]. To shed light on the maternal genetic history of the region, we analyzed the complete mitochondrial genomes of 52 ancient skeletons from presentday Armenia and Artsakh spanning 7,800 years and combined this dataset with 206 mitochondrial genomes of modern Armenians. We also included previously published data of seven neighboring populations (n = 482). Coalescence-based analyses suggest that the population size in this region rapidly increased after the Last Glacial Maximum ca. 18 kya. We find that the lowest genetic distance in this dataset is between modern Armenians and the ancient individuals, as also reflected in both network analyses and discriminant analysis of principal components. We used approximate Bayesian computation to test five different demographic scenarios explaining the formation of the modern Armenian gene pool. Despite well documented cultural shifts in the South Caucasus across this time period, our results strongly favor a genetic continuity model in the maternal gene pool. This has implications for interpreting prehistoric migration dynamics and cultural shifts in this part of the world.

Highlights:

- We analyzed 52 full mitochondrial genomes from ancient humans in the South Caucasus
- The results show a high level of maternal genetic continuity in this region
- Cultural shifts across eight millennia have not changed the maternal gene pool

In Brief: Margaryan et al. analyze whole mitochondrial genomes of 206 modern and 52 ancient individuals that represent various cultural groups from the South Caucasus spanning eight millennia. The results clearly indicate genetic continuity of human maternal gene pool since Neolithic times despite well documented cultural shifts in the South Caucasus.

POSTH 2017

Cosimo Posth et al., *Deeply divergent archaic mitochondrial genome provides lower time boundary for African gene flow into Neanderthals*. [Nature Communications 8 \(2017\), 16046](https://doi.org/10.1038/ncomms16046). DOI:10.1038/ncomms16046.

Cosimo Posth, Christoph Wißing, Keiko Kitagawa, Luca Pagani, Laura van Holstein, Fernando Racimo, Kurt Wehrberger, Nicholas J. Conard, Claus Joachim Kind, Hervé Bocherens & Johannes Krause

Ancient DNA is revealing new insights into the genetic relationship between Pleistocene hominins and modern humans. Nuclear DNA indicated Neanderthals as a sister group of Denisovans after diverging from modern humans. However, the closer affinity of the Neanderthal mitochondrial DNA (mtDNA) to modern humans than Denisovans has recently been suggested as the result of gene flow from an African source into Neanderthals before 100,000 years ago. Here we report the complete mtDNA of an archaic femur from the Hohlenstein–Stadel (HST) cave in southwestern Germany. HST carries the deepest divergent mtDNA lineage that splits from other Neanderthals B270,000 years ago, providing a lower boundary for the time of the putative mtDNA introgression event. We demonstrate that a complete Neanderthal mtDNA replacement is feasible over this time interval even with minimal hominin introgression. The highly divergent HST branch is indicative of greater mtDNA diversity during the Middle Pleistocene than in later periods.

Biologie Anthropologie

SCHMELZ 2017

Martin Schmelz, Sebastian Grueneisen, Alihan Kabalak, Jürgen Jost

& Michael Tomasello, *Chimpanzees return favors at a personal cost*. PNAS 114 (2017), 7462–7467.

pnas114-07462-Supplement1.mp4, pnas114-07462-Supplement2.mp4

Humans regularly provide others with resources at a personal cost to themselves. Chimpanzees engage in some cooperative behaviors in the wild as well, but their motivational underpinnings are unclear. In three experiments, chimpanzees (*Pan troglodytes*) always chose between an option delivering food both to themselves and a partner and one delivering food only to themselves. In one condition, a conspecific partner had just previously taken a personal risk to make this choice available. In another condition, no assistance from the partner preceded the subject's decision. Chimpanzees made significantly more prosocial choices after receiving their partner's assistance than when no assistance was given (experiment 1) and, crucially, this was the case even when choosing the prosocial option was materially costly for the subject (experiment 2). Moreover, subjects appeared sensitive to the risk of their partner's assistance and chose prosocially more often when their partner risked losing food by helping (experiment 3). These findings demonstrate experimentally that chimpanzees are willing to incur a material cost to deliver rewards to a conspecific, but only if that conspecific previously assisted them, and particularly when this assistance was risky. Some key motivations involved in human cooperation thus may have deeper phylogenetic roots than previously suspected.

Keywords: cooperation | prosociality | chimpanzees | reciprocity

Significance: There are many examples of costly cooperation in humans. Although other great apes have been shown to engage in a number of cooperative behaviors, there is no reliable experimental evidence that they will sacrifice resources to benefit others. Here, we show that chimpanzees (*Pan troglodytes*) return favors to conspecifics who have previously assisted them in acquiring food; crucially, they even do this at a material cost to themselves and especially when the conspecific incurred a risk in providing the assistance. Chimpanzees are thus capable of engaging in materially costly reciprocal interactions commonly considered unique to humans.

Judentum

BERESH 2016

Nathan Beresh, *Messianism in the Dead Sea Scrolls, What Were the Messianic Expectations of the Qumran Community?* Hausarbeit, McMaster Divinity College (Hamilton 2016).

In terms of their messianic expectations, it is apparent that the community expected two messiahs. One would be a Davidic king and be called the Messiah of Israel. The other would be a high priest from the line of Zadok and be called the Messiah of Aaron. It is not unanimously accepted that two messiahs were expected; however, the evidence in the texts makes it the most probable assumption. Shifts in the theology of the community are very possible, but evidence found throughout the scrolls all point towards two messiahs. The expected messiahs were to resemble closely the king and priest prophecies of the Hebrew Bible. Little is said in the scrolls about an eschatological prophet except in the Rule of the Community where “there shall come the Prophet and the Messiahs of Aaron and Israel” (1QS IX, 11).

Although Qumran was an eschatological community with their sights fixed on the end of days, there are few scrolls which speak of their messianic expectations. This disappointing fact is still important. It tells scholars how the community was

not overly obsessed with talking about the messiahs. Their coming was expected, it was looked forward to with anticipation, but the focus of the community certainly did not revolve around the messiahs. As Craig Evans says, “Qumran is not preoccupied with messianism; the community presupposes it and utilizes it as part of the community’s eschatology and hopes of restoration,” but it was only one part of God’s plan to restore the kingdom of Israel.

Klima

HERTZBERG 2017

Jennifer Hertzberg, *Ice-sheet history revealed by fossils*. [nature 547 \(2017\), 35–36](#).

Microscopic fossils show that, from 10,400 to 7,500 years ago, upwelling of a water mass called Circumpolar Deep Water destabilized Antarctic ice shelves — a finding that advances our understanding of ice-sheet retreat.

HILLENBRAND 2017

Claus-Dieter Hillenbrand et al., *West Antarctic Ice Sheet retreat driven by Holocene warm water incursions*. [nature 547 \(2017\), 43–48](#).

Claus-Dieter Hillenbrand, James A. Smith, David A. Hodell, Mervyn Greaves, Christopher R. Poole, Sev Kender, Mark Williams, Thorbjørn Joest Andersen, Patrycja E. Jernas, Henry Elderfield, Johann P. Klages, Stephen J. Roberts, Karsten Gohl, Robert D. Larter & Gerhard Kuhn

Glaciological and oceanographic observations coupled with numerical models show that warm Circumpolar Deep Water (CDW) incursions onto the West Antarctic continental shelf cause melting of the undersides of floating ice shelves. Because these ice shelves buttress glaciers feeding into them, their ocean-induced thinning is driving Antarctic ice-sheet retreat today. Here we present a multi-proxy data based reconstruction of variability in CDW inflow to the Amundsen Sea sector, the most vulnerable part of the West Antarctic Ice Sheet, during the Holocene epoch (from 11.7 thousand years ago to the present). The chemical compositions of foraminifer shells and benthic foraminifer assemblages in marine sediments indicate that enhanced CDW upwelling, controlled by the latitudinal position of the Southern Hemisphere westerly winds, forced deglaciation of this sector from at least 10,400 years ago until 7,500 years ago—when an ice-shelf collapse may have caused rapid ice-sheet thinning further upstream—and since the 1940s. These results increase confidence in the predictive capability of current ice-sheet models.

LEE 2017

Jasmine R. Lee, Ben Raymond, Thomas J. Bracegirdle, Iadine Chadès, Richard A. Fuller, Justine D. Shaw & Aleks Terauds, *Climate change drives expansion of Antarctic ice-free habitat*. [nature 547 \(2017\), 49–54](#).

[n547-0049-Supplement1.pdf](#), [n547-0049-Supplement2.xlsx](#)

Antarctic terrestrial biodiversity occurs almost exclusively in ice-free areas that cover less than 1% of the continent. Climate change will alter the extent and configuration of ice-free areas, yet the distribution and severity of these effects remain unclear. Here we quantify the impact of twenty-first century climate change on ice-free areas under two Intergovernmental Panel on Climate Change (IPCC) climate forcing scenarios using temperature-index melt modelling. Under the strongest forcing scenario, ice-free areas could expand by over 17,000 km² by the end of the

century, close to a 25 % increase. Most of this expansion will occur in the Antarctic Peninsula, where a threefold increase in ice-free area could drastically change the availability and connectivity of biodiversity habitat. Isolated ice-free areas will coalesce, and while the effects on biodiversity are uncertain, we hypothesize that they could eventually lead to increasing regionalscale biotic homogenization, the extinction of less-competitive species and the spread of invasive species.

Klima Anthropologie

BLUMENTHAL 2017

Scott A. Blumenthal et al., *Aridity and hominin environments*. [PNAS 114 \(2017\), 7331–7336](#).

[pnas114-07331-Supplement1.xlsx](#), [pnas114-07331-Supplement2.xlsx](#), [pnas114-07331-Supplement3.xlsx](#), [pnas114-07331-Supplement4.xlsx](#)

Scott A. Blumenthal, Naomi E. Levin, Francis H. Brown, Jean-Philip Brugal, Kendra L. Chritz, John M. Harris, Glynis E. Jehle & Thure E. Cerling

Aridification is often considered a major driver of long-term ecological change and hominin evolution in eastern Africa during the Pliopleistocene; however, this hypothesis remains inadequately tested owing to difficulties in reconstructing terrestrial paleoclimate. We present a revised aridity index for quantifying water deficit (WD) in terrestrial environments using tooth enamel $\delta^{18}\text{O}$ values, and use this approach to address paleoaridity over the past 4.4 million years in eastern Africa. We find no long-term trend in WD, consistent with other terrestrial climate indicators in the Omo-Turkana Basin, and no relationship between paleoaridity and herbivore paleodiet structure among fossil collections meeting the criteria for WD estimation. Thus, we suggest that changes in the abundance of C4 grass and grazing herbivores in eastern Africa during the Pliocene and Pleistocene may have been decoupled from aridity. As in modern African ecosystems, other factors, such as rainfall seasonality or ecological interactions among plants and mammals, may be important for understanding the evolution of C4 grass- and grazer-dominated biomes.

Keywords: oxygen isotopes | terrestrial paleoclimate | human evolution | mammals | Africa

Significance: Oxygen isotopes in modern and fossil mammals can provide information on climate. In this study, we provide a new record of aridity experienced by early hominins in Africa. We show that past climates were similar to the climate in eastern Africa today, and that early hominins experienced highly variable climates over time. Unexpectedly, our findings suggest that the long-term expansion of grasses and grazing herbivores since the Pliocene, a major ecological transformation thought to drive aspects of hominin evolution, was not coincident with aridification in northern Kenya. This finding raises the possibility that some aspects of hominin environmental variability might have been uncoupled from aridity, and may instead be related to other factors, such as rainfall seasonality or ecological interactions among plants and mammals.

Methoden

YUAN 2017

Peng Yuan, *Extraordinary and poor*. [science 356 \(2017\), 1406](#).

Financial support from my family in China is the only reason I can afford to continue following my dream. But I stubbornly believe in the work I do and can't

imagine doing anything else. So, for now, at least, I will continue to pass up monetary gain to have the intellectual freedom that academia offers. I will only live once, and I want to achieve something extraordinary. Unfortunately, this blind faith does not pay the bills. And it has become increasingly difficult to explain to my family, and to myself, why my research is valuable while I have to get food vouchers from the WIC nutrition program every month.

Religion

GRESKY 2017

Julia Gresky, Juliane Haelm & Lee Clare, *Modified human crania from Göbekli Tepe provide evidence for a new form of Neolithic skull cult*. *Science Advances* **3** (2017), e1700564. DOI:10.1126/sciadv.1700564.

Archaeological excavations at Göbekli Tepe, a transitional Neolithic site in southeast Turkey, have revealed the earliest megalithic ritual architecture with characteristic T-shaped pillars. Although human burials are still absent from the site, a number of fragmented human bones have been recovered from fill deposits of buildings and from adjacent areas. We focus on three partially preserved human skulls, all of which carry artificial modifications of a type so far unknown from contemporaneous sites and the ethnographic record. As such, modified skull fragments from Göbekli Tepe could indicate a new, previously undocumented variation of skull cult in the Early Neolithic of Anatolia and the Levant.

Story or Book

STANLEY 2017

Matthew Stanley, *The enlightened empiricist*. *science* **356** (2017), 1341.

Revered today for his scientific contributions, Isaac Newton's religious scholarship is often all but forgotten

Priest of Nature, *The Religious Worlds of Isaac Newton*, Rob Iliffe. Oxford University Press, 2017. 536 pp.

Newton saw himself as a "true Christian," although he would be labeled a heretic at almost any time and place in the Western world. He refuted the divinity of Jesus and even thought that the doctrine of the Trinity—the idea that God exists simultaneously in the form of the Father, Son, and Holy Spirit—was the result of an ancient plot to sabotage Christianity.