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Psychology as a Historical Science

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Abstract

Psychology has traditionally seen itself as the science of universal human cognition, but it has only recently begun seriously grappling with cross-cultural variation. Here we argue that the roots of cross-cultural variation often lie in the past. Therefore, to understand not only how but also why psychology varies, we need to grapple with cross-temporal variation. The traces of past human cognition accessible through historical texts and artifacts can serve as a valuable, and almost completely unutilized, source of psychological data. These data from dead minds open up an untapped and highly diverse subject pool. We review examples of research that may be classified as historical psychology, introduce sources of historical data and methods for analyzing them, explain the critical role of theory, and discuss how psychologists can add historical depth and nuance to their work. Psychology needs to become a historical science if it wants to be a genuinely universal science of human cognition and behavior.

Contents

INTRODUCTION

Our psychology is shaped by our societies, and our societies are shaped by their histories (Henrich 2020, Uchiyama et al. 2020). Humans living in different societies across the world vary in multiple ways: in normative behaviors about how and to whom we should be prosocial (Henrich et al. 2001, 2010a; Muthukrishna et al. 2020; Santos et al. 2017), in whether intent matters in moral judgments (Barrett et al. 2016, McNamara et al. 2019), in the presence and structure of personality traits (Gurven et al. 2013, Smaldino et al. 2019), in what one pays attention to (Kitayama et al. 2003), in the organization of one's working memory (Guida et al. 2018), and in the ways that our brains process visual information (Dehaene et al. 2010, Han et al. 2013). Understanding present-day psychology requires understanding the past processes, environments, and constraints that led to that psychology. Thus, for psychology to develop a full theoretical understanding of human behavior (Muthukrishna & Henrich 2019), psychology needs to also be a historical science.

Cultural evolution offers a theoretical framework for explaining cross-cultural psychological differences (Boyd 2018, Boyd & Richerson 1985, Chudek et al. 2015, Henrich 2016, Muthukrishna & Henrich 2019). Cultural evolutionary theory is an extension of evolutionary theory into the social world that describes the cumulative process by which variants of beliefs, norms, behaviors, techniques, and technologies are selectively transmitted and retained through social learning strategies (reviewed in Kendal et al. 2018). Our psychological suite of social learning strategies allows us to acquire adaptive beliefs and behaviors by selectively overimitating (Hoehl et al. 2019), for example, successful people, those whom others copy (prestige bias), or the majority or plurality (conformist bias). Through these selective social learning processes, we acquire many aspects of psychology, such as norms about what constitutes fairness (Blake et al. 2015), overplacement and overprecision in confidence (Cheng et al. 2020, Moore et al. 2018, Muthukrishna et al. 2018), and the tendency to discount the future (Amir et al. 2020, Garvert et al. 2015). Some of this acquired psychology overrides genetic tendencies. Chili peppers, for instance, induce pain in mammals as a deterrent to being consumed, but in regions where people stand to benefit from the antimicrobial properties of capsaicin, cultural training causes individuals to interpret this pain as pleasure (Billing & Sherman 1998, Tewksbury & Nabhan 2001).

This selective retention of successful beliefs, behaviors, norms, institutions, skills, and technology allows cultures to evolve solutions to problems that are beyond the comprehension of any single person. We need not understand the causal mechanism of a particular belief or behavior to practice it (Derex et al. 2013, 2019; Muthukrishna & Henrich 2016; Muthukrishna et al. 2013)—that is, spice-consuming societies do not enjoy spiciness because of their understanding of the interaction between spice and health. Indeed, we typically have a shallow understanding of the beliefs, behaviors, and technologies we possess, despite overestimating our true level of understanding (what is called the illusion of explanatory depth; see Rozenblit & Keil 2002, Sloman & Fernbach 2017). Just as genetic evolution has led to physiology that no genetic engineer could design, cultural evolution has led to norms, practices, technologies, and institutions that not even the brightest among us could recreate (Henrich 2016, Muthukrishna & Henrich 2016).

Cultural evolutionary theory describes the processes by which important aspects of human psychology evolve and persist as adaptations to environments over time. Thus, cultural evolution offers a theoretical framework for explaining not only cross-cultural psychological differences but also cross-temporal psychological differences. Important aspects of present-day psychology lie in the past—either the past environments of present-day societies or the past environments of migrants who live in these present-day societies. These beliefs and behaviors may persist even after the environment changes or after the group moves to a new environment (De Leersnyder et al. 2011, Dinesen 2012, Giavazzi et al. 2019, Mesoudi et al. 2016, Norris & Inglehart 2012, Sinding Bentzen 2019).

Innovations, of course, occur in each new generation, but innovation itself is built out of the existing cultural repertoire accumulated over many previous generations (Muthukrishna & Henrich 2016). Historical path dependence (Page 2006) can constrain our technology and institutions, particularly in the absence of sufficiently strong countervailing selection pressures. We use QWERTY keyboards today not because they are efficient, but because they needed to be inefficient on early typewriters to avoid key jamming. If the US Constitution were written today, it would look very different (Rockmore et al. 2018). Consider the many challenges to switching to the more efficient Dvorak keyboard layout or amending the US Constitution.

The path dependence of historical processes also affects our psychology. For example, by creating identical objects that are only distinguishable by stable differences in color, industrialization may have increased both the number of terms we can use to refer to color and our ability to distinguish and recall different shades (Gibson et al. 2017). New generations of children from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) countries master these new color terms ever faster, even within just the last half century (Pitchford & Mullen 2002). Some historical processes lead to cultural traits that affect the rate of innovation itself. For example, less materially secure environments develop norms against deviation because the potential cost of deviating from the current accumulated adaptive norms can be high, often threatening the group welfare (Hruschka & Henrich 2013, Hruschka et al. 2014, Jackson et al. 2019, Muthukrishna & Henrich 2016). Norms against deviation, often referred to as cultural tightness (Gelfand et al. 2006, 2011), are a particularly interesting example, because they affect the rate of cultural innovation itself; tighter societies produce more incremental rather than revolutionary inventions (Chua et al. 2019, Gelfand 2018, Muthukrishna & Henrich 2016). Societies more resistant to change may also be more constrained by existing practices, although this same conformist, norm-adhering psychology may also make them more vulnerable to abrupt society-wide shifts (Muthukrishna & Schaller 2020).

At any given time, cultural evolution is constrained by what is known as the adjacent possible (Muthukrishna & Henrich 2016). To see this, consider an analogy in genetic evolution (Chatterjee et al. 2014, Kauffman 2003): An organism is constrained by its current genome. New mutations

need to fit with the current complex interaction of genes that produces the organism. Human populations have optimized levels of skin-darkening melanin to match levels of UV radiation that vary with latitude, resulting in skin light enough to synthesize sufficient Vitamin D but dark enough to avoid skin cancer (Jablonski 2018, Jablonski & Chaplin 2010). However, no human population could evolve wings in any reasonable time frame. Within cultural evolution, we see similar constraints on how countries select new industries in which to invest (Hidalgo et al. 2007) and how cultural and psychological innovations emerge (Muthukrishna & Henrich 2016). These tend to be incremental changes, serendipitous discoveries, or recombinations of existing practices. Of course, unlike genes in complex organisms, culture can be recombined and transmitted horizontally, allowing for innovations in one place to spread to another through processes of cultural group selection, such as migration, relative population growth, conflict, and prestige-biased group-level transmission (Henrich 2016, Henrich & Muthukrishna 2020, Richerson et al. 2016). The spread of monogamous marriage provides a historical example. Approximately 85% of human societies in the anthropological record have permitted polygynous marriage, and evolutionary models suggest that large wealth inequality should favor polygyny, but monogamous marriage spread rapidly with religion, Christianity in particular (Henrich et al. 2012). Although polygyny may be more economically efficient under conditions of large wealth inequality (according to the polygyny threshold model; see Orians 1969, Verner & Willson 1966), monogamy can create more stable, safe societies—with less male–male competition—by resolving the problem of young men lacking sufficient resources to marry and reproduce (Henrich et al. 2012). History suggests that although we might think that cultural evolution is driven by radically new ideas generated by the powerful rationality and creativity of our big brains, in reality each of us is stuck thinking with the mental tools, heuristics, beliefs, expectations, and worldviews bequeathed to us by earlier generations.

Thus, our psychology is shaped by millions of years of genetic evolution, thousands of years of cultural evolution, and a short lifetime of experience; and yet, much of the field has focused on that short lifetime of experience. When most animals encounter a new environment, they are forced to adapt genetically. Our species has some local genetic adaptations (for a review see Fan et al. 2016; on adaptation to UV radiation, see Jablonski & Chaplin 2017; on malaria, see Kwiatkowski 2005; on altitude, see Yi et al. 2010); however, most differences we see around the world are cultural rather than genetic (Bell et al. 2009; for discussion, see Uchiyama et al. 2020). Developing better theories of human behavior (Muthukrishna & Henrich 2019) requires moving beyond cataloging cross-cultural differences and toward understanding where they come from and how they change. Psychology still overwhelmingly generalizes from present-day populations living in WEIRD countries (Arnett 2008, Henrich et al. 2010b, Nielsen et al. 2017, Nisbett 2003, Thalmayer et al. 2020) or countries that are culturally similar (Muthukrishna et al. 2020). This WEIRD people problem is a matter not only of geography but also of history (Atkinson 2011, Botero et al. 2014, Gavin et al. 2018, Gray et al. 2010, Pacheco Coelho et al. 2019).

Societies in the past can be as culturally distant as societies in another place. The same argument for geographical variation in psychology also applies to temporal variation. The generation gaps we measure as cohort effects are a sliver of the cross-temporal variation we would expect in a culturally evolving species. History serves as a kind of psychological fossil record, which opens up an exciting, and hitherto mostly untouched, source of "data from dead minds" (Martin 2014). Patterns of past cognition are captured in historical artifacts, ranging from archeological remains to written texts, that not only are important for understanding the roots of modern psychological patterns but also represent an important source of less WEIRD data (Slingerland 2014, 2015). Although our inability to experimentally manipulate or directly observe historical participants

places limits on what we can learn from these data, traces of human thought can be a rich and informative source of descriptive information on past cognition, both explicit and implicit.

With few exceptions, which we discuss shortly, psychology has largely ignored history and historical data, perhaps in part due to its lack of focus on building cumulative theories to explain human behavior (Muthukrishna & Henrich 2019). But just as economic history helps us understand present-day economics (Nunn 2009, 2020), historical psychology can help us understand the psychology of the past, which is crucial to understanding the psychology of the present and its many cross-cultural differences. Here we will (*a*) review work that might be classified as historical psychology; (*b*) introduce some methods that may be useful to historical psychologists, including how to extract data from dead minds; (*c*) explore the role of theory in mapping history to psychology; and (*d*) provide some conclusions concerning the future of this emerging field.

HISTORICAL PSYCHOLOGY TODAY

To explain contemporary behavior and psychology, an increasing number of researchers have found themselves turning to cultural evolutionary theories and historical data. Here, we describe some illustrative examples that link contemporary psychological variation—including cooperation, trust, personality, and gender differences—to historical processes focused on religion, kinship, formal institutions (democracy), economic patterns, and ecological factors.

Religious Evolution and Social Psychology

What, if anything, is the connection between religion and social motivations? This question has frequently been asked within psychology, but few efforts to tackle it have brought forth a clearly articulated theory, an appreciation for how and why religions have changed over millennia, or a recognition of the extent of global religious diversity. Indeed, religion in psychology has often meant Christianity. Although Christianity is the world's largest religion, most people in the world are not Christians, and over the scale of world history, Christianity is a relatively recent development.

Addressing these issues within a historical and cultural evolutionary framework (Atran & Henrich 2010, Norenzayan et al. 2016), a recent approach has proposed that the supernatural beliefs and ritual practices of contemporary religions have been shaped by intergroup competition over millennia (as well as by our evolved psychology) in ways that have favored their success in competition against other religions. According to this argument, this intergroup competition might have favored supernatural agents (e.g., deities) and/or cosmic forces (e.g., karma) along with prescribed beliefs and behaviors that promoted more intensive cooperation within a broader social sphere. The resulting psychological shifts permitted societies to scale up in size and complexity and/or to remain stable for longer. Particular religions therefore might have provided a kind of social technology for scaling up from the relatively small-scale hunter-gatherer populations of the Paleolithic to modern nation-states with millions or even billions of people. In some traditions, the gods became increasingly morally concerned about precisely those areas of life in which people struggle to cooperate with strangers or suppress their inclinations and tend to exploit others through theft, murder, dishonesty, and adultery (Wright 2009). These supernatural police became increasingly equipped with the power to monitor and punish violators of new universal codes of morality (McNeil 1991). Some deities even gained the ability to see into people's hearts and control their fate in an afterlife, which became contingent on their compliance with divine decrees. In many large-scale societies, these gods gradually acquired the traits of omniscience, omnipotence, and omnibenevolence, coevolving with the scale of their societies (Henrich 2020,

MORALIZING RELIGIONS AS A RESPONSE TO RISING SECURITY

Researchers have proposed that moralizing religions arose in response to evoked psychological recalibrations created by rising security over historical time, especially due to greater food security among the elites (Baumard & Chevallier 2015, Baumard et al. 2015). With their changed psychology, the elites revised religious doctrines and formulated moralizing gods concerned with cooperation and sex. Unfortunately, efforts to test this hypothesis using detailed data on people's material security, morality, and supernatural beliefs have not yet provided support for this interpretation (Banerjee & Bloom 2015, Purzycki et al. 2018b).

chapter 4). An alternative explanation is presented in the sidebar titled Moralizing Religions as a Response to Rising Security.

This historical theory about the evolution of religion makes predictions not only about expected relationships in the historical record but also about expected contemporary cross-cultural diversity in religious beliefs and cognition. In doing so, the theory links historical psychology to cultural psychology. One prediction is that those who believe more strongly in powerful moralizing gods should behave relatively more prosocially or be more fair-minded toward socially or even physically distant coreligionists. This belief and behavior are necessary if being bound by a belief in a powerful moralizing god serves as a superethnic group identity for cooperation. The research to test this prediction involved an interdisciplinary team of psychologists, anthropologists, and religious studies scholars who conducted two waves of ethnographic and experimental research in 15 diverse populations around the globe (Lang et al. 2019; Purzycki et al. 2016, 2018a). Their sample of hunter-gatherers, pastoralists, horticulturalists, and wage laborers belonged to a diversity of religious traditions, including Buddhism, Christianity, and Hinduism, as well as local traditions that incorporate ancestor worship and animism. Based on a preliminary interview, the researchers selected two local deities in each population: the most powerful moralizing god (e.g., Yahweh, Shiva, etc.) entertained by the population and a salient but less powerful supernatural being (e.g., an ancestor god or forest spirit). In subsequent interviews, the researchers assessed participants' beliefs about the monitoring, punishing, and rewarding powers and inclinations of these gods, including their influence over the afterlife. Finally, to assess people's prosocial inclinations (as specified by the theory), the team administered two different one-shot experimental games involving an anonymous stranger: the dictator game and the random allocation game (RAG). In the dictator game, a "dictator" is given a sum of money that they can divide as they wish between themselves and a recipient. In the RAG, a sum of money is also divided between the participant and a recipient, but the allocation is random, for example, based on rolls of a die; the outcome of these rolls is known only to the participant, offering an opportunity for cheating. To test the effects of religious identity, these tasks were modified: Participants were asked to make two monetary allocations, one between a coreligionist in a distant town and themselves (self game) and a second between another distant coreligionist and a local coreligionist from the participant's home community (local coreligionist game). In the dictator game, participants simply decided how much money to put in each cup (each assigned to one of the recipients). In the RAG, participants rolled a six-sided die and had to allocate either to their preferred cup or the other cup. This die roll concealed each allocation decision from the researchers but not from an omniscient god. The researchers did not have omniscience but did have probability and statistics, which allowed them to estimate biases in people's allocations.

The results from both experimental tasks demonstrated that those who believed more strongly in a moralizing, punishing god allocated the game money more equitably toward the distant

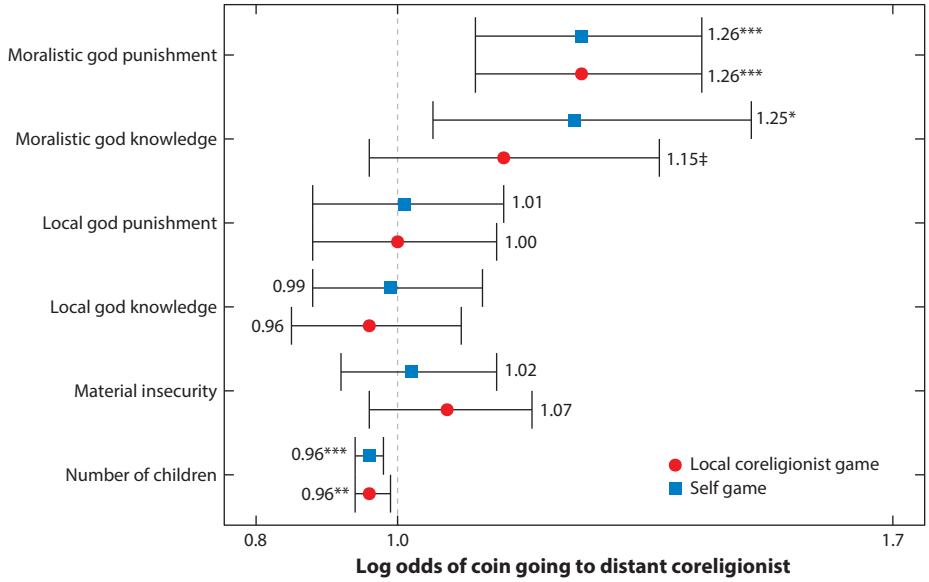

Figure 1

Effects of divine punishment and monitoring on allocations to distant coreligionists in the random allocation game for both the self and local coreligionist games. These odds ratios are derived from a multilevel binary logistic regression in which the allocation of each coin to one of the two cups is regressed on a battery of predictors. The models include fixed effects for each population and, at the individual level, controls for age, sex, number of children, household size, material insecurity, and emotional closeness to the recipient. One asterisk indicates $P \leq 0.05$; two asterisks indicate $P \leq 0.01$; three asterisks indicate $P \leq 0.001$; a double dagger indicates $P \leq 0.15$. Data from Purzycki et al. (2016).

coreligionist in both the dictator and random allocation games. Using data from the RAG, **Figure 1** shows some of the major findings. For both the self and local coreligionist games, the squares and circles give the odds ratios for six key variables in a multilevel binary logistic regression. The stronger people's beliefs in the punishing and monitoring powers of their moralizing god were, the more equally they allocated toward the distant coreligionist. This suggests that some kinds of deities can expand the moral circle. Notably, these analyses only compared individuals within each population, so site-level differences like national GDP, climate, ecology, and so on cannot explain these patterns. The researchers also controlled for the participants' age, sex, number of children, household size, material insecurity, and emotional closeness to the recipient (**Figure 1**). Interestingly, only beliefs about the punishing and monitoring capacities of the big, moralizing god mattered; beliefs about the weaker, less moralizing supernatural agents did not account for significant behavioral variation. This follows directly from the theory, since most small gods are either not particularly morally concerned or only locally concerned with the behaviors of other clan or community members (Hadnes & Schumacher 2012, McNamara & Henrich 2018, Norenzayan et al. 2016).

This cross-cultural work dovetails with a large body of laboratory experiments testing whether religious reminders influence prosociality: Dozens of studies have revealed how reminding believers (but not nonbelievers; see Shariff et al. 2016) of their moralizing gods or supernatural forces (karma) can increase fairness in dictator games, cooperation in prisoner's dilemmas, and honesty in a variety of tasks (Shariff et al. 2016, White et al. 2019). Although most work has focused on Christians, the literature has gradually expanded to reveal parallel effects among Muslims,

Hindus, and Buddhists (Aveyard 2014, Duhaime 2015, Rand et al. 2014, Xygalatas 2013, Yilmaz & Bahçekapili 2016).

The second set of predictions are about the relationships between individual psychology and societal structures. For example, historical and anthropological data suggest that powerful gods, contingent afterlives, universal moral codes, and divinely infused notions of free will only gradually arose and spread as societies scaled up in size and complexity (Atran & Henrich 2010, Henrich 2020, Norenzayan et al. 2016). To properly test this claim, psychologists and their collaborators have analyzed a global anthropological database of over 1,200 different societies. Their results confirm that the presence of moralizing gods is unambiguously associated with measures of sociopolitical complexity (Botero et al. 2014). Similarly, using a database of ethnographic observations from Oceania at the time of European contact (Watts et al. 2015b), researchers have applied phylogenetic techniques for the historical reconstruction of cultural history to examine the coevolution of societal political complexity and the presence of moralizing gods who use supernatural punishment. These analyses suggest that notions of broad supernatural punishment likely facilitated increases in the political complexity and scale of societies (Watts et al. 2015a).

Despite some fascinating findings, the major shortcoming of this research program is a lack of systematic historical and longitudinal data on either religion or psychology. As we discuss below, the advent of large-scale, coded historical databases, such as the Database of Religious History (Slingerland & Sullivan 2017), the Seshat Databank (Francois et al. 2016), and others (Slingerland et al. 2020) will allow future studies to incorporate historical data in a much more rigorous and comprehensive manner.

The Historical Origins of WEIRD Psychology

During late antiquity the branch of Christianity that evolved into the Roman Catholic Church began developing a package of prohibitions and prescriptions surrounding marriage and the family. The Church banned polygamy, cousin marriage, levirate marriage (the obligation to marry one's brother's widow), and arranged marriage while promoting individual land ownership (not family ownership) and testamentary inheritance (e.g., allowing individuals to leave their property to the Church rather than it going to their families). The bans on marrying relatives began with first cousins (and closer) but eventually expanded to include sixth cousins; the forbidden circle prohibited not only all blood relatives but also all affines (e.g., in-laws) and spiritual kinfolk (e.g., god daughters). As the Church diffused across Europe over the next millennium (500 to 1500 CE), the imposition of these policies dramatically altered the social organization of indigenous Europeans, breaking them down into monogamous nuclear families while at the same time dissolving tribal distinctions. Consequently, centuries before industrialization and even Europe's global expansion, the populations of Latin Christendom came to possess a virtually unique form of social organization, one not built primarily on kinship (Goody 1983, Henrich 2020, Mitterauer & Chapple 2010).

In light of these historical findings, researchers have proposed that the medieval Catholic Church, particularly through the Church's impact on kinship organizations, can explain a substantial swath of contemporary psychological variation along dimensions such as individualism, tightness, conformity, independence, moral judgment, and impersonal prosociality (which includes cooperation, trust, and fairness toward strangers and anonymous others as well as third-party punishment; see Henrich 2020, Schulz et al. 2019). To test these hypotheses, they assembled historical, anthropological, and psychological databases. By tracking the historical diffusion of bishoprics across Europe, Schulz et al. (2019) calculated the duration of exposure to the Church from roughly 500 to 1500 CE and used the results to predict contemporary psychological

variation within Europe on four psychological measures: individualism/independence, conformity/obedience, impersonal fairness, and impersonal trust. As expected, Europeans from populations that spent more centuries under the Church are now more individualistic and independent, are less inclined toward conformity and obedience, and show greater trust and fairness toward strangers. These results only compare individuals living in the same country and hold constant a vast array of control variables, including individual religiosity, religious denomination, income, and education, as well as regional variables including historical prosperity, latitude, agricultural potential, pathogen stress, and terrain ruggedness.

This research also reveals links between kinship intensity and both medieval Church exposure and contemporary psychological variation. Within Europe, for example, detailed analyses show that the more centuries a local population spent under the Church, the lower the rate of cousin marriage in the twentieth century. They also demonstrate that less cousin marriage was associated with less conformity and obedience, less individualism and independence, and reduced levels of impersonal trust and fairness.

To further test the contemporary psychological predictions of this historical theory, Schulz et al. (2019) extended this analysis globally using 17 different measures, showing that national populations that have experienced more centuries under the Church are more individualistic (**Figure 2*a***), more analytic in their thinking (**Figure 2*b***), and more impersonal in their prosociality toward strangers, including greater impartiality (in experiments and observational data), higher public goods contributions (in experiments and blood donations), and more trust in out-groups relative to in-groups (**Figure 2*c***). They also show less conformity in both the Asch task and in surveys (Asch 1956, Bond & Smith 1996), greater tightness (Gelfand et al. 2006), more embeddedness (Schwartz 2006), stronger obedience (based on the World Values Survey), and less nepotism (**Figure 2*d***). These results are further confirmed by comparing second-generation immigrants living in the same European countries but whose origins trace back to populations scattered around the globe: Their ancestry predicted their present behavior. Studies by other researchers have confirmed the key relationship between kinship intensity and the predicted psychological outcomes (Akbari et al. 2019, Enke 2019) (see also the sidebar titled Contemporary Psychological Variation as a Consequence of Differences in Wealth or Material Security).

Successful Democratic Institutions

Institutions rest on invisible cultural and psychological pillars. For example, a constitution's proclamations are irrelevant without a belief in the rule of law or norms of punishment for violations of this rule, markets require traders to trust one another, and cooperation at the scale of family and friends can corrupt the impartiality necessary for police and courts to function effectively

CONTEMPORARY PSYCHOLOGICAL VARIATION AS A CONSEQUENCE OF DIFFERENCES IN WEALTH OR MATERIAL SECURITY

Some researchers have sought to explain contemporary psychological variation as a consequence of differences in wealth or material security, arguing in part that the experience of more secure or abundant environments during early childhood evokes life-long psychological calibrations (Frankenhuis et al. 2016, Nettle 2010). While some evidence supports this view (Baumard 2019), the impact of Church exposure and kinship intensity on psychology is independent of individual-level measures of income, wealth, and education measures and of regional-level measures of historical prosperity and national wealth.

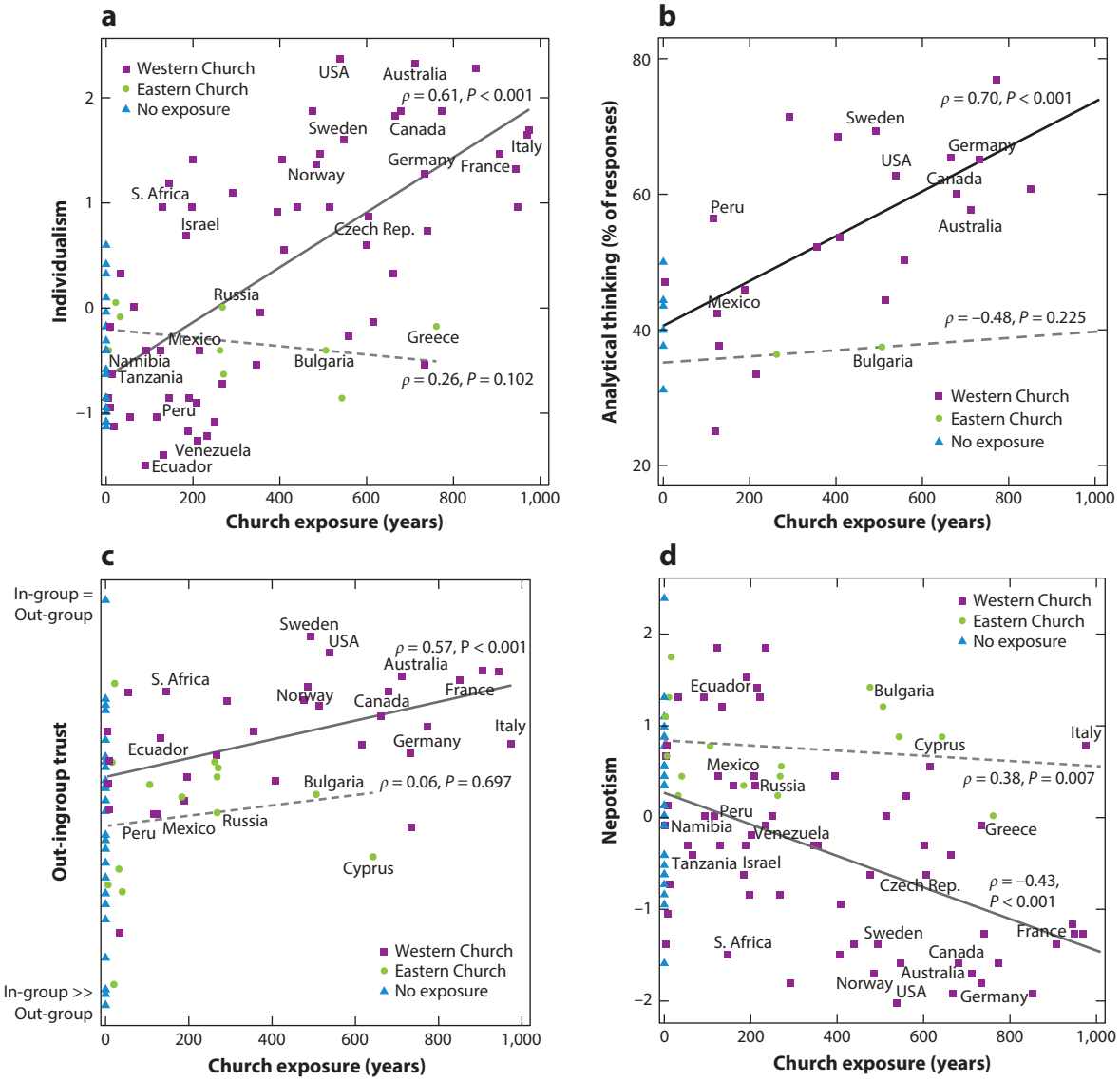

Figure 2

The contemporary cross-national relationships between Church exposure, measured in years, and four different psychological outcomes: (*a*) Hofstede's individualism measure, (*b*) analytic thinking (assessed using triads), (*c*) out-group versus in-group trust (based on six World Values Survey questions), and (*d*) nepotism (based on interviews of executives at the World Economic Forum on hiring relatives). The solid gray lines represent Spearman correlations for the Western Church; the dashed gray lines represent Spearman correlations for the Eastern Church. Data from Schultz et al. (2019).

(Muthukrishna 2017, Muthukrishna et al. 2017). Institutions coevolve with their underlying psychological foundations, which can make transplanting them a challenge. Thus, as research in the adjacent field of economic history shows, the success of institutions and their psychological foundations have their origins in the past. Giuliano & Nunn (2013) combined several data sources to test whether the degree to which a country is democratic today (as measured by the Polity2

variable in the Polity IV database; see Polity IV 2014) is predicted by the extent of village-level democratic practices prior to industrialization. The effect of these traditional local democracies on present political institutions was robust to a range of controls, including the quality of the land for agriculture and European influence.

One aspect of the beliefs and norms that support institutions can be captured by attitudes toward those institutions. Giuliano & Nunn (2013) also tested the effect of traditional democracy on present-day, individual-level, self-reported attitudes toward democracy using three variables from the World Values Survey: (*a*) support for the statement "Democracy may have problems but it is better than any other form of government"; (*b*) belief that having a democratic political system is very good, fairly good, fairly bad, or very bad; and (*c*) answer to the question, "How important is it to live in a country that is governed democratically?" Once again, traditional local democracy was a strong and significant predictor, robust to a range of controls. The study illustrates the institutional persistence and historical path dependence of political psychology. On the other hand, historical events can also change culture and institutions. For instance, Sinding Bentzen et al. (2019) show that the disruption of local indigenous democracy by colonial powers has weakened present-day democratic institutions in these places.

These studies of democratic institutions are from economic history and therefore focus primarily on economic implications. However, there is considerable overlap with psychology, particularly political psychology (e.g., on the foundations of egalitarianism, see Sheehy-Skeffington & Thomsen 2020; on the intuitiveness of legal codes, see Sznycer & Patrick 2020). Moreover, the psychology in these economic studies is shallower than it would be if studied by historical psychologists. Underlying the effects of local democracy may be increases in the rule of law, norms of fair redistribution and fair rewards for production, modes of free expression, efficient and meritocratic allocations of talent, less temporal discounting, more abstract reasoning, impartiality toward non-kin and out-groups, and trust within a group. A deeper understanding of these psychological foundations of democracy would benefit from the tool kits of both history and psychology.

Trust in Strangers

Psychologists have long studied people's willingness to trust other people, especially strangers (Evans & Krueger 2009). In recent decades, a rapidly growing body of research has focused on global differences in trust, often linking them back centuries in time to past events, processes, and migrations (Algan & Cahuc 2010). Strikingly, Nunn & Wantchekon (2011) tested the causal effect of the African slave trade (1500–1900) on present-day levels of trust in Africa. The authors show that ethnic populations who experienced a greater impact of the slave trade, in terms of people enslaved and exported, have higher levels of mistrust today.

Of course, this raises the question of whether lower levels of trust led to higher levels of slave trading, higher levels of slave trading led to lower levels of trust, or some third variable affected both. Trust levels and slave trade severity are correlated with one another, but causation is hard to establish. Nunn & Wantchekon (2011) used various causal inference techniques (see the sidebar titled Causal Inference Techniques) to investigate this relationship, among which their instrumental variable analysis is particularly persuasive. An instrumental variable allows one, under certain assumptions, to effectively pull out a fraction of the variation in a key predictor variable (slaves extracted in this case) that is exogenously caused and use this to provide quasi-random assignment to differing intensities of the phenomenon of interest (slaving in this case) (Angrist & Pischke 2009, Angrist et al. 1996). Just as a weighing scale is an instrument for measuring weight, Nunn and Wantchekon used distance from the coast as an instrument for measuring the severity of the slave trade, because coastal areas were more convenient for sourcing slaves than regions inland due

CAUSAL INFERENCE TECHNIQUES

Correlation can equal causation, at least with some caveats. Lacking the ability to conduct laboratory or field experiments, historical psychologists require additional tools to identify the historical causes of psychological change and variation. Instrumental variables, difference in differences, and regression discontinuities are just a few examples of statistical approaches that make it possible to argue for causality based on correlational data (Angrist & Pischke 2009, Pearl & Mackenzie 2018, Pearl et al. 2016). Although many of these causal identification techniques are not commonly used or taught within psychology today (perhaps due to the dominance of the laboratory experimental paradigm), they have a long history within psychology (e.g., Shadish et al. 2001); indeed, the regression discontinuity design for the analysis of natural experiments created by a geographic or temporal separation was first developed by psychologists Thistlethwaite & Campbell (1960). Within psychology, a common source of temporal regression discontinuities are educational policies with inclusion criteria that separate similar people for arbitrary reasons (e.g., date of birth determines schools' start dates and can separate those born days apart into different cohorts). This particular policy allowed for identifying effects of relative age on ADHD diagnoses (Layton et al. 2018). Similarly, a policy that increased years of compulsory schooling for Norwegian children allowed for the identification of the effects of education on IQ (Brinch & Galloway 2012).

to lower transport costs. Distance from the coast does not predict levels of trust in other places, but it does predict the severity of the slave trade in Africa. Therefore, if distance from the coast predicts levels of trust in Africa, we can at least make a case for excluding the possibility of reverse causality of trust on the slave trade. To make the causal case more convincing, other possibilities, such as a third variable explanation, also need to be excluded. The effect of the slave trade on other aspects of African psychology remains unknown. However, as previously noted, historical circumstances can potentially help explain a wide range of psychological differences captured by measures of analytic thinking, conformism, individualism, endowment effects, and impersonal prosociality, including measures ranging from psychological scales and behavioral games to return rates of lost wallets and voluntary blood donations to strangers (Apicella et al. 2014, Cohn et al. 2019, Herrmann et al. 2008, Schulz et al. 2019, Thomson et al. 2018).

Modes of Production, Sex Differences, and Gender Inequality

Sex differences have been found across a broad range of psychological measures, including personality (Kaiser et al. 2020), interests (Lippa 2010), preferences for altruism, trust, reciprocity, risk taking, patience (Falk & Hermle 2018), and even the propensity to be a serial killer (Harrison et al. 2019). Apart from differences in the psychology of the sexes, attitudes toward the sexes also differ. These differences in attitudes affect outcomes such as the wage gap: The economic penalty on women's wages caused by the birth of a child is larger in countries in which a larger fraction of people agree with the statement, "Women with children under school age or in school should stay at home" (Kleven et al. 2019). Sex differences and attitudes toward the sexes go hand-in-hand and may trace back to a genetic basis shared with other primates (Benenson & Abadzi 2020, Henrich 2016). Historical psychology is revealing the sources of the variation in gender inequality.

One cultural evolutionary explanation for variation in the nature and strength of sex differences across contemporary populations is that they arise from historical differences in the division of labor. Historical differences in the division of labor can create integrated cultural complexes of norms, practices, beliefs and rituals that can persist long after the actual economic

or social constraints lift (Henrich & Boyd 2008). As the cultural repertoire expanded beyond what could be learned by a single individual in a single lifetime, one natural division of information and labor prior to job specialization was sex. Comparative advantages of male and female bodies may have exacerbated the size of this division. For example, Alesina et al. (2013) investigated the relationship between ancestral farming practices and present-day gender norms. Different crops and land are better suited to plowing compared to hoeing. The plow is best suited to large areas that are deep, flat, and not rocky. In contrast, shallow, sloped, rocky soils are difficult to plow and are more suited to hoeing. Driving a plow requires more upper-body strength than hoeing, even when assisted by an animal. Humans are sexually dimorphous, with males being on average larger and stronger, giving men a comparative advantage in plow agriculture. As a consequence, plowing tends to be a male activity compared to hoeing, which can be done by both sexes, resulting in a situation where, relative to hoe-based societies, plow-based societies tend to have a stronger sex-based division of labor. Cultural economists and evolutionary theorists have hypothesized that asymmetries in the contribution of men versus women to household economic production may result in the creation of social norms that embed greater gender inequality.

Testing this idea, Alesina et al. (2013) showed that traditional plow use predicted lower present-day female labor market participation and share of firms owned by females, controlling for a range of historical controls (including agricultural suitability, climate, the presence of large animals, political hierarchies, and economic complexity) and contemporary controls (including income). Traditional plow use also predicted individual characteristics, such as whether a woman was in the labor force, and attitudes regarding whether men should be prioritized when jobs are scarce and whether men make better political leaders. The same relationship was found at a national and subnational level. To try to make a convincing causal case, Alesina and colleagues also used an instrumental variable analysis to infer causality, using land plow suitability as an instrument. This analysis showed the same robust finding. Finally, Alesina and colleagues showed the persistence of these beliefs among migrants in the United States and Europe. Daughters of immigrants with either a mother or father (or both) from a traditional plow agriculture country were themselves less likely to be in the labor force. Similarly, children of immigrants with either a mother or father (or both) from a traditional plow agriculture country were more likely to endorse the statement that "when jobs are scarce, men should have more right to a job than women." Notably, these later findings underline the fact that social norms persist after the conditions that created them have dissolved (in fact, plow agriculture is rare in the world today).

The psychology of sex differences has emphasized (*a*) hypothesized human universals, such as differences in sexual behavior (Buss 1994), often driven by evolutionary logic, such as parental investment theory (Trivers 1972); (*b*) socialization through social learning processes (Bussey & Bandura 1999); and sometimes (*c*) cross-cultural differences, such as societal divisions of labor (Wood & Eagly 2012). A historical psychological approach offers a way to integrate these different emphases. It would be surprising if humans had not phylogenetically inherited sex differences due to the evolutionary logic described by evolutionary theories, such as parental investment, but it would be equally surprising if norms and institutions did not strengthen, weaken, or change these sex differences and attitudes toward the sexes. Furthermore, it would be surprising if at least some of these norms and institutions were not an evolved product of the present and past problems faced by a particular society, interacting in complex ways with other cultural traits. However, understanding how and why these differences persist requires both an evolutionary and a historical approach. Some sex differences may be a downstream product of exogenous features of the environment, such as the division of labor created by the varying difficulty of growing food in different geographies, as in the case of plowing and hoeing. We might expect these differences

to persist, but they may equally slowly change in the presence of alternative norms and in the absence of the original selection pressures; indeed, migrants and their children acculturate over generations (Mesoudi et al. 2016).

In other cases, the fundamental evolutionary challenge created by long gestation and longer childhood can be heightened by historical cultural practices that reduce paternal certainty, such as pastoralism. Becker (2019) shows that a particular form of preindustrialized pastoralism—large-animal herding—favored the adoption of restrictions on female sexuality. Because pastoralism required males to be absent for long periods of time, paternal uncertainty increased. This led to normative restrictions on women's freedom in terms of mobility and sexual behavior and even to female genital cutting (FGC), enforced by both men and women. Becker shows that historical dependence on pastoralism predicts a range of contemporary norms and practices, including FGC and attitudes toward FGC; norms about the faithfulness of married women, premarital sex, and number of sexual partners; and norms about the possibility for women to go out without asking for permission, to talk to men outside the family, to visit relatives, and more generally to have freedom of movement. Becker's analysis used an array of historical and contemporary controls. Causality was inferred through an instrumental variable analysis using the ecological suitability of the environment for pastoralism as the instrument: Suitability for pastoralism caused increases in pastoralism but did not affect restrictions to female sexuality directly (there was no relationship in the absence of pastoralism) nor was there a reverse relationship. Becker also used placebo tests (in which variables that should not be predictive are used instead of the main predictor and shown to not be predictive), which represent another useful technique in historical psychology.

Personality

The Big Five personality scores differ between societies in mean and variance (McCrae & Terracciano 2005) as well as the degree to which they are intercorrelated (Lukaszewski et al. 2017). These patterns are not arbitrary: As work by Lukaszewski et al. (2017) shows, less socioecologically complex societies have greater intercorrelation between these five factors. People's personalities can theoretically vary in a variety of ways. Developing a theoretical approach to personality variation, Smaldino et al. (2019) modeled the niche diversity hypothesis, according to which these variations would be able to form reliable profiles to match greater diversity in social, economic, and ecological niches. For example, in a society in which deviating from prescribed norms is more dangerous, those who would otherwise be more open to new experiences cannot nurture this trait and may even be forced to suppress this desire. In contrast, in a society that tolerates large deviations in behavior, this tendency can manifest and may even be rewarded through higher levels of creativity and innovation (Muthukrishna & Henrich 2016). Indeed, openness to new experiences can be difficult to extract as a factor; among Tsimane forager-farmers of the Bolivian Amazon its measurement was not entirely reliable (Gurven et al. 2013). Ultimately this theory describes the correlates of cross-cultural differences but not their source. Theories exist to predict what creates differences in socioecological complexity (Henrich 2004, Henrich & Muthukrishna 2020, Henrich et al. 2016, Powell et al. 2009), and these have been tested using anthropological (Kline & Boyd 2010) and experimental data (Derex et al. 2013, Muthukrishna et al. 2013). Building on these ideas, Henrich (2020, chapter 11) has sketched a historical psychological theory for the emergence of the Big Five personality structure over the last millennium of cultural evolution, but this idea awaits in-depth testing.

A recent paper by Obschonka et al. (2018) offers an example of a historical psychological approach to understanding present-day differences in personality and well-being. Obschonka and colleagues investigated the effects of the industrial revolution in different regions of England and

Wales on the Big Five, life satisfaction, and life expectancy. To infer causality, they used an instrumental variable approach. Since the location of coal fields drove the locations of large-scale industries, distance of a region to the nearest coalfield was used as an instrument for employment share in large-scale, coal-based industries. Their results suggested a negative effect of industrialization on conscientiousness and a positive effect on neuroticism, as well as a negative effect on both life satisfaction and life expectancy. Their analysis controlled for other economic sectors in 1813–1820 and for historical energy supply, education, wealth, geology, climate, and population density. This research represents the next step in cross-cultural psychology, aimed not only at documenting the psychology of populations more culturally distant from WEIRD nations (Muthukrishna et al. 2020) but also at developing and testing cultural evolutionary explanations for these differences.

Individualism/Collectivism and Relational Mobility

Two of the most cited cross-cultural psychological differences are individualism/collectivism and relational mobility. Some societies tend to be highly collectivistic, emphasizing family, social relations, and group welfare. Others tend to be more individualistic, as decisions are made based on one's own goals and preferences, and accomplishments are seen as personal. These traits are often correlated with other features of a society, such as relational mobility, that is, the ease with which people can choose and lose relationships. Cultural psychology has traditionally emphasized the collectivism and low relational mobility of Eastern countries and the individualism and high relational mobility of Western countries. However, countries and societies are not homogenous but instead represent different distributions of cultural and psychological traits structured by embedded and overlapping cultural groups (Muthukrishna et al. 2020). Earlier, we discussed the breaking of kin bonds as a crucial factor increasing individualism and relational mobility, which may be the more recent and unusual social arrangement **(**Schulz et al. 2019). Cultural traits are interwoven with one another in complex ways, and these institutional shifts may have necessary preconditions. For example, one can really afford to lose relationships or prioritize one's own preferences when they differ from others' only to the degree that one can succeed without these relationships or support. In light of this logic, Thomson et al. (2018) used data from around 17,000 people in 39 countries to show that more interdependent subsistence style (rice farming compared to herding) and historical and ecological threats to material security (such as natural disasters, disease, and resource scarcity) were both highly correlated with lower levels of relational mobility ($r = -0.63$ and $r = -0.54$, respectively) (see **Figure 3*a***). Relational mobility, in turn, was associated with a host of psychological outcomes, such as trust, intimacy, willingness to offer help, homophily, and so on. However, all relationships remained correlations with no convincing causal identification strategy.

Even within traditionally individualist or collectivist societies, there may be regional differences in these traits. Talhelm et al. (2014) attempted to causally identify the effect of more interdependent agricultural practices (rice farming) on collectivist psychology. The researchers used an instrumental variable design using environmental suitability for rice growing (over the more individually farmable wheat) (see **Figure 3*b***). Rice suitability was highly predictive of higher levels of holistic reasoning—that is, the tendency to focus on broader contexts and larger patterns—and lower levels of individualism.

DATA FROM DEAD MINDS

There are at least two ways in which an engagement with history can be useful for psychologists. In the previous section, we focused on how past cultural or ecological dynamics can drive

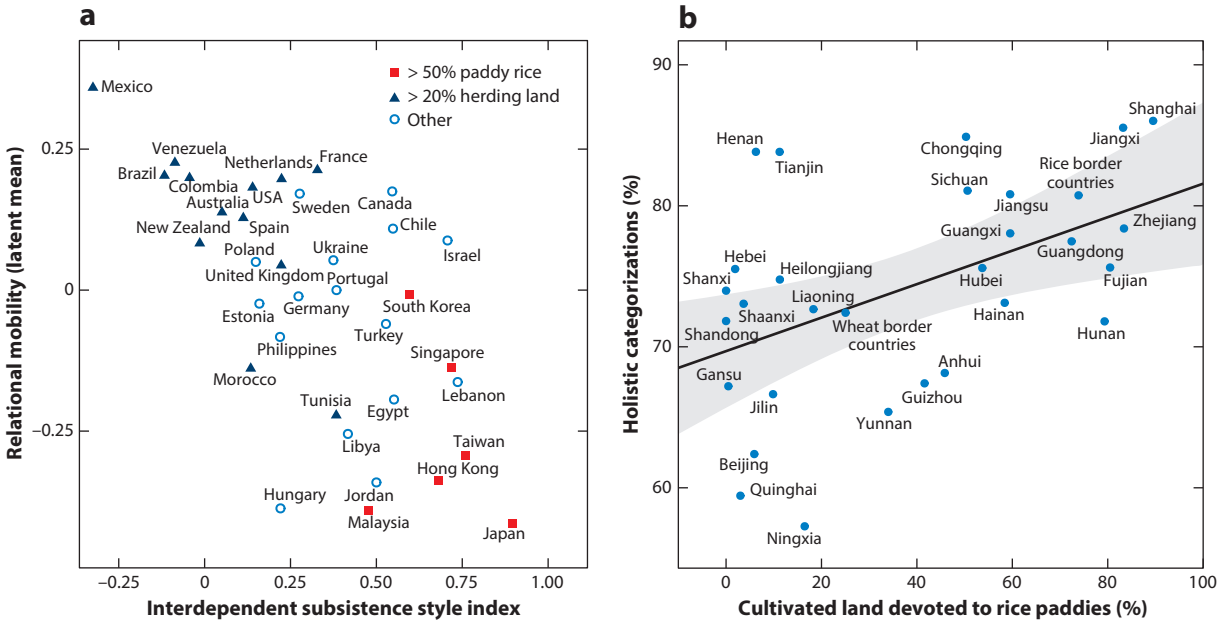

Figure 3

(*a*) Relationship between relational mobility and interdependent subsistence style. The interdependent subsistence style index incorporates herding (relatively mobile and independent), wheat farming (more settled and interdependent), and paddy rice farming (most settled and interdependent). Data from Thomson et al. (2018). (*b*) Correlation (*solid line*) between holistic cognition and cultivated land devoted to rice paddies in different provinces of China. Data from Talhelm et al. (2014).

contemporary cross-cultural psychological patterns. In this section, we turn to a discussion of how traces of past cognition can be extracted from historical artifacts or texts.

Historical subjects consist of the collection of people across the globe and throughout time who have left records of their cognition in various physical objects, from archeological remains to transmitted texts. The dead represent a remarkably diverse subject pool, especially compared to the samples typically studied by psychologists. They thus constitute an important and relatively untapped source of data for psychological researchers.

There are, to be sure, limitations to studying dead subjects. We cannot actively manipulate the dead's thoughts and behaviors and so must infer their psychology from texts and objects. If the data source involves texts from ancient societies, the subject pool often consists entirely of educated elites, and in many societies of exclusively educated elite males. However, despite these drawbacks, there are advantages to studying the dead. Long-dead subjects do not require payment or human subject approval and, more importantly, represent considerable cultural and cognitive diversity (Cooperrider 2019, Salali et al. 2020, Uchiyama et al. 2020).

Sources of Historical Data

It is helpful to think of historical data in terms of a spectrum from unstructured to structured. Fully unstructured data consist of uninterpreted artifacts or physical texts from the past, the raw data upon which scholarly interpretation is built. As the identity and function of artifacts are inferred, or texts are deciphered, standardized, and interpreted, these historical data become

more structured and abstracted from the original objects of study. A dividing line of sorts is crossed when qualitative data, such as archeological site descriptions or analyses of ancient texts, are converted into quantitative data about, for instance, the presence or absence of a certain type of artifact, belief, or practice; a population estimate; or a continuous, standardized variable such as level of social complexity or frequency of ritual practice.

The objects of historical study can be mined to glean traces of past human cognition, either directly or indirectly. The field of cognitive archeology is dedicated to making inferences about past human cognition from physical artifacts and built environments (Renfrew 2008). The structure and contents of tombs from a given society can, for instance, provide insight into that society's afterlife beliefs, which in turn can tell us something about views on mind/body dualism. The presence or absence of certain cultural technologies or institutions—e.g., coinage, professional priesthoods, rice paddies—can be linked indirectly to psychology. The presence of coins, for instance, suggests the existence of market-based economies, which might suggest in its wake certain specific forms of cognition related to fairness with strangers or an endowment effect (Henrich 2020, Henrich et al. 2010a). Historical evidence of paddy rice can similarly be used as a proxy for a more collectivist sense of self (Talhelm et al. 2014). Physically transmitted texts, such as inscriptions on objects or ancient manuscripts, can provide us with direct introspective reports from past human minds. Received texts—i.e., texts of ancient origin that have been transmitted over time, copied, and recopied in various physical forms—also tell us a great deal, although in these cases concerns about potential alteration (deliberate or not) in the transmission process need to be addressed.

Whatever their specific medium, most of the data studied by professional historians remain in qualitative form. The process of assessing their psychological significance requires acts of interpretation on the part of historical experts, who have the necessary linguistic and cultural knowledge. This sort of qualitative, descriptive data can play an important role in ruling out certain hypotheses. For instance, work on folk mind/body dualism (e.g., Bloom 2004) has been criticized for focusing on modern, Westernized populations (Astuti & Harris 2008), and the possibility has been raised that what has been presented as a cognitive universal might instead be a product of a particular linguistic system or reflect the conceptual influence of Christianity or philosophers such as Descartes (Wierzbicka 2006, Xiang 2010, Yu 2007). However, a review of qualitative historical data from various ancient societies suggests instead that mind/body dualism is a folk cognitive universal, although this dualism does not take a Cartesian form (Hodge 2008), and this view is further supported by cross-cultural developmental psychology (Chudek et al. 2018). Similarly, claims that moralizing, punishing gods are entirely absent from certain important populations, such as early China (Gernet 1985), can be countered by demonstrating the presence of such concepts in texts that can be reliably dated to ancient China (Clark & Winslett 2011).

Ideally, however, psychologists making use of historical data would like to turn these qualitative assessments into quantitative data that can then be analyzed statistically. Such highly structured historical data can take the form of databases of coded cultural histories or cross-cultural surveys conducted repeatedly over the course of years or decades.

Historical Databases

Databases are sometimes constructed on a study-by-study basis to test specific hypotheses. For instance, Sosis & Bressler (2003) employed a team of undergraduate research assistants to scour secondary sources concerning 83 nineteenth-century American communes answering a survey to categorize and structure each commune's rituals and taboos, behavioral restrictions, and other

costly demands. They found that costlier demands were correlated with commune longevity, supporting experimental evidence among contemporary subjects that links costly signaling to enhanced group solidarity and within-group cooperation (Henrich 2009, Irons 2001, Xygalatas et al. 2013). Matthews and colleagues (2013) similarly created a custom data set coding 44 features of the religious beliefs and practices of sixteenth-century Anabaptist groups. Comparing these features to a phylogenetic tree depicting the known descent of generations of congregations from one another, they found that most theological traits were borrowed from contemporaneous sects, with the exception of advocacy of group violence, which was instead inherited from parent congregations. This suggests that there is something psychologically distinct about beliefs concerning religious-motivated violence, which might perhaps be linked to congregationally inherited economic or political factors rather than theology.

More useful for psychologists lacking funds for large teams of research assistants, or without access to collaborators with the expertise to analyze qualitative historical data, are precoded historical data, ideally accompanied by coding rubrics broad enough to answer a wide range of research questions. The creation of such databases is still in its infancy and is characterized by multiple challenges (Slingerland et al. 2020). For instance, large-scale societies are characterized by huge quantities of artifacts and texts in ancient languages\ as well as massive secondary scholarly literatures analyzing these traces of past cognition. Coding decisions concerning variables that involve significant degrees of interpretation, such as whether a particular supernatural being is concerned with human morality, are probably best made by experts in a relevant field. Expert opinion on such topics often differs, however, and it is extremely difficult in practice to interest historians and archeologists in coding historical data. Having research assistants review some sample of historical data and create codings results in more reliable data accumulation and likely higher intercoder reliability, but it runs the risk of producing inaccurate codes or failing to reflect differences in scholarly opinion (Slingerland et al. 2020). A representative sample of coded databases with at least some historical depth is presented in **Table 1**.

The Pulotu Database of Pacific Religions (**http://pulotu.econ.mpg.de**) and the Seshat Databank (**http://seshatdatabank.info**) were recently employed in published studies. Supporting cultural evolutionary theories (Norenzayan et al. 2016), one study produced by the Pulotu team (Watts et al. 2015a) drew upon coded data concerning religious beliefs and social complexity in 96 Austronesian cultures to argue that broad supernatural enforcement of moral norms, rather than moralistic high gods per se, precedes political complexity. Turchin et al. (2018) analyzed coded historical data from the Seshat database concerning features such as social scale, economies, and governance in 414 societies from 30 regions around the world, and they demonstrated that various aspects of social complexity have strong relationships with one another, suggesting that these features tend to coevolve in disparate societies across time and space. A third database with deep historical depth, the Database of Religious History (**http://religiondatabase.org**), is slowly expanding its coverage, but to date this still remains insufficiently broad or representative for a proper cross-cultural analysis.

Other structured databases with some historical depth, typically on the order of decades, include the World Values Survey, Eurobarometer, Afrobarometer, the US General Social Survey and its equivalent in other societies, and broader surveys that include data relevant to psychology, such as the UK Biobank or the Household, Income and Labor Dynamics in Australia Survey. A final useful source of relatively structured historical data is economic or crime statistics. Henrich (2020, chapter 11), for example, has argued that a long-term rise in patience or self-regulations is captured by long-term declines in both murder and interest rates, which can be traced back to the High Middle Ages in some European countries.

Table 1 Examples of structured historical databases relevant to historical psychology[a]

Database	Common name	URL	Type of data	Current content
eHRAF World Cultures	eHRAF	**http://ehrafworldcultures.yale.edu**	General culture (ethnographic)	Ethnographic documents related to 320 cultures are subject-coded at the paragraph level to facilitate searching.*
eHRAF Archaeology	eHRAF	**http://ehrafarchaeology.yale.edu**	General culture (archeological)	Archaeological documents related to 102 archaeological traditions are subject-coded at the paragraph level to facilitate searching.*
Database of Religious History	DRH	**http://religiondatabase.org**	Religion	397 entries on religious groups or places from 195 experts or research assistants are provided, with coded responses to poll questions.*
Pulotu Database of Pacific Religions	Pulotu	**http://pulotu.shh.mpg.de**	Religion	116 Austronesian cultures are coded for 62 variables related to religion, history, society, and the natural environment.
Seshat: Global History Databank	Seshat	**http://seshatdatabank.info**	General culture	Historical, political, economic, and religious variables are coded for 30 natural geographic areas around the world.*
Grambank	Grambank	**http://grambank.clld.org**	Grammar	195 structural features are coded for over 1,400 languages.*
Database of Places, Language, Culture and Environment	D-PLACE	**http://d-place.org**	Culture, environment, language	Cultural, linguistic, environmental, and geographic information is coded for over 1,400 human societies.
World Atlas of Language Structures	WALS	**http://wals.info**	Language	This is a large database of structural (phonological, grammatical, lexical) properties of languages gathered from descriptive materials (such as reference grammars).
The Natural History of Song	NHS	**http://osf.io/jmv3q**	Music	NHS Ethnography contains 50 variables coded from eHRAF for 60 human cultures; NHS Discography contains 40 variables coded from field recordings from 86 societies.

Asterisk indicates that the content is expanded annually.
[a]Data from Slingerland et al. (2020).

Large-Scale Textual Analysis

Databases of coded, quantitative data need to become larger, broader, and more reliable to be of genuine use to psychologists. Fortunately, psychologists also have access to a variety of tools that

allow them to analyze relatively unstructured historical data—i.e., the actual texts and artifacts of historical cultures—in a quantitative manner.

One approach to analyzing texts from the past is to rely upon summaries of them in contemporary sources, such as Wikipedia. This is the method adopted by Baumard et al. (2018), who combined human coding and word counts to analyze Wikipedia entries concerning the biographies of saints in Europe from 600 to 1300 CE and novels from 800 to 1600 CE. They found that increases in economic prosperity correlated with higher degrees of asceticism in the accounts of saintly exemplars and an increased mention of romantic love in fictional narratives. This was seen as supporting the authors' hypothesis that increases in material security push human psychology toward "higher" motivational drives, such as self-discipline, emotional attachment, and altruism.

Modern, monolingual summaries of historical texts, however, are likely to be heavily filtered by contemporary psychological and linguistic practices. For instance, English words such as "religion," "god," or even "belief" do not map cleanly onto any term in premodern Chinese, which means that modern English descriptions of premodern Chinese religious texts will subtly, but significantly, refashion their content to better fit the mold of the Abrahamic faiths that dominate modern Western conceptions of religion (Campany 2003, Sun 2013). A preferred approach is to analyze historical texts directly, in their original languages. A study by Munson et al. (2014) surveyed a large collection of classical Mayan (250–900 CE) hieroglyphic texts and found that mentions of ritual bloodletting, a dramatic costly display, suggest that the practice spread along social networks and served to signal commitment between allied royal families. Slingerland & Chudek (2011) explored the structure of mind/body dualism in an early Chinese corpus by using teams of human coders to produce data on the conceptions of mind and mind/body relations in these early (pre-221 BCE) texts (see **Figure 4**). Their results showed that the *xin* (meaning

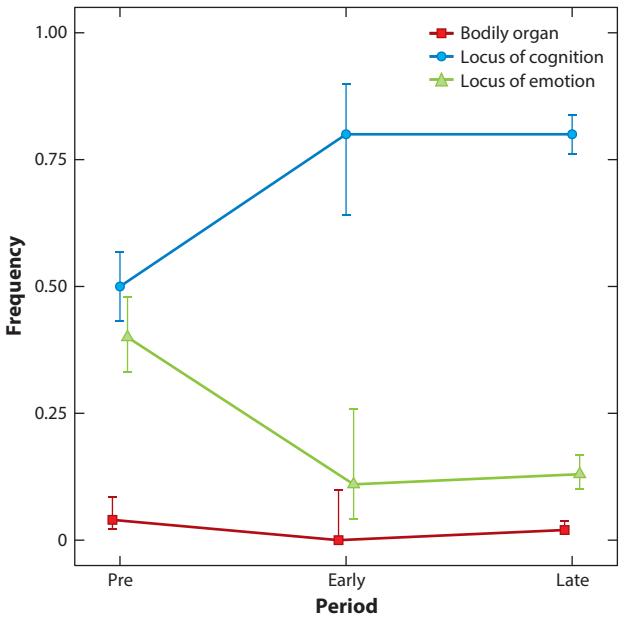

Figure 4

Frequency with which *xin* is portrayed as a bodily organ, generic locus of cognition, or generic locus of emotion in an ancient Chinese corpus by historical period: pre–Warring States (before 475 BCE), early Warring States (475 BCE–350 BCE), and late Warring States (350 BCE–221 BCE).

"heart," "heart-mind," or "mind"; there is no precise equivalent in English), uniquely among all of the bodily organs, was frequently contrasted with the three main terms used for the physical body (*shen*, *xing*, and *ti*, depending on the context; again, there is no single lexical equivalent to "body"), despite being at least nominally identified with the organ in the human chest. Moreover, although *xin* served as a generic locus of both emotions and higher cognition in the earliest texts, by the end of the third century BCE it was functioning primarily as the locus of higher cognition: reflecting, planning, choosing, etc. The authors concluded that the pressure of innate folk mind/body dualism is the best explanation for these semantic patterns.

This method of large-scale qualitative coding was borrowed by Clark & Winslett (2011), who pulled passages containing keywords related to high gods from a large early Chinese corpus and found that they were commonly associated with verbs related to moralistic reward and punishment.

One limitation of these sorts of approaches is the need to employ a team of highly qualified coders to manually read and code passages, which is a very time-consuming process. A follow-up study to Slingerland & Chudek (2011), employing a much larger corpus, turned to automated, distant reading techniques (Moretti 2013), such as word collocation (Bullinaria & Levy 2012), topic modeling (Blei 2012), and hierarchical cluster analysis (Zhao et al. 2005), and replicated the original findings. They showed that the *xin* had an unusual relationship to body terms and clustered with other words related to higher cognition, planning, and choice. A similarly automated approach to analyzing terms related to supernatural punishment in ancient Chinese texts suggested that supernatural enforcement of morality in early China might have been spread among a variety of extrahuman agents, including not only high gods but also legendary sage-kings and minor deities (Nichols et al. 2020).

A potential concern with using texts to infer thought is that a focus on written statements rather than actual behavior limits one to explicit forms of cognition. Large-scale textual analysis is helpful in this regard. Techniques such as word colocation or word-embedding analysis (Pennington et al. 2014) appear to track implicit rather than explicit attitudes, as seen, for instance, in studies drawn from a massive contemporary textual corpus (Caliskan et al. 2017, Garg et al. 2018). For instance, Kurdi et al. (2019) noted that in explicit judgements, warmth and competence are often diametrically opposed: In self-reports, subjects claimed to view elderly people as warm but incompetent. Experimental measures of implicit attitude and belief, such as the Implicit Association Test, show instead that warmth and competence track one another, with people's judgements of valence (likable/warm) corresponding to beliefs about competence, ability, or intelligence. Semantic patterns derived from word embedding, they found, matched experimental measures of implicit belief, suggesting that such patterns reflect implicit rather than explicit cognition.

Another advantage of automated text analysis techniques is that many of them have long been used by psychologists to analyze contemporary or near-contemporary discourse (Boyd 2017, Iliev et al. 2016, Tausczik & Pennebaker 2010). These same methods can then be adapted to the analysis of premodern or ancient texts with a minimum of expert input and involvement. One example of how a moderate degree of historical depth can be added to an analysis of contemporary discourse is offered by Garg et al. (2018), who drew upon Google Books and the Corpus of Historical American English (**https://www.english-corpora.org/coha/**; see Davies et al. 2012) to trace changes in implicit gender and ethnic stereotypes in the United States from the early 1900s to the present.

The existence of historical textual corpora from around the world, in a wide variety of languages, makes it possible to greatly extend both the cross-cultural reach and historical depth of our textual analyses. In the case of China, the textual tradition goes back approximately three thousand years; millennial time–depths can also be achieved by utilizing Latin or Greek corpora. Moreover,

most of these corpora are now available in digitized, fully searchable forms, which makes them an easily accessible and surprisingly underutilized resource for psychologists.

A good example of how deep historical sources can readily be added to studies of contemporary subjects is provided by Thornton et al. (2020). The authors noted that the 3D Mind Model, which classifies mental states along three dimensions—rationality (calculation or planning versus ecstasy or grief), social impact (love or envy versus exhaustion or stupor), and valence (awe or gratitude versus sadness or anger) (Tamir et al. 2016)—had been developed by analyzing the discourse of primarily Northeasters in the United States. In order to test the robustness of this model in other populations, they first analyzed a large corpus of English tweets from 57 countries, finding an excellent fit. Since English Twitter users, even in countries such as Nigeria or Pakistan, are likely to be influenced by American culture and norms, they then expanded their analysis to Wikipedia entries in 17 other languages. Finally, noting that contemporary cultures influence each other in unpredictable ways, they turned to historical textual corpora: seventeenth-to-nineteenth-century English and French texts drawn from the Standardized Project Gutenberg Corpus and the corpus of pre-Qin and Han Dynasty (ca. 1000 BCE–200 CE) Chinese texts employed by Slingerland et al. (2017). In all of these latter cases the model held up quite well, especially along the dimensions of rationality and valence, supporting the hypothesis that the 3D Mind Model might capture something genuinely universal about how humans organize mental states.

Another important, relatively unstructured resource for accessing the history of cognition are digitized newspaper archives, which sometimes provide considerable historical depth. Recently, Winkler (2020) applied a dictionary of tightness–looseness developed by Jackson et al. (2019) to a corpus of US daily newspapers from around the country going back to 1840. This provides a nearly continuous measure of tightness–looseness that varies through time and space. Not surprisingly, the newspaper data showed a long-term decline in average tightness as well as a great deal of spatial variation. To benchmark this newspaper measure, Winkler correlated contemporary measures from newspapers with both a state-level measures of tightness–looseness (Harrington & Gelfand 2014) and an aggregate of the "strength of norms" questions from the Moral Foundations Questionnaire (Graham et al. 2013). Both correlations were roughly 0.4. Then, comparing only the tightness–looseness of individual newspapers over time and across states, Winkler showed that economic downturns cause people to tighten up. Employing an econometric technique called difference-in-differences, he found that a one percent increase in unemployment resulted in a rise in tightness corresponding to 6% of a standard deviation in normative tightness. Winkler then linked these psychological shifts to both greater parochial cooperation and more votes for Donald Trump in 2016 relative to the average for Republicans in these counties. This application brings together economics, psychology, and politics.

THEORY IN HISTORICAL PSYCHOLOGY

A society is a cultural complex of interconnected and sometimes codependent norms, values, beliefs, behaviors, and institutions. If one takes an exploratory approach and looks for correlations in history, there are many to be found (Slingerland et al. 2020). Theories built on formal theoretical frameworks help clarify the causal nature of these relationships, the patterns we should expect, and how we might test theory against data. Perhaps even more so than in experimental psychology, testing theories are critical for developing psychology as a historical science (Muthukrishna & Henrich 2019).

The large-scale collaborative research project on the origins of prosocial religions that we discussed above provides one such example of how theory can drive data gathering (Norenzayan et al. 2016). Early explorations of the big gods hypothesis showed that particular features of religion, such as expectations of costly aid for coreligionists, might be explained as an evolutionary

adaptation that promotes cooperation rather than as a simple cultural by-product of evolved psychology (Atran & Henrich 2010, Norenzayan & Shariff 2008, Shariff & Norenzayan 2007). This idea was linked to the broader literature on the evolution of large-scale cooperation, which suggests that religions with cooperative and pronatalist prescriptions might sustain larger scales of cooperation than communities in which cooperation is rooted only in mechanisms like kinship and/or direct reciprocity (Henrich & Muthukrishna 2020). The theory made several predictions, suggesting for example that (*a*) religion should invoke costly prosocial behaviors in which people would not otherwise engage, (*b*) the prosocial behaviors should be primarily directed at coreligionists, and (*c*) the behaviors that the religion encourages and the beliefs that sustain the behaviors should coevolve with the scale of cooperation.

Correlations between religion and prosociality established the plausibility of the hypothesis, but some of the first experimental tests were performed in a WEIRD lab setting where reminders of religious beliefs increased giving in a dictator game (Shariff & Norenzayan 2007). Later experiments nuanced these findings by testing with larger, more diverse samples from different populations around the world (Lang et al. 2019, Purzycki et al. 2016). This project required collaboration between psychologists, anthropologists, historians, and religious studies scholars.

A final, more comprehensive test of this hypothesis required testing the theory against a large body of deep historical data from around the world. As noted, researchers have established the coevolution of divine punishment and societal complexity in Oceania by reconstructing the historical pathways of cultural evolution from mostly synchronic data (Watts et al. 2015a). However, testing this idea with true historical data has proved a sizable endeavor. Munson et al. (2014), Slingerland et al. (2017), and Nichols et al. (2020) have made attempts to bring unstructured textual data to bear on the question. Similarly, the Database of Religious History was created in order to provide a large historical data set on both the beliefs and the behaviors of religious groups around the world and through time to test the theory. These data gathering efforts are still in progress (Slingerland & Sullivan 2017). Other historical databases, such as the Seshat Databank, have also been recently employed to test the prosocial religions hypothesis against competing ones (Whitehouse et al. 2019), although there has been substantial controversy over both data analysis (Beheim et al. 2019) and coding procedures (Slingerland et al. 2020). In any case, this multi-year, interdisciplinary effort gives a sense of how experimental data can be combined with historical data to provide broad and rigorous tests of psychological hypotheses.

History is full of correlations, the vast majority of which do not represent causal relationships. Establishing the causal pathways between historical events and subsequent psychology demands a theory-first approach to reduce the hypothesis space of plausible relationships, connect to broader theoretical frameworks, and specify expected and unexpected testable relationships (Muthukrishna & Henrich 2019). Schulz et al.'s (2019) article on the origins of WEIRD psychology implicates a package of prescriptions and proscription regarding marriage and the family by the Roman Catholic Church. The data and statistics alone are insufficient to make a compelling case for the importance of this package; however, this hypothesis connects to a broader theoretical framework that links kinship to both psychology and cooperation (Enke 2019, Henrich 2020). Undermining a lower scale of cooperation can help a higher scale of cooperation flourish (Muthukrishna 2017). Here too, in the ongoing conversation between theory and evidence in science, the precise pathways between the Roman Catholic Church's creation of uniquely European marriage practices and the many aspects of psychology it predicts need to be formally established.

THE FUTURE OF HISTORICAL PSYCHOLOGY

Interdisciplinary research is always a challenge, and it remains an unfortunate fact that psychologists making inherently historical claims typically do not engage substantively with historical

scholarship or with colleagues from the humanities. For example, Finkel et al. (2014) have argued that modern American marriage norms are historically unusual in the amount of pressure they place upon couples to serve multiple roles for one another, including a strong and novel emphasis upon the importance of romantic love. The historical evidence for this claim marshalled by the authors is, however, confined to a few sources in the American context, extending back into North American colonial times. Human civilizations around the world have been designing marriage norms for millennia, and at least a cursory survey of broader world history would allow contemporary American norms to be put into a more complete and arguably more useful context. For instance, the work of Baumard et al. (2018) suggests that an emphasis on the importance of romantic love has deeper roots than colonial times, going back hundreds of years in Western Europe. It is also important to realize that modern American marriage norms are parasitic on monogamous marriage and nuclear families, which are arguably also a relatively recent historical innovation. Through most of recorded history, in complex societies around the world, polygamy and arranged marriages were common, at least among elites. As historians and anthropologists have argued, the monogamous nuclear family formed on the basis of mutual choice was at least partly the result of a relentless campaign by the Western Church, conducted for over a millennium, that ultimately produced contemporary ideals and patterns (Goody 1983, Henrich 2020, Mitterauer & Chapple 2010). This created an historically novel phenomenon that was subsequently elaborated into the sort of all-or-nothing model (Finkel et al. 2014) that dominates modern American notions of marriage. Unraveling these conceptions takes one back into the synods of late antiquity, the writings of St. Augustine, and the politics of the Merovingian Franks.

Just as it is useful to reach out to colleagues in neuroscience for an fMRI study or to colleagues in genetics for a genetic study, involving trained experts is useful when delving into historical data. But as with any interdisciplinary work, there are many challenges. In an ideal world, historical psychology would involve a genuine collaboration among psychologists, historians, and other humanities scholars, from the beginnings of hypothesis formation to study design and data gathering methods. However, humanities scholars, for their part, are typically not accustomed to working in research teams, and they have very little professional incentive to take part in scientific studies. Attempts to advocate for closer coordination between the humanities and the sciences (Slingerland 2008, Wilson 1998) have typically fallen on deaf ears among humanities scholars. Large-scale database projects that have attempted to rely primarily upon humanistic expertise, such as the Database of Religious History project, have experienced serious difficulties in gathering data and have had to reconfigure their projects to include features or functions appealing to humanities scholars but orthogonal to the original scientific purpose.

When collaboration or consultation with historians is not feasible, and particularly in more circumscribed cases, it may be possible to rely on existing historical data. For instance, economic historians interested in a small set of proxy values have often been able to perform their own archival work, effectively making themselves into experts on the slice of the historical record they focus on (e.g., Blaydes & Chaney 2013, Chaney 2016, Nunn 2009, Nunn & Wantchekon 2011). The advent of reliable, structured databases of historical cultural data will also make it easier for psychologists to incorporate data from past minds into their analyses. Historical textual corpora can similarly be accessed with minimal effort if appropriate attention is given to the challenges of translation, especially for texts written in archaic languages.

Historical archives can provide other unexpected sources of data relevant to contemporary human psychology. For instance, the data set created by Nunn (2008) combined slave trade shipments with a variety of other archival sources suggesting the ethnic identity of slaves in order to construct estimates of the total number of slaves taken from different regions of Africa during the slave trade from 1400 to 1900 CE. He found a negative correlation between intensity

of historic slaving activity and current economic development. Nunn & Wantchekon (2011) were then able to combine this work with data from the 2005 Afrobarometer survey to analyze the relationship between the slave trade and levels of trust in contemporary African societies, concluding that contemporary levels of trust were in part shaped by the history of slavery.

In a recent paper, Muthukrishna et al. (2020) developed a cultural distance scale. They found that cultural distance from the United States, which may serve as an indication of relative WEIRDness, predicts other cultural differences, from individualism to personality, prosociality, and honesty. While these differences are correlated with cultural distance, their origin is yet unknown and likely lies in the different historical paths taken by these societies.

The roots of modern psychology are to be found not only in our species' deep genetic evolutionary history but also in our diverse cultural evolutionary histories. Historical data provide an excellent and underutilized source of information about the structure and function of a much broader range of human minds than psychologists typically study. Taking history more seriously is a critical part of moving beyond the WEIRD people problem and making psychology a genuinely universal science of human cognition and behavior.

DISCLOSURE STATEMENT

E.S. and M.M. are directors and J.H. is a scientific advisor of the Database of Religious History. The authors are not aware of any other affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

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