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# WEIRD

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MIT Press

**Published on:** Jul 24, 2024

**DOI:** <https://doi.org/10.21428/e2759450.8e9a83b0>

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WEIRD is a backronym that stands for Western, Educated, Industrialized, Rich, and Democratic. It was coined in 2010 to label the populations most commonly sampled by researchers in the experimental behavioral sciences, including psychologists, cognitive scientists, and economists. By design, the WEIRD concept was meant as a kind of social mirror developed to raise the consciousness of researchers to the pitfalls of generalizing about “humans” based on data derived from narrow and rather peculiar slices of humanity. Thus, the WEIRD concept emerged as a rhetorical tool meant to highlight the need for researchers in the behavioral sciences to confront the challenges of generalizing from narrow samples before speaking of “human” psychology, “children’s” cognitive development, or “people’s” perceptual biases.

## History

Psychologists, anthropologists, and other researchers have long expressed concerns about an overreliance on specific populations—often American undergraduates—to conduct experiments within the psychological and cognitive sciences ([Cole, 1996](#); [Gergen, 1973](#); [Medin & Atran, 2004](#); [Norenzayan & Heine, 2005](#); [Rozin, 2001, 2009](#); [Sears, 1986](#); [Sue, 1999](#)). However, these “pop-up concerns” rarely gained much traction in the mainstreams of cognitive science and psychology. The original papers that coined and popularized the WEIRD concept ([Henrich et al., 2010a](#); [2010b](#)) were important because they focused on empirical results showing substantial population-level variation around the world and within the United States. Indeed, the results reviewed reveal not only that WEIRD people were one population within a spectrum of cultural variation but that they were often unusual, outliers anchoring the ends of global distributions. The enterprise’s catchy backronym—WEIRD—offered a decisive justification to granting agencies for conducting research in diverse populations and a pithy retort to reviewers asking, “Why do we care about experiments done among the Tsimané of the Bolivian Amazon?”

While a few early commentaries were critical of the concept, many scholars from psychology, neuroscience, anthropology, and cognitive science more broadly applauded the effort and piled on by pointing to additional evidence indicating the existence of important psychological variation that is largely or entirely missed in typical samples (e.g., [Chiao & Cheon, 2010](#); [Karasik et al., 2010](#); [Majid & Levinson, 2010](#); [Stich, 2010](#)).

Nevertheless, despite frequent references to the WEIRD concept, over 90% of experimental participants still come from the United States (70%), Canada, and a few Western European countries ([Hruschka et al., 2018](#); [Nielsen et al., 2017](#); [Rad et al., 2018](#)). The rest of the world, some 87% of the global population, accounts for 5 to 8% of all participants in the psychological and cognitive sciences. Consequently, researchers from developmental psychology ([Amir & McAuliffe, 2020](#); [Nielsen et al., 2017](#)), linguistics ([Blasi et al., 2022](#)), philosophy ([Henrich et al., 2023](#); [Machery et al., 2023](#)), anthropology ([Barrett, 2020a](#); [2020b](#)) and across cognitive science ([Kroupin et al., 2024](#)) continue to call for action.

[WEIRD](#) was a *New York Times* Word of the Year in 2010.

## Core concepts

The key to understanding the WEIRD concept is to recognize that it is a rhetorical device intended to raise researchers' consciousness about the challenges of generalizability and the prevalence of population-level variation in many domains. Because many researchers grew up in WEIRD societies, or at least trained in WEIRD universities, the WEIRD coinage reminds them to question their intuitions, assumptions, and expectations. Most societies over human history, well back into our evolutionary past, lacked money, schools, supermarkets, insurance, clean water, phones, police, antibiotics, hospitals, courts, democracies, jobs, universities, or even diverse occupations ([Henrich, 2020](#)). Infants and children had to learn to speak multiple languages rather different from English, navigate institutions based on family relationships and clan loyalties, and employ diverse tools and technologies that required complementary physical and cognitive skills. From a historical and evolutionary perspective, most readers live in an “exotic” society, which cultivates intuitions and assumptions about “people” that may not be broadly applicable.

Since 2010, new research comparing diverse populations along important psychological and behavioral dimensions has substantially expanded the database underpinning the WEIRD people problem—(see reviews, [Apicella et al., 2020](#); [Hruschka et al., 2018](#); [Machery et al., 2023](#)). Some key findings from this recent work include sensory abilities and perception, economic preferences, personality structure, morality, and language.

### *Sensory abilities and perception*

Substantial variation exists across societies in both perception and our sensory abilities. Recent work, for example, has revealed population-level variation in underwater visual acuity ([Ilardo et al., 2018](#)), olfaction ([Majid, 2021](#)) [see [Olfaction](#)], and spatial navigation ([Davis & Cashdan 2019](#)) [see [Spatial Cognition](#)]. Such work builds on a venerable tradition of research that has demonstrated substantial variation across populations in visual acuity (myopia) and susceptibilities to various visual illusions ([Berry, 1968](#); [Segall et al., 1966](#)). Despite this history, textbooks and debates in cognitive science still proceed as if WEIRD findings readily generalize to the species. For example, interdisciplinary research in the 1960s by anthropologists and psychologists revealed that the strength of the famed Müller-Lyer illusion varied substantially across societies, from a maximum in WEIRD contexts to nonexistent among foragers. Nevertheless, later debates among cognitive scientists about the penetrability of “human” cognitive processes proceeded as if this research never happened ([McCauley & Henrich 2006](#)).

### *Economic preferences*

Economists and psychologists had long assumed that people's preferences or motivations for reciprocity, fairness, and altruism were universal, even etching this into a species-specific theory with the phrase *Homo reciprocans* ([Bowles & Gintis 2002](#)). Building on earlier work that demonstrated substantial variation among both small-scale societies and student populations ([Ensminger & Henrich 2014](#); [Henrich et al., 2004](#); [Herrmann et al., 2008](#)), recent large-scale efforts have obtained representative samples from 80,000

people in 80 countries. This research confirms the existence of substantial variation in people's preferences and motivations related to reciprocity, fairness, and altruism as well as risk and patience ([Falk et al., 2018](#)). This work suggests that most of the insights from behavioral economics and decision science should not be generalized beyond WEIRD populations, although this is common practice in policy circles.

### ***Personality structure***

While the *Big Five* personality structure has long been considered a feature of human psychology, recent research suggests this is not the case in some small-scale societies. Indeed, among an Amazonian population of forager horticulturalists in Bolivia, a two-factor structure fits best, and neither factor resembles any of the Big Five ([Gurven et al., 2013](#)). How well the Big Five structure fits different populations worldwide depends on the population's occupational or social niche diversity ([Lukaszewski et al., 2017](#)). That is, the fit depends on the breadth and variety of occupations or social roles that a person can voluntarily enter: For example, in some societies, individuals can become librarians, politicians, economists, or militia members. In most societies over human history, there were very few such niches or roles, and they were typically not entered into voluntarily (e.g., castes in India or gender roles). The Big Five model fits best in the urban centers of the United States.

### ***Morality***

Many findings with moral psychology turn out to be WEIRD. For example, building on research showing that “human” morality can be captured by five dimensions or foundations—care/harm, equality/fairness, loyalty, hierarchy, and purity—new work from Iran suggests a sixth foundation—Qeirat—which captures a dimension that can be glossed as “honor” ([Atari et al., 2020](#)). This dimension did not emerge in the WEIRD sample even when researchers looked for it. Similarly, focusing on the role of intentionality in moral judgment, there is substantial global variation in the relative importance of an actor's intentionality to people's moral judgment of them ([Barrett et al., 2016](#); [Curtin et al., 2020](#); [McNamara et al., 2019](#)). While WEIRD societies show the most attention to intention, some societies place little or no emphasis on mental states in moral judgment. Finally, drawing on vignettes from philosophy that asked people to choose whether to, for example, redirect a runaway trolley into one bystander to avoid killing five people, morality researchers had developed a number of insights about “human” psychology ([Mikhail, 2007](#)). However, global data collection involving 40 million decisions from 233 countries reveals substantial variation in people's moral intuitions in these situations ([Awad et al., 2018](#)). These differences are further amplified by work in small-scale societies ([Abarbanell & Hauser 2010](#); [Sorokowski et al., 2020](#)).

### ***Language***

The study of language within the cognitive sciences has focused heavily on English speakers and their intuitions despite the fact that English is an unusual language in many ways ([Blasi et al., 2022](#)). Addressing this, a growing body of research focusing on different domains, including space ([Haun et al., 2010](#); [Majid et al., 2004](#)) [see [Spatial Cognition](#)], numbers ([Gordon, 2005](#)), gender ([Gay et al., 2018](#)), olfaction ([Majid,](#)

2021) [see [Olfaction](#)], and kinship ([Levinson, 2012](#)), increasingly reveals the relevance of linguistic diversity for understanding cognition.

## Questions, controversies, and new developments

The designers of WEIRD offered three admonitions for using the WEIRD concept ([Henrich et al., 2010b](#)). First, they urged researchers to avoid creating a binary WEIRD versus non-WEIRD opposition in their minds. Such a binary distinction would be like naming a newly discovered species “penguins” and then clumping the rest of nature together as “non-penguins.” Knowing two other species are non-penguins does not tell you much. Non-penguins like cobras, robins, ticks, and octopi have little in common. The same is true of non-WEIRD societies. Second, but closely related, they urged researchers not to assume that psychological variation falls along some WEIRD to non-WEIRD linear continuum. Finally, they warned people not to read any theory into the backronym. It was intended as a conscious-raising device, not a theoretical summary or a scientific category.

Despite these admonitions, researchers have spent considerable time discussing what “counts as” a WEIRD population, assessing which countries are WEIRD, and attempting to deploy “non-WEIRD” societies as a meaningful category ([Bentahila et al., 2022](#); [Laajaj et al., 2019](#)). Other studies have even sought to measure the WEIRDness of countries by decomposing each letter in the backronym WEIRD to create a composite index ([Klein et al., 2018](#); [Schimmelpfennig et al., 2024](#)).

To improve researchers’ ability to generalize from limited sampling without reifying non-WEIRD societies or engaging in backronym decomposition, an online tool has been developed using cultural evolutionary theory and global surveys to rigorously measure the cultural distances among populations ([Muthukrishna et al., 2020](#)). This tool allows researchers to develop sampling strategies using the cultural distances, potentially along different dimensions, of locations from the United States or anywhere else.

Finally, several authors have considered how the dominance of WEIRD researchers in the psychological and cognitive sciences may influence the questions asked and the features of life studied ([Barrett, 2020b](#); [Hruschka et al., 2018](#); [Medin et al., 2010](#)). While most agree that increasing the prevalence of researchers from non-WEIRD societies will undoubtedly help address this, some argue that many researchers, regardless of their upbringing and cultural background, can be trained to connect with people in diverse societies, take inspiration from anthropological ethnography, and find questions in historical works from around the world ([Henrich et al., 2010c](#)).

## Broader connections

The WEIRD concept has influenced researchers studying medicine, physiology, animal behavior, and generative artificial intelligence. Researchers seeking to understand human physiology, anatomy, and health have revealed unexpected and medically relevant population-level differences in domains ranging from body temperature and foot anatomy to cardiac risk factors and acne (e.g., [Campbell & Strassmann, 2016](#); [Gurven et al., 2020](#); [Gurven & Lieberman, 2020](#); [Henrich et al., 2023](#)). Leading researchers in this area

argue that the near-exclusive focus on WEIRD bodies has distorted our picture of human health and created blind spots to conceal simple treatments.

The WEIRD concept has also inspired biologists to consider the selective biases they inadvertently introduce into their studies based on how they select, tag, and follow nonhuman animals ([Webster & Rutz, 2020](#)). They have even coined their own backronym: STRANGE (Social background, Tappability and selection, Rearing history, Acclimation and habituation, Natural changes in responsiveness, Genetic makeup, and Experience; also see [Leavens et al., 2010](#)).

With the rise of generative artificial intelligences such as ChatGPT, computer and cognitive scientists have published a flurry of findings showing a “human-like” performance on various measures. Of course, the “humans” used for comparisons are nearly always WEIRD. To address this, researchers compared ChatGPT’s responses to both global survey questions and psychological tasks to representative samples from around the world ([Atari et al., 2023](#)). Perhaps unsurprisingly, ChatGPT is psychologically WEIRD, most similar to the United States, New Zealand, and Germany but dissimilar to people from Africa and the Middle East.

The success of the WEIRD concept has brought to the forefront of the cognitive sciences the question of how to explain the variation in key aspects of psychology across space and time ([Kroupin et al., 2024](#)) [see [Cultural Evolution](#)]. This has led to exciting new efforts, spurred by the availability of new data sources, to explain extant psychological variation based on factors related to ecology ([Talhelm, 2020](#)), environmental variation ([Giuliano & Nunn 2017](#)), religious beliefs ([Lang et al., 2019](#); [Schulz et al., 2019](#)), market institutions ([Agneman & Chevrot-Bianco, 2023](#); [Enke, 2022](#); [Rustagi et al., 2010](#)), and kinship ([Curtin et al., 2020](#); [Enke, 2019](#)).

Going deeper, researchers in the burgeoning field of historical psychology have begun to use artifacts, including texts, paintings, and musical compositions, to infer aspects of psychology across space and back into time ([Atari & Henrich, 2023](#); [Baumard et al., 2023](#); [Muthukrishna et al., 2021](#)). For example, to measure the psychological construct *normative tightness*, that is, the extent to which social norms are clear and strictly enforced within a community ([Gelfand et al., 2011](#)) [see [Normativity](#)], researchers have developed lists that contain words indicating either “tightness” or “looseness.” By applying these lists to historical texts going back in time, researchers have tracked changes in “tightness” over time in the United States ([Jackson et al., 2019](#)).

## Acknowledgments

The author thanks Asifa Majid and Clark Barrett for their helpful comments.

## Further reading

- Amir, D., & McAuliffe, K. (2020). Cross-cultural, developmental psychology: Integrating approaches and key insights. *Evolution and Human Behavior*, 41(5), 430–444.

<https://doi.org/10.1016/j.evolhumbehav.2020.06.006>

- Barrett, H. C. (2020). Towards a cognitive science of the human: Cross-cultural approaches and their urgency. *Trends in Cognitive Sciences*, 24(8), 620–638. <https://doi.org/10.1016/j.tics.2020.05.007>
- Majid, A. (2021). Human olfaction at the intersection of language, culture, and biology. *Trends in Cognitive Sciences*, 25(2), 111–123. <https://doi.org/10.1016/j.tics.2020.11.005>
- Henrich, J. (2020). *The WEIRD people in the world: How the West became psychologically peculiar and particularly prosperous*. Farrar, Straus and Giroux.

## References

- Abarbanell, L., & Hauser, M. D. (2010). Mayan morality: An exploration of permissible harms. *Cognition*, 115(2), 207–224. <https://doi.org/10.1016/j.cognition.2009.12.007> ↵
- Agneman, G., & Chevrot-Bianco, E. (2023). Market participation and moral decision-making: Experimental evidence from Greenland. *The Economic Journal*, 133(650), 537–581. <https://doi.org/10.1093/ej/ueac069> ↵
- Amir, D., & McAuliffe, K. (2020). Cross-cultural, developmental psychology: Integrating approaches and key insights. *Evolution and Human Behavior*, 41(5), 430–444. <https://doi.org/10.1016/j.evolhumbehav.2020.06.006> ↵
- Apicella, C., Norenzayan, A., & Henrich, J. (2020). Beyond WEIRD: A review of the last decade and a look ahead to the global laboratory of the future. *Evolution and Human Behavior*, 41(5), 319–329. <https://doi.org/10.1016/j.evolhumbehav.2020.07.015> ↵
- Atari, M., & Henrich, J. (2023). Historical psychology. *Current Directions in Psychological Science*, 32(2), 176–183. <https://doi.org/10.1177/09637214221149737> ↵
- Atari, M., Graham, J., & Dehghani, M. (2020). Foundations of morality in Iran. *Evolution and Human Behavior*, 41(5), 367–384. <https://doi.org/10.1016/j.evolhumbehav.2020.07.014> ↵
- Atari, M., Xue, M. J., Park, P. S., Blasi, D. E., & Henrich, J. (2023). Which humans? *PsyArXiv*. <https://doi.org/10.31234/osf.io/5b26t> ↵
- Awad, E., Dsouza, S., Kim, R., Schulz, J., Henrich, J., Shariff, A., Bonnefon, J.-F., & Rahwan, I. (2018). The Moral Machine experiment. *Nature*, 563(7729), 59–64. <https://doi.org/10.1038/s41586-018-0637-6> ↵
- Barrett, H. C. (2020). Deciding what to observe: Thoughts for a post-WEIRD generation. *Evolution and Human Behavior*, 41(5), 445–453. <https://doi.org/10.1016/j.evolhumbehav.2020.05.006> ↵
- Barrett, H. C. (2020). Towards a cognitive science of the human: Cross-cultural approaches and their urgency. *Trends in Cognitive Sciences*, 24(8), 620–638. <https://doi.org/10.1016/j.tics.2020.05.007> ↵

- Barrett, H. C., Bolyanatz, A., Crittenden, A. N., Fessler, D. M., Fitzpatrick, S., Gurven, M., Henrich, J., Kanovsky, M., Kushnick, G., & Pisor, A. (2016). Small-scale societies exhibit fundamental variation in the role of intentions in moral judgment. *Proceedings of the National Academy of Sciences*, 113(17), 4688–4693. <https://doi.org/10.1073/pnas.1522070113>

↩

- Baumard, N., Safra, L., Martins, M., & Chevallier, C. (2023). Cognitive fossils: Using cultural artifacts to reconstruct psychological changes throughout history. *Trends in Cognitive Sciences*, 28(2), 172–186. <https://doi.org/10.1016/j.tics.2023.10.001>

↩

- Bentahila, L., Fontaine, R., & Pennequin, V. (2022). Universality and cultural diversity in moral systems among WEIRD and non-WEIRD societies: A case study of France and Morocco. *Psychological Applications and Trends*, 185–187. <https://doi.org/10.36315/2022inpact045>

↩

- Berry, J. W. (1968). Ecology, perceptual development and the Müller-Lyer illusion. *British Journal of Psychology*, 59(3), 205–210. <https://doi.org/10.1111/j.2044-8295.1968.tb01134.x> ↩
- Blasi, D. E., Henrich, J., Adamou, E., Kemmerer, D., & Majid, A. (2022). Over-reliance on English hinders cognitive science. *Trends in Cognitive Sciences*, 26(12), 1153–1170. <https://doi.org/10.1016/j.tics.2022.09.015>

↩

- Blasi, D. E., Henrich, J., Adamou, E., Kemmerer, D., & Majid, A. (2022). Over-reliance on English hinders cognitive science. *Trends in Cognitive Sciences*, 26(12), 1153–1170. <https://doi.org/10.1016/j.tics.2022.09.015>

↩

- Bowles, S., & Gintis, H. (2002). Homo reciprocans. *Nature*, 415(6868), 125–128. <https://doi.org/10.1038/415125a> ↩
- Campbell, C. E., & Strassmann, B. I. (2016). The blemishes of modern society? *Evolution, Medicine, and Public Health*, 2016(1), 325–337. <https://doi.org/10.1093/emph/eow027> ↩
- Chiao, J. Y., & Cheon, B. K. (2010). The weirdest brains in the world. *Behavioral and Brain Sciences*, 33(2–3), 88–90. <https://doi.org/10.1017/S0140525X10000282>

↩

- Cole, M. (1996). *Cultural psychology: A once and future discipline*. Harvard University Press. ↩
- Curtin, C. M., Barrett, H. C., Bolyanatz, A., Crittenden, A. N., Fessler, D. M. T., Fitzpatrick, S., Gurven, M., Kanovsky, M., Kushnick, G., Laurence, S., Pisor, A., Scelza, B., Stich, S., von Rueden, C., & Henrich, J. (2020). Kinship intensity and the use of mental states in moral judgment across societies. *Evolution and Human Behavior*, 41(5), 415–429. <https://doi.org/10.1016/j.evolhumbehav.2020.07.002> ↩

- Davis, H. E., & Cashdan, E. (2019). Spatial cognition, navigation, and mobility among children in a forager-horticulturalist population, the Tsimané of Bolivia. *Cognitive Development*, 52, 100800. <https://doi.org/10.1016/j.cogdev.2019.100800> ↵
- Enke, B. (2019). Kinship, cooperation, and the evolution of moral systems. *The Quarterly Journal of Economics*, 134(2), 953–1019. <https://doi.org/10.1093/qje/qjz001> ↵
- Enke, B. (2022). Market exposure and human morality. *Nature Human Behaviour*, 7(1), 134–141. <https://doi.org/10.1038/s41562-022-01480-x> ↵
- Ensminger, J., & Henrich, J. (Eds.). (2014). *Experimenting with social norms: Fairness and punishment in cross-cultural perspective*. Russell Sage Press. ↵
- Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. *Quarterly Journal of Economics*, 133(4), 1645–1692. <https://doi.org/10.1093/qje/qjy013> ↵
- Gay, V., Hicks, D. L., Santacreu-Vasut, E., & Shoham, A. (2018). Decomposing culture: an analysis of gender, language, and labor supply in the household. *Review of Economics of the Household*, 16(4), 879–909. <https://doi.org/10.1007/s11150-017-9369-x> ↵
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliach, A., Ang, S., & Arnadottir, J. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, 332(6033), 1100–1104. <https://doi.org/10.1126/science.1197754> ↵
- Gergen, K. J. (1973). Social psychology as history. *Journal of Personality and Social Psychology*, 26(2), 309–320. <https://doi.org/10.1037/h0034436> ↵
- Giuliano, P., & Nunn, N. (2017). Understanding Cultural Persistence and Change. *NBER Working Paper* 23617, 1–51. <https://doi.org/10.3386/w23617> ↵
- Gordon, P. (2005). Numerical cognition without words: Evidence from Amazonia. *Science*, 306(5695), 496–499. <https://doi.org/10.1126/science.1094492> ↵
- Gurven, M. D., & Lieberman, D. E. (2020). WEIRD bodies: mismatch, medicine and missing diversity. *Evolution and Human Behavior*, 41(5), 330–340. <https://doi.org/10.1016/j.evolhumbehav.2020.04.001> ↵
- Gurven, M., Kraft, T. S., Alami, S., Adrian, J. C., Linares, E. C., Cummings, D., Rodriguez, D. E., Hooper, P. L., Jaeggi, A. V., Gutierrez, R. Q., Suarez, I. M., Seabright, E., Kaplan, H., Stieglitz, J., & Trumble, B. (2020). Rapidly declining body temperature in a tropical human population. *Science Advances*, 6(44). <https://doi.org/10.1126/sciadv.abc6599> ↵

- Gurven, M., von Rueden, C., Massenkoff, M., Kaplan, H., & Lero Vie, M. (2013). How universal is the Big Five? Testing the five-factor model of personality variation among forager-farmers in the Bolivian Amazon. *Journal of Personality and Social Psychology*, 104(2), 354–370. <https://doi.org/10.1037/a0030841> ↵
- Haun, D. B. M., Jordan, F. M., Vallortigara, G., & Clayton, N. S. (2010). Origins of spatial, temporal and numerical cognition: Insights from comparative psychology. *Trends in Cognitive Sciences*, 14(12), 552–560. <https://doi.org/10.1016/j.tics.2010.09.006>

↵

- Henrich, J. (2020). *The WEIRDest people in the world: How the West became psychologically peculiar and particularly prosperous*. Farrar, Straus and Giroux. ↵
- Henrich, J., Blasi, D. E., Curtin, C. M., Davis, H. E., Hong, Z., Kelly, D., & Kroupin, I. (2023). A cultural species and its cognitive phenotypes: implications for philosophy. *Review of Philosophy and Psychology*, 14(2), 349–386. <https://doi.org/10.1007/s13164-021-00612-y>

↵

- Henrich, J., Boyd, R., Bowles, S., Camerer, C. F., Fehr, E., & Gintis, H. (2004). *Foundations of human sociality: Economic experiments and ethnographic evidence from fifteen small-scale societies*. Oxford University Press. ↵
- Henrich, J., Heine, S. J. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, 466(7302), 29. <https://doi.org/10.1038/466029a>

↵

- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Beyond WEIRD: Towards a broad-based behavioral science. *Behavioral and Brain Sciences*, 33(2–3), 111–135. <https://doi.org/10.1017/S0140525X10000725>

↵

- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33(2–3), 61–83. <https://doi.org/10.1017/S0140525X0999152X>

↵

- Herrmann, B., Thöni, C., & Gächter, S. (2008). Antisocial punishment across societies. *Science*, 319(5868), 1362–1367. <https://doi.org/10.1126/science.1153808> ↵
- Hruschka, D. J., Medin, D. L., Rogoff, B., & Henrich, J. (2018). Pressing questions in the study of psychological and behavioral diversity. *Proceedings of the National Academy of Sciences*, 115(45), 11366–11368. <https://doi.org/10.1073/pnas.1814733115> ↵
- Hruschka, D. J., Medin, D. L., Rogoff, B., & Henrich, J. (2018). Pressing questions in the study of psychological and behavioral diversity. *Proceedings of the National Academy of Sciences*, 115(45), 11366–11368. <https://doi.org/10.1073/pnas.1814733115>

↵

- Ilardo, M. A., Moltke, I., Korneliussen, T. S., Cheng, J., Stern, A. J., Racimo, F., de Barros Damgaard, P., Sikora, M., Seguin-Orlando, A., Rasmussen, S., van den Munckhof, I. C. L., ter Horst, R., Joosten, L. A. B., Netea, M. G., Salingkat, S., Nielsen, R., & Willerslev, E. (2018). Physiological and genetic adaptations to diving in sea nomads. *Cell*, 173(3), 569-573.e15.

<https://doi.org/10.1016/j.cell.2018.03.054>

↩

- Jackson, J. C., Gelfand, M., De, S., & Fox, A. (2019). The loosening of American culture over 200 years is associated with a creativity-order trade-off. *Nature Human Behaviour*, 3(3), 244–250.

<https://doi.org/10.1038/s41562-018-0516-z>

↩

- Karasik, L. B., Adolph, K. E., Tamis-LeMonda, C. S., & Bornstein, M. H. (2010). WEIRD walking: Cross-cultural research on motor development. *The Behavioral and Brain Sciences*, 33(2–3), 95–96.

<https://doi.org/10.1017/S0140525X10000117>

↩

- Klein, R. A., Vianello, M., Hasselman, F., Adams, B. G., Adams, R. B., Alper, S., Aveyard, M., Axt, J. R., Babalola, M. T., Bahník, Š., Batra, R., Berkics, M., Bernstein, M. J., Berry, D. R., Bialobrzeska, O., Binan, E. D., Bocian, K., Brandt, M. J., Busching, R., ... Nosek, B. A. (2018). Many Labs 2: investigating variation in replicability across samples and settings. *Advances in Methods and Practices in Psychological Science*, 1(4), 443–490. <https://doi.org/10.1177/2515245918810225> ↩
- Kroupin, I., Davis, H. E., & Henrich, J. (2024). Beyond Newton: Why assumptions of universality are critical to cognitive science, and how to finally move past them. *Psychological Review*. Advance online publication. <https://doi.org/10.1037/rev0000480>

↩

- Laajaj, R., Macours, K., Pinzon Hernandez, D. A., Arias, O., Gosling, S. D., Potter, J., Rubio-Codina, M., & Vakis, R. (2019). Challenges to capture the big five personality traits in non-WEIRD populations. *Science Advances*, 5(7), eaaw5226. <https://doi.org/10.1126/sciadv.aaw5226> ↩
- Lang, M., Purzycki, B. G., Apicella, C. L., Atkinson, Q. D., Bolyanatz, A., Cohen, E., Handley, C., Kundtová Klocová, E., Lesorogol, C., Mathew, S., McNamara, R. A., Moya, C., Placek, C. D., Soler, M., Vardy, T., Weigel, J. L., Willard, A. K., Xygalatas, D., Norenzayan, A., & Henrich, J. (2019). Moralizing gods, impartiality and religious parochialism across 15 societies. *Proceedings of the Royal Society B: Biological Sciences*, 286(1898), 20190202. <https://doi.org/10.1098/rspb.2019.0202> ↩
- Leavens, D. A., Bard, K. A., & Hopkins, W. D. (2010). BIZARRE chimpanzees do not represent “the chimpanzee.” *Behavioral and Brain Sciences*, 33(2–3), 100–101. <https://doi.org/10.1017/S0140525X10000166>

↩

- Levinson, S. C. (2012). Kinship and human thought. *Science*, 336(6084), 988–989.

<https://doi.org/10.1126/science.1222691> ↩

- Lukaszewski, A. W., Gurven, M., von Rueden, C. R., & Schmitt, D. P. (2017). What explains personality covariation? A test of the socioecological complexity hypothesis. *Social Psychological and Personality Science*, 8(8), 943–952.

<https://doi.org/10.1177/1948550617697175>

↩

- Machery, E., Knobe, J., & Stich, S. P. (2023). Editorial: Cultural variation and cognition. *Review of Philosophy and Psychology*, 14(2), 339–347. <https://doi.org/10.1007/s13164-021-00612-y> ↩
- Machery, E., Knobe, J., & Stich, S. P. (2023). Editorial: Cultural Variation and Cognition. *Review of Philosophy and Psychology*, 14(2), 339–347. <https://doi.org/10.1007/s13164-023-00687-9> ↩
- Majid, A. (2021). Human olfaction at the intersection of language, culture, and biology. *Trends in Cognitive Sciences*, 25(2), 111–123. <https://doi.org/10.1016/j.tics.2020.11.005> ↩
- Majid, A., & Levinson, S. C. (2010). WEIRD languages have misled us too. *Behavioral and Brain Sciences*, 33(2-3), 103. <https://doi.org/10.1017/S0140525X1000018X>

↩

- Majid, A., Bowerman, M., Kita, S., Haun, D. B. M., & Levinson, S. C. (2004). Can language restructure cognition? The case for space. *Trends in Cognitive Sciences*, 8(3), 108–114.

<https://doi.org/10.1016/j.tics.2004.01.003>

↩

- McCauley, R., & Henrich, J. (2006). Susceptibility to the Müller-Lyer illusion, theory-neutral observation, and the diachronic penetrability of the visual input system. *Philosophical Psychology*, 19(1), 1–23.

<https://doi.org/10.1080/09515080500462347>

↩

- McNamara, R. A., Willard, A. K., Norenzayan, A., & Henrich, J. (2019). Weighing outcome vs. intent across societies: How cultural models of mind shape moral reasoning. *Cognition*, 182, 95–108.

<https://doi.org/10.1016/j.cognition.2018.09.008>

↩

- Medin, D. L., & Atran, S. (2004). The native mind: Biological categorization and reasoning in development and across cultures. *Psychological Review*, 111(4), 960–983.

<https://doi.org/10.1037/0033-295X.111.4.960>

↩

- Medin, D., Bennis, W., & Chandler, M. (2010). Culture and the home-field disadvantage. *Perspectives on Psychological Science*, 5(6), 708–713.

<https://doi.org/10.1177/1745691610388772>

↩

- Mikhail, J. (2007). Universal moral grammar: theory, evidence and the future. *Trends in Cognitive Sciences*, 11(4), 143–152.  
<https://doi.org/10.1016/j.tics.2006.12.007>  
[↵](#)
- Muthukrishna, M., Bell, A. V., Henrich, J., Curtin, C. M., Gedranovich, A., McInerney, J., & Thue, B. (2020). Beyond Western, educated, industrial, rich, and democratic (WEIRD) psychology: Measuring and mapping scales of cultural and psychological distance. *Psychological Science*, 31(6), 678–701.  
<https://doi.org/10.1177/0956797620916782> [↵](#)
- Muthukrishna, M., Henrich, J., & Slingerland, E. (2021). Psychology as a historical science. *Annual Review of Psychology*, 72(1), 717–749. <https://doi.org/10.1146/annurev-psych-082820-111436> [↵](#)
- Nielsen, M., Haun, D., Kärtner, J., Legare, C. H., Kärtner, J., & Legare, C. H. (2017). The persistent sampling bias in developmental psychology: A call to action. *Journal of Experimental Child Psychology*, 162, 31–38.  
<https://doi.org/10.1016/j.jecp.2017.04.017>  
[↵](#)
- Norenzayan, A., & Heine, S. J. (2005). Psychological universals: What are they and how can we know? *Psychological Bulletin*, 131(5), 763–784.  
<https://doi.org/10.1037/0033-2909.131.5.763>  
[↵](#)
- Rad, M. S., Martingano, A. J., & Ginges, J. (2018). Toward a psychology of Homo sapiens: Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences*, 115(45), 11401–11405.  
<https://doi.org/10.1073/pnas.1721165115>  
[↵](#)
- Rozin, P. (2001). Social psychology and science: Some lessons from Solomon Asch. *Personality and Social Psychology Review*, 5, 2–14.  
<https://doi.org/10.1207/S15327957PSPR0501>  
[↵](#)
- Rozin, P. (2009). What kind of empirical research should we publish, fund, and reward? A different perspective. *Perspectives on Psychological Science*, 4, 435–439.  
<https://doi.org/10.1111/j.1745-6924.2009.01151.x>  
[↵](#)
- Rustagi, D., Engel, S., & Kosfeld, M. (2010). Conditional cooperation and costly monitoring explain success in forest commons management. *Science*, 330(6006), 961–965.  
<https://doi.org/10.1126/science.1193649> [↵](#)

- Schimmelpfennig, R., Spicer, R., White, C. J. M., Gervais, W., Norenzayan, A., Heine, S., Henrich, J., & Muthukrishna, M. (2024). The moderating role of culture in the generalizability of psychological phenomena. *Advances in Methods and Practices in Psychological Science*, 7(1), 25152459231225163. <https://doi.org/10.1177/25152459231225163> ↵
- Schulz, J. F., Bahrami-Rad, D., Beauchamp, J. P., & Henrich, J. (2019). The Church, intensive kinship, and global psychological variation. *Science*, 366(6466), eaau5141. <https://doi.org/10.1126/science.aau5141> ↵
- Sears, D. (1986). College sophomores in the laboratory: Influences of a narrow data base on social psychology's view of human nature. *Journal of Personality and Social Psychology*, 51(3), 515–530. <https://doi.org/10.1037/0022-3514.51.3.515>

↵

- Segall, M., Campbell, D., & Herskovits, M. J. (1966). *The influence of culture on visual perception*. The Bobbs-Merrill Company. ↵
- Sorokowski, P., Marczak, M., Misiak, M., & Białek, M. (2020). Trolley Dilemma in Papua. Yali horticulturalists refuse to pull the lever. *Psychonomic Bulletin & Review*, 27(2), 398–403. <https://doi.org/10.3758/s13423-019-01700-y> ↵
- Stich, S. (2010). Philosophy and WEIRD intuition. *Behavioral and Brain Sciences*, 33(2–3), 110. <https://doi.org/10.1017/S0140525X10000257>

↵

- Sue, S. (1999). Science, ethnicity, and bias. Where have we gone wrong? *American Psychologist*, 54(12), 1070–1077. <https://doi.org/10.1037/0003-066x.54.12.1070>

↵

- Talhelm, T. (2020). Emerging evidence of cultural differences linked to rice versus wheat agriculture. *Current Opinion in Psychology*, 32, 81–88. <https://doi.org/10.1016/j.copsyc.2019.06.031> ↵
- Webster, M. M., & Rutz, C. (2020). How STRANGE are your study animals? *Nature*, 582(7812), 337–340. <https://doi.org/10.1038/d41586-020-01751-5> ↵