Kinship Systems, Cooperation, and the Evolution of Culture*

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Abstract

An influential body of psychological and anthropological theories holds that societies exhibit heterogeneous cooperation systems that differ both in their level of in-group favoritism and in the tools that they employ to enforce cooperative behavior. According to some of these theories, bundles of functional psychological adaptations – religious beliefs, moral values, negative reciprocity, and emotions – serve as "psychological police officers" to regulate behavior in social dilemmas across different cooperation regimes. This paper uses an anthropological measure of the tightness of historical kinship systems to study the structure of cooperation patterns and enforcement devices across historical ethnic groups, contemporary countries, ethnic groups within countries, and among migrants. The results document that societies with loose ancestral kinship ties cooperate and trust broadly, which appears to be enforced through beliefs in moralizing gods; individualizing moral values; internalized guilt; altruistic punishment; and large-scale institutions. Societies with a historically tightly-knit kinship structure, on the other hand, exhibit strong in-group favoritism in behavior and trust levels. This cooperation regime is in turn enforced by communal moral values; emotions of external shame; revenge-taking; and local governance structures. These patterns suggest that various seemingly unrelated aspects of culture are all functional, and ultimately serve the same purpose of regulating economic behavior.

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1 Introduction

A society's kinship system – the structure of extended family relationships – represents the most basic aspect of its social organization (Todd and Garrioch, 1985). Anthropologists have long noted that kinship systems differ in their tightness, i.e., the extent to which people are embedded in large, interconnected extended family networks (Henrich, n.d.).[1] A popular notion in cultural psychology and anthropology is that this feature is of critical importance for the economics of social dilemmas. In contexts such as the tragedy of the commons, bilateral trade, public goods provision, violence, or team production, people can in principle effectively cooperate with one another to achieve socially desirable outcomes, yet defecting is often an individually rational strategy.

According to psychologists and anthropologists, societies solve this "fundamental problem of human existence" (Greene, 2014) in different ways. With tight kinship, effective cooperation is believed to take place within cohesive in-groups, while people outside the group are distrusted. Conversely, in loose kinship societies, people are hypothesized to enter productive interactions with strangers, but do not place special emphasis on helping in-group members (Henrich, n.d.). Thus, these two systems fundamentally differ in the slope of the prosociality (or trust) gradient as social distance increases.[2]

A key question is how cooperation is enforced in these different systems. While economists usually emphasize institutions as enforcement devices, various distinct evolutionary psychological and anthropological literatures hypothesize that the problem of cooperation is of such importance that an entire package of *functional* psychological adaptations supports cooperation as "psychological police officers." The resulting "moral systems" (Haidt, 2012) are theorized to include (i) moralizing gods that are concerned with human morality (Norenzayan, 2013); (ii) moral values that emphasize either an individualizing or communal morality (Shweder et al., 1997; Haidt, 2012); (iii) "moral emotions" of internalized guilt and external shame (Benedict, 1967; Bowles and Gintis, 2011); and (iv) a predisposition to punish defectors, i.e., negative reciprocity (Fehr and Gächter, 2002; Boyd et al., 2003). Crucially, as some of these authors have argued, *different cooperation regimes might require different sets of psychological adaptations* to enforce prosocial behavior.

This paper unites these largely disparate theories from across the social sciences in order to empirically study the relationships between kinship systems, the scope of cooperation and trust, and the structure of enforcement devices. The key objective is to document that various aspects of cultural variation – types of prosocial behavior, trust,

[1] See Parkin (1997), Haviland (2002), and Schultz and Lavenda (2005) for textbook treatments.

[2] Related concepts include those of Gemeinschaft vs. Gesellschaft (Tönnies, 1955) in sociology or individualism vs. collectivism in cultural psychology (Hofstede, 1984; Triandis, 1995).

Table 1: Overview of hypothesized cooperation systems

		Loose kinship	***Tight kinship***
Cooperation	(1) *Behavior*	Equal treatment of in- and out-group	In-group favoritism
	(2) *Trust*	Uniformly high	High in in-group, low in out-group
Enforcement devices	(3) *Governance*	Global institutions	Local institutions
	(4) *Religion*	Moralizing god	
	(5) *Morality*	Individualizing moral values	Communal moral values
	(6) *Emotions*	Internalized guilt	External shame
	(7) *Neg. reciprocity*	Altruistic punishment	Revenge punishment

religious beliefs, moral values, moral emotions, and negative reciprocity – that may initially appear puzzling and unrelated actually form internally coherent cooperation systems in which culture ultimately serves an economic purpose.

Table 1 illustrates the core argument of the paper, i.e., the structure and functional role of culture. The starting point is the observation that in tight kinship societies, where cooperation and trusting is hypothesized to occur largely within in-groups, life is characterized by repeated interaction and familiarity. In loose kinship societies, on the other hand, anonymous one-shot exchanges are more prevalent because people are hypothesized to also effectively cooperate with and trust in strangers. As I discuss in detail in Section 3, various authors outside of economics (e.g., Benedict, 1967; Haidt, 2012; Norenzayan, 2013; Henrich, n.d.) have suggested that these basic features have immediate implications for the structure of effective enforcement devices. First, enforcing geographically concentrated in-group cooperation can be achieved through local governance structures. On the other hand, if people interact broadly with strangers, then large-scale institutions are required. Second, successful regulation of impersonal one-shot exchanges benefits from *internalized* punishment devices such as belief in punitive gods. Third, regarding people's sense of morality, enforcing in-group cooperation requires communal values that mandate, e.g., loyalty to the group. Conversely, enforcing broader cooperation among strangers requires individualizing "universal" moral values that emphasize everyone's welfare equally. Fourth, similarly to beliefs in moralizing gods, emotions of internalized guilt effectively enforce anonymous one-short exchanges, while repeated interaction and familiarity facilitate effective public shaming. Finally, the hypothesized broader sense of prosociality in loose kinship societies facilitates altruistic punishment, i.e., the punishment of defectors by unrelated bystanders. In tight kinship systems, repeated interaction makes punishment via direct revenge feasible.

I investigate these hypotheses by presenting a pattern of conditional correlations across historical ethnic groups, contemporary countries, ethnic groups within countries, and among migrants. To this end, I link cross-cultural datasets on cooperation, trust, and enforcement devices to an anthropological index of the tightness of historical kinship systems, which measures the extent to which people are embedded in large, interconnected extended family networks (Henrich, n.d.). I construct this measure based on information in the Ethnographic Atlas, an ethnographic dataset on the structure of 1,311 preindustrial ethnic groups around the globe (Murdock, 1967; Giuliano and Nunn, 2017).

Anthropologists often characterize kinship systems using information on family structure and descent systems (Parkin, 1997; Haviland, 2002). For both of these dimensions, I closely follow Henrich (n.d.) in identifying two societal characteristics in the Ethnographic Atlas that reflect strong extended family networks: the presence of extended family systems and post-marital residence with parents (family structure), and the presence of lineages and localized clans (descent systems). I aggregate these four variables through a principal component analysis. The resulting score of kinship tightness loads positively on the presence of extended family systems and post-marital residence with parents as well as on the presence of lineages and localized clans. Thus, the factor loadings endogenously correspond to anthropological notions of tight kinship.

Depending on data availability, I link kinship tightness to the structure of cooperation and enforcement devices at various levels of aggregation: (i) within the Ethnographic Atlas, i.e., across historical ethnic groups; (ii) across contemporary countries by matching historical ethnic groups to contemporary populations (following Giuliano and Nunn, 2017); (iii) across contemporary ethnic groups within countries in the World Values Survey by linking historical ethnic groups to contemporary ones; and (iv) in individual-level within-country analyses, by exploiting variation in ancestral kinship tightness across first- or second-generation migrants in the European Social Survey, Global Preference Survey (Falk et al., 2016), and Moral Foundations Questionnaire (Graham et al., 2012). Working at these different levels of aggregation allows me to study both historical and contemporary data, and to address the most obvious forms of endogeneity concerns.

The empirical analysis is structured around the core relationships outlined in Table 1 and hence proceeds in seven steps. The analysis begins by considering the links between kinship tightness, in-group favoritism, and the radius of trust, where I think of trust beliefs as mirror image of cooperative behavior (compare rows (1) and (2) of Table 1). In a second step, I turn to studying the structure of enforcement devices (rows (3)–(7)).

First, I document that, across contemporary countries, ancestral kinship tightness is strongly positively associated with in-group favoritism in the business domain, measured by the fraction of management jobs that is assigned based on kin relations as opposed to personal qualifications. Moreover, I find that kinship tightness is significantly related

to in-group favoritism across historical ethnic groups in the Ethnographic Atlas. Here, societies with tight kinship ties accept violence towards members of other societies differentially more than towards members of their own society.

Second, to investigate whether the strong in-group favoritism in tight kinship societies is mirrored in people's trust radius, I work with a set of detailed questions about trust in various specific groups (e.g., family or strangers) in the World Values Survey. The analysis documents that, across countries, kinship tightness is strongly positively correlated with the difference in the extent to which people trust in-group members (such as family) and out-group members (such as strangers or foreigners). In a second step, I study within-country variation in kinship tightness and trust. This analysis exploits variation across contemporary ethnic groups in the World Values Survey and across second-generation migrants in the European Social Survey. The results reveal that the relationship between ancestral kinship tightness and people's trust radius extends to individual-level within-country analyses. Here, again, people from tight kinship societies exhibit higher in-group trust, but lower trust in out-group members. Thus, as predicted, the gradient of prosociality and trust as a function of social distance is significantly larger in tight kinship societies, and the overall level of (generalized) trust is lower in tight kinship societies.

Third, having established the connections between kinship tightness, in-group favoritism, and trust, the analysis moves on to characterizing the enforcement devices employed by different cooperation systems, first in *pre-industrial* times in the Ethnographic Atlas and then in *contemporary* data. I provide evidence that a historical ethnic group's kinship tightness is systematically related to the structure of its institutional setup. As hypothesized, the key distinction here is that between local and larger-scale institutions (row (3) of Table 1). Specifically, across ethnic groups, kinship tightness is negatively related to the development of large-scale institutions that supersede local groups, such as chiefdoms or states. At the same time, kinship tightness is *positively* correlated with the power and sophistication of institutions at the level of local communities, such as village chiefs.

Fourth, the results document that ethnic groups with loose kinship systems were substantially more likely to honor a moralizing god, i.e., a god that is actively concerned with and supportive of human prosociality. This is consistent with the idea that omniscient and punitive big gods facilitate one-time (rather than repeated) interaction. Fifth, again consistent with the research hypothesis, I find that societies with tight kinship structures exhibit stronger moral values related to loyalty to the local community.

Continuing the study of moral values, I next characterize *contemporary* enforcement systems. I document that – just like in historical data – kinship tightness is systematically related to beliefs about "right" and "wrong", i.e., people's concept of morality. To this

end, I work with the Moral Foundations Questionnaire, which reflects a highly influential recent line of work in moral psychology that distinguishes between "individualizing" moral values – such as justice, rights, and fairness – and "communal" values, such as in-group loyalty (Haidt, 2012). I document that kinship tightness is positively related to a moral emphasis on loyalty, but negatively related to the moral relevance of treating all people equally. In fact, societies with tight ancestral kinship ties more generally emphasize communal moral values over universal moral concepts such as care, rights, and justice. These relationships hold both across countries and in within-country analyses that leverage variation across groups of migrants.

Sixth, I study the relationship between kinship tightness and the relative importance of internalized guilt and external shame, i.e., the so-called "moral emotions" (Haidt, 2003). Based on the idea that online searches reveal the salience of psychological phenomena in daily life (Stephens-Davidowitz, 2014), I study the frequency with which people across countries searched for "shame" or "guilt" on Google in their respective languages. The results document that kinship tightness is positively related to the relative frequency of googling shame, controlling for language. Furthermore, based on self-reports in a cross-cultural psychological questionnaire on emotions, I document that people in tight kinship societies perceive shame as significantly more intense and long-lasting than guilt. Because shame and guilt are biologically-based emotional reactions, some authors have noted that cross-societal variation in the prevalence of shame and guilt suggests a coevolution of biological and psychological enforcement devices of cooperation (Tomasello, 2009; Sapolsky, 2017).

Seventh, the analysis relates kinship tightness to the structure of negative reciprocity, i.e., the relative prevalence of altruistic (third-party) and revenge (second-party) punishment in the Global Preference Survey (row (7) of Table 1). The results show that kinship tightness is strongly positively related to people's propensity to engage in second-party relative to third-party punishment. Again, this result holds both across countries and within countries across populations of migrants.

In summary, the paper documents the close link between kinship systems and a host of variables that can be understood as aspects of social cooperation systems. The key takeaway is that seemingly random aspects of culture exhibit a perhaps surprising degree of structure, and that this structure regulates economic behavior.

While I deliberately refrain from making causal claims, it is important to recognize that the patterns that I uncover indeed appear to be specific to ancestral kinship tightness as opposed to capturing the institutional sophistication of historical ethnic groups.[3] As I document through a series of placebo regressions, the standard proxy for institu-

[3]Of course, institutions are endogenous to a society's kinship system, especially given that extended family relationships were present long before formal governance structures evolved.

tional quality in the Ethnographic Atlas is only very weakly predictive of in-group favoritism, trust, or the structure of enforcement devices. Still, a potentially interesting mechanism that my analysis does not rule out is that evolved differences in, e.g., morality, religious beliefs, or institutions feed back into the structure of kinship systems, and hence contribute to the formation of internally consistent cooperation systems, akin to the mechanisms in the models of Tabellini (2008b) and Greif and Tabellini (2017).

The ways in which the problem of cooperation is solved are of critical importance for many economically relevant settings such as public goods provision, trade, and the dissemination of knowledge. If historical kinship tightness is systematically related to the structure of cooperation systems, a perhaps immediate question concerns potential implications for our understanding of economic development. Anthropologists have long argued that tight kinship emerged to enable successful medium-scale cooperation in agricultural production (Blumberg and Winch, 1972; Gowdy and Krall, 2016). Thus, tight kinship is not believed to have been "detrimental" at early stages of development. However, tight kinship is theorized to have become disadvantageous once technological change required increased specialization, geographic mobility, and trade with strangers (see, e.g., Henrich (n.d.) and the model in De la Croix et al. (2017)).

While causally examining these accounts is difficult, I correlationally study the relationship between kinship tightness and historical development over time. First, I document that prior to industrialization, ethnic group-level kinship tightness was *positively* correlated with a proxy for local population density. Similarly, in cross-country regressions, the correlation between population density and kinship tightness prior to the Industrial Revolution is small, statistically insignificant, and flat over time. These patterns suggest that tight kinship is indeed at least not negatively associated with development at early stages of development. However, beginning with the onset of the Industrial Revolution, this relationship exhibits a sharp, sudden change, becoming strongly and significantly negative. These patterns are reminiscent of the theory that the social systems associated with tight kinship constituted a structural disadvantage once technological change required increased cooperation with strangers.

The remainder of the paper is organized as follows. Section 2 discusses related literature. Section 3 explains the hypothesized relationship between kinship tightness, cooperation patterns, and enforcement devices. Section 4 presents the data. The analysis begins in Section 5 with the relationships between kinship tightness, in-group favoritism, and trust. Sections 6 and 7 present evidence on how kinship tightness is associated with enforcement devices, in both historical and contemporary data. Section 8 reports extensions and robustness checks. Section 9 discusses the relationship between kinship tightness and development over time. Section 10 concludes the paper.

2 Related Literature

The study of nuclear family structures has recently attracted much attention among economists (Alesina and Giuliano, 2013; Alesina et al., 2015). However, this line of work has neither focused on extended kinship systems nor on how these shape cooperation patterns and the structure of enforcement devices.

Empirical research on social organization and kinship includes work on the relationship between individualism and per capita income (Gorodnichenko and Roland, 2016; Roland, 2017), analyses of how segmentary lineage organization shapes civil conflict (Moscona et al., 2017a,b), the relationships between cousin marriage and corruption levels or democracy (Akbari et al., 2016; Schulz, 2016), the effect of matrilineality on within-household cooperation (Lowes, 2017), and the relationship between matrilocal residence and investment in children (Bau, 2016).[4] On the theory side, Greif (1994) highlights the potential role of family systems for cooperative norms; Tabellini (2008b) as well as Greif and Tabellini (2017) provide related models.

More broadly, this paper is part of the literature on cultural variation (Voigtländer and Voth, 2012; Desmet et al., 2017), in particular papers that highlight the endogeneity of culture (Bisin and Verdier, 2001; Doepke and Zilibotti, 2014; Galor and Özak, 2016; Olsson and Paik, 2016; Buggle, 2017; Michalopoulos and Xue, 2017; Lowes et al., 2017). My paper contributes to this line of work by documenting that cultural variation in a range of traits might be functional and enforces cooperation.

Finally, the paper builds on the various literatures in psychology and anthropology that developed the theories that serve as basis for my analysis (e.g., Bowles and Gintis, 2011; Haidt, 2012; Greene, 2014; Tomasello, 2016; Henrich, n.d.). Since these literatures are all theoretical or comprise of small case studies, my results contribute through a rigorous and quantitative investigation of the topic.

3 Research Hypothesis and Background

The various literatures outside of economics that deal with human cooperation share two common features. First, they emphasize the important role of in-group vs. out-group distinctions for cooperation. Second, if only by their sheer breadth, these literatures suggest that enforcing cooperation is not achieved by any single mechanism, but rather by an entire package of interrelated tools that, e.g., Haidt (2012) refers to as "moral system".

[4]For work on social capital, trust, cooperation, and parochial altruism, see La Porta et al. (1997), Algan and Cahuc (2010), and de la Sierra (2017).

3.1 Tight Kinship, Cooperation, and Trust

Kinship describes the system of procreative relationships in society. It clarifies what rights and obligations people have and may even constitute the foundation of people's social lives (Schultz and Lavenda, 2005). For cultural psychologists and anthropologists, the idea that societies exhibit heterogeneity in basic social organization regarding how deeply people are embedded in tight kinship groups, is as basic as economists' idea that markets equilibrate supply and demand (Triandis, 1995; Hofstede, 1984; Markus and Kitayama, 1991; Henrich, n.d.). The key characteristic of tight kingroups is that they strongly partition society into multiple disjointed in-groups. As a result, people are said to think of themselves as "we": they rely on the in-group for food and other necessities of life in exchange for unquestioning loyalty. However, outsiders to their group are considered strangers at best, and enemies at worst. At the other extreme of the spectrum, psychologists say, lie societies in which people think of themselves as "I" because they are not part of a tightly interlinked kinship system. Such individuals are said to have weaker personal relationships with in-group members (if the concept of an extended in-group even exists). At the same time, people in these societies are believed to also enter productive relationships with people outside their group.

Thus, the key distinction between these two systems is the prosociality gradient as a function of social distance. With tight kinship, prosociality towards the in-group is very high, yet as social distance increases, prosociality rapidly declines. In loose kinship societies, on the other hand, prosociality towards in-group members is lower, yet the gradient is smaller than with tight kinship. As a mirror image of such differences in in-group favoritism, one would also expect that differences in trust between in- and out-group are more pronounced with tight kinship.

3.2 Tight Kinship and Enforcement Devices

If it is true that societies exhibit heterogeneous cooperation schemes, it is conceivable that they use different devices to sustain and enforce such cooperation. Across the social sciences, researchers have proposed various mechanisms that serve to enforce cooperative behavior, including religious beliefs, moral values, basic emotions and their physiological consequences, negative reciprocity in the form of second- or third-party punishment, and formal institutions.[5] By their very nature, some of these mechanisms predominantly apply to enforcing cooperation *within* an in-group, while others are also suitable for enforcing anonymous one-shot cooperation.

The literatures that I draw from to develop testable hypotheses are at the core of

[5]See Appendix C for a discussion of the role of social norms.

modern evolutionary theory regarding human cooperation outside of economics. Excellent overviews of (various subsets) of the hypotheses outlined below can be found in Boyd and Richerson (1988, 2009); Bowles and Gintis (2011); Haidt (2012); Tomasello (2016), and in particular Henrich (n.d.). Still, there is no single authoritative piece of work on the topic that outlines the full array of hypotheses below. Rather, these hypotheses are derived by integrating concepts and arguments from different literatures in psychology and anthropology that evolved in at least partially separate contexts. Thus, part of this paper's contribution is to unite many conceptually interlinked theories in one coherent framework. While I highlight the role of kinship tightness throughout, this does not preclude that evolved differences in morality, religious beliefs, or institutions feed back into the structure of kinship systems, contributing to the formation of internally consistent cooperation systems, akin to the mechanisms in the models of Tabellini (2008b) and Greif and Tabellini (2017).

Governance. Institutions have long been recognized as critical for enforcing cooperation. Given the different scope of cooperation in the respective systems, differences in kinship tightness might go hand in hand with different governance structures. In particular, if people primarily interact with other in-group members, then there is less of a need to bear the cost of setting up large-scale enforcement institutions that supersede separate groups. On the other hand, enforcing in-group cooperation might require powerful institutions at a local level. This perspective suggests that kinship tightness is negatively correlated with the development of formal institutions *above* the level of an in-group, but positively correlated with the development of institutions at the *local* level.

Religious beliefs. Cultural psychologists, anthropologists, historians, and scholars of religious studies routinely emphasize the importance of religious practices and beliefs in sustaining cooperation. In this context, moralizing gods are believed to play a key role (Norenzayan and Shariff, 2008; Norenzayan, 2013; Botero et al., 2014; Norenzayan et al., 2016). A god is said to be moralizing if they are concerned with and supportive of human morality by, e.g., punishing wrongdoing or rewarding prosocial behavior.[6] The notion that a god is moralizing is often implicit in contemporary discussions because – mostly due to the spread of the Abrahamic religions Islam and Christianity – today, a large majority of humans live in societies that honor a moralizing god. However, historically, this was not the case. Animistic religions, for example, usually featured gods who were not particularly interested in the actions of humans.

Crucially, belief in punitive gods is hypothesized to solve human social dilemma

[6]Small-scale behavioral experiments have shown that belief in a punitive god is positively correlated with cooperative behavior (Purzycki et al., 2016; Norenzayan et al., 2016).

problems. In large-scale anonymous societies in which direct enforcement is difficult due to a lack of repeated interaction, belief in moralizing gods is helpful because it functions as an internal "policeman," who punishes human wrongdoing even in the absence of worldly punishment. Importantly, societies with tight kinship ties are less in need of moralizing gods: because people predominantly interact within their own group in settings where personal monitoring is feasible, moralizing god provide fewer benefits, but presumably the same drawbacks in terms of paying the costs of religious beliefs such as attending mass and extending sacrifices (see, e.g., Norenzayan, 2013). Thus, one should expect a negative correlation between kinship tightness and belief in moralizing gods.

Moral values. Moral and evolutionary psychologists argue that human morality – people's beliefs about "right" and "wrong" – partly evolved to solve social dilemma problems (e.g., Haidt, 2012; Greene, 2014). Moral Foundations Theory (MFT, Graham et al., 2012) – a particularly influential recent line of work in moral psychology asserts that moral values consist of two structurally different types. First, some values are said to reflect "individualizing" or "universal" principles such as fairness, individual rights, and justice. These principles emphasize the welfare of all individuals in society equally. Second, morality is said to also include "communal" or "groupish" values (such as in-group loyalty) that are tied to particular groups.[7] Such communal values constitute a form of particularist morality, according to which the application of motal principles depends on context, including notions of us and them. Recent work has shown that the distinction between these two types of moral values is predictive of both voting behavior and in-group favoritism in donations and volunteering (Enke, 2017).

The distinction between individualizing and communal values is important for the present purposes because if moral values actually emerged to enfore cooperation, then they *should* vary across societies. One the one hand, enforcing repeated in-group interaction requires communal values such as in-group loyalty. On the other hand, enforcing anonymous one-shot cooperation in loose kinship societies requires moral principles that apply universally, such as placing high moral relevance on treating everyone equally. Thus, the relative importance of communal over individualizing values should be positively related to kinship tightness.

Moral emotions. Cultural psychologists and anthropologists have long used the terms "shame" and "guilt" cultures (Dodds, 1957; Benedict, 1967; Scherer and Wallbott, 1994; Bowles and Gintis, 2003, 2011; Sznycer et al., 2012) to draw attention to the notion that societies inculcate different emotional responses to wrongdoing into their children. In

[7] Haidt (2012) refers to these values as "binding".

this terminology, guilt refers to an emotion that is internalized and can be evoked even when nobody knows about the event. Shame, on the other hand, is called the "public emotion" and is evoked in front of others. The relative importance of shame and guilt should vary across societies because shaming someone in front of others is more effective under repeated interaction. In anonymous one-shot exchange environments, on the other hand, effective regulation of behavior requires inculcating internalized guilt. In this sense, guilt is conceptually similar to moralizing gods. Loose kinship systems should hence be associated with a more pronounced importance of guilt relative to shame. Some authors have noted that since emotions like shame and guilt have partly distinct physiological consequences, this hypothesis implies a coevolution of psychology and certain aspects of biology (Tomasello, 2009; Sapolsky, 2017).

Negative reciprocity. Across the social sciences, researchers have emphasized the important role of negative reciprocity in sanctioning wrongdoings (e.g., Fehr and Gächter, 2002; Boyd et al., 2003). The most important conceptual distinction in the discussion of such punishment patterns is that between second-party (revenge) and third-party (altruistic) punishment. Second-party punishment refers to direct revenge-taking by the victim. Conversely, altruistic punishment describes behavior in which people are willing to incur personal costs to punish wrongdoing *even if they did not personally suffer from the misconduct*. As its name implies, altruistic punishment is conceptually similar to cooperation behavior itself: because punishing is usually costly, there exists a so-called "second-degree free-rider" problem whereby people prefer for others to punish. There are at least two reasons to expect that the relative prevalence of second- over third-party punishment increases in kinship tightness. First, direct revenge-taking is more feasible in a system of repeated interaction and familiarity. Second, third-party punishment should be higher in loose kinship societies in which people have a broader sense of prosociality. After all, why would someone with strong in-group vs. out-group feelings expend costly resources to punish a person that cheated on an out-group member?

4 Data

4.1 Measure of Kinship Tightness

Kinship describes the system of procreative relationships in society, potentially broad patterns of relatedness that arise through mating and birth. The measure of kinship tightness is based on variables in the Ethnographic Atlas (EA), a dataset that contains detailed information on the living conditions and social structures of 1,265 ethnic groups prior to industrialization (Murdock, 1967). The EA is arguably the leading collection of

anthropological knowledge on historical ethnic groups. Murdock constructed the data by coding ethnicities for the earliest period for which ethnographic data is available or can be reconstructed from written records. Following work in ethno-graphy, Giuliano and Nunn (2017) extended this dataset to include an additional 46 ethnic groups, broadening coverage in Europe.

The average year of observation is 1900, but even for those groups for which information was sampled during the 20th century, the data are meant to describe living conditions prior to intense European contact or industrialization.[8]

The EA contains information on mode of subsistence (agriculture, animal husbandry, hunting, gathering, and fishing); family structure and community organization; religious beliefs; language; and institutions, among others. In fact, for a subset of 186 ethnicities – the so-called Standard Cross-Cultural Sample (SCCS) – very detailed ethnographic information on local customs and beliefs is available.[9]

My goal is to develop an index of kinship tightness that captures the extent to which people are interconnected in tightly structured, extended family systems. This paper follows the discussion in Henrich (n.d.), which in turn is similar to the textbook treatments by Parkin (1997), Haviland (2002), and Schultz and Lavenda (2005). At a broad level, dimensions of kinship can be partitioned into family structure and descent systems. For each of these categories, I closely follow Henrich (n.d.) who identifies two variables in the EA that measure the extent to which family structure and descent systems induce strong extended family networks. That is, my index of kinship tightness is based not on my own judgment, but rather on prior anthropological work. Appendix A provides all details of the underlying coding procedure and histograms for each variable.[10]

1. Family structure

   (a) *Domestic organization.* In the discussion of kinship ties, a key distinction exists between independent nuclear versus extended families. Living in extended family systems considered an indication of the presence of large interconnected family networks. I generate a binary variable that equals one if the

[8]The year of observation is only weakly correlated with the index of kinship tightness that I develop below ($\rho = 0.05$).

[9]Murdock assembled the EA by relying on the records of different ethnographers, so that that Murdock's own predispositions are unlikely to be a major source of bias in the dataset. In addition, many of the theoretical developments in psychology and anthropology that link social structure to enforcement devices took place relatively recently; as such, they are unlikely to have affected ethnographers' perceptions during the time of coding.

[10]An earlier version of this paper was based on an extended definition of kinship tightness that also included marriage patterns, i.e., the presence of cousin marriage and polygamy. The score that I work with exhibits a correlation of $\rho = 0.96$ with the extended index. All results in this paper are robust to including polygamy and cousin marriage in the construction of the index.

domestic organization is around independent nuclear families and zero otherwise (Q8 in the EA).

(b) *Post-wedding residence.* Post-marital residences vary widely across cultures. Anthropologists argue that strong kinship ties are indicated by social norms that prescribe residence with the husband's (or the wife's) group. Weak kinship ties, on the other hand, are indicated by couples living either by themselves or flexibly, with either the wife's or the husband's group. Accordingly, I generate a variable that equals one if the wife is expected to move in with the husband's group or vice versa, and zero otherwise (Q11).

2. Descent systems

(a) *Lineages.* Descent groups are defined by people's ancestry. A descent system's defining characteristic is whether it features unilineal or bilateral descent. Unilineal descent systems track descent primarily through one line (maternal or paternal) as opposed to through both lines. A lineage (unilineal descent group) is thus a group of people who can trace the links uniting them back to a known common ancestor, alive or dead. Such groups are typically much larger than Western notions of what constitutes "family," and can include more than 1,000 people. Unilineal descent systems are said to induce particularly strong and cohesive in-groups because they make people feel close to a particular part of their family. In contrast, bilateral descent systems are ego-oriented. This means that people trace descent through both lines, so that everybody relates to a different family. For example, in a unilineal male descent system, the children of two brothers (cousins) belong to the same lineage, yet they have different families in a bilateral system because they also partly associate with the mother's side of the family. Consequently, bilateral systems are believed to prevent the build-up of extended tight linkages. I construct a variable that equals one if descent is bilateral, and zero otherwise (Q43).

(b) *Segmented communities and localized clans.* When lineage systems become too large to be traceable and memorized, they split into new, smaller lineages. In such cases, people across lineages often continue to recognize their "broad relatedness" even though they could not describe the specific path that connects them. Such systems are called clans. Clans serve an important function in building up very large extended family networks because they allow very distantly related people to feel connected. Clans may be more or less closely interconnected, partly depending on whether they determine geographical

residency as opposed to being geographically dispersed. Accordingly, I code a variable that equals one if people are part of localized clans that live as segmented communities – e.g., in clan barrios – and zero otherwise (Q15).

To aggregate these four dimensions of kinship, I compute the first principal component. This score has the appealing endogenous property that it loads to a substantial extent on all four variables in a direction that is consistent with anthropological notions of tight kinship.[11] The index loads negatively on independent nuclear families (weight 0.3699), positively on joint residence (0.4558), negatively on bilateral descent (0.5820), and positively on the presence of segmented communities / clans (0.5628).[12] The resulting Kinship Tightness Index (KTI) is normalized to be in $[0, 1]$. Figure 1 depicts the distribution of the Kinship Tightness Index at the level of 1,087 historical ethnic groups for which data on all four dimensions are available. All main analyses are conducted using this composite index. Section 8 reports analyses that use each of the four variables separately.

4.2 Additional Data Sources and Nature of Variation

The measure of kinship tightness is a historical ethnicity-level object. The data can be matched to contemporary populations, allowing for contemporary cross-country, cross-ethnic group, and cross-migrant analyses. Appendix G provides a detailed description of all variables used in this study.

Cross-Country. Giuliano and Nunn (2017) propose a method to match the ethnic groups in the EA to contemporary country-level populations. In this method, contemporary populations are related to their ancestors in the EA through the language they speak. To illustrate, if the Ethnologue project reported that 80% of all US residents spoke English and 20% Spanish, then the country-level score for the US would consist of the weighted average score of those ethnic groups in the EA whose languages are closest to English and Spanish in the Ethnologue language tree. Effectively, this method is a language-based version of Putterman and Weil's (2010) ancestry-adjustment procedure. Appendix G.3.1 provides a further desciption of this matching procedure. Following Giuliano and Nunn's 2017 methodology, Figure 10 in Appendix G.3.1 depicts the country-level distribution of ancestral kinship tightness.[13]

[11] This first component has an eigenvalue of 1.94, whereas that of the second component is 0.87, i.e., not statistically significant.

[12] To interpret these weights, recall that all four variables are in [0,1].

[13] Table 20 in Appendix F demonstrates that the country-level index of kinship tightness is positively correlated with contemporary measures of collectivism (vs. individualism) that have previously been employed, including the collectivism vs. individualism index of Hofstede (1984), a measure of family ties by

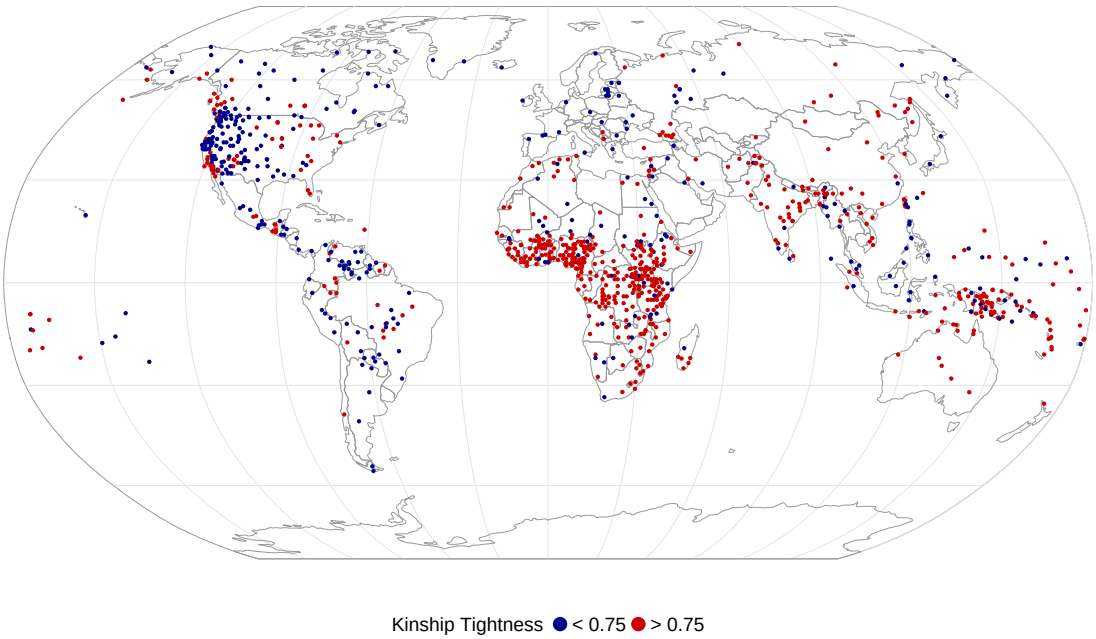


Figure 1: Distribution of Kinship Tightness Index in the Ethnographic Atlas

World Values Survey: Ethnicities Within Countries. The World Values Survey (WVS) contains information on respondents' ethnicities. While these data are often very coarse, 111 ethnic groups in 41 countries were described in sufficiently great detail for me to be able to match a total of 45,958 respondents to their ancestors in the EA. Thus, I can investigate the relationship between ancestral kinship tightness and respondents' trust or values by exploiting variation across contemporary ethnic groups within countries.

European Social Survey: Second-Generation Migrants Within Countries. The European Social Survey (ESS) provides detailed information on the migration background of respondents' parents. Thus, following Giuliano (2007) and Fernández (2007), I study the relationship between people's values and the kinship tightness of their ancestors by computing the Kinship Tightness Index for their parents' country of origin (where the country-level data are computed as described above). In these analyses, the sample is restricted to respondents who were born in the country of current residence; however, their ancestral kinship tightness varies because of their parents' migratory background. Thus, similarly to the cross-ethnicity analysis in the WVS, this analysis identifies pure within-country correlates of kinship tightness. In practical terms, I assign each respondent the average Kinship Tightness Index of (i) mother and father's countries of birth if both were born outside the respondent's country of residence and (ii) the mother's coun-

Alesina and Giuliano (2013), and the fraction of the population speaking a language that allows dropping the pronoun (Tabellini, 2008a).

try of birth if the father was born in the respondent's country of residence but the mother was not, and (iii) vice versa.[14] In total, I make use of 20,733 respondents for whom I know both the father and mother's country of birth, and that are second-generation migrants with respect to at least one parent. These respondents live in 32 countries. Their fathers and mothers were born in 164 and 160 different countries, respectively.

Global Preference Survey and Moral Foundations Questionnaire: First-Generation Migrants Within Countries. The Global Preference Survey (GPS) is a survey dataset on economic preferences from representative population samples in 76 countries (Falk et al., 2016). The data include information on respondents' country of birth. Thus, similarly to the ESS, I leverage within-country variation in kinship tightness by relating migrants' preferences to the ancestral kinship tightness in their country of birth, controlling for current country of residence. In total, I draw from data on 2,430 migrants from 147 different countries of birth.

The Moral Foundations Questionnaire (MFQ) is a psychological questionnaire on moral values (Graham et al., 2012). uploaded by the authors to `www.yourmorals.org` in 2008. Until March 2017, 285,792 of people had completed the questionnaire and provided basic background information including their country of birth. The sample of respondents is based purely on self-selection and is therefore not representative of a country's population. Nonetheless, I am not aware of any reason why the nature of differential self-selection into the survey across countries or groups of migrants should bias the results in favor of my research hypothesis, as opposed to simply inducing measurement error.[15] Similar to the GPS, the MFQ allows me to leverage within-country variation in kinship tightness by relating people's moral values to the ancestral kinship tightness in their country of birth. In total, I draw from data on 26,657 immigrants from 199 countries of birth.

[14]This ensures that I only exploit variation that is independent of the current country of residence.

[15]One potential conjecture is that people's trust level determines selection into the online survey. All results to be presented below are robust to controlling for the trust level in the country of origin of the migrant, see Tables 25 and 26 in Appendix F.

5 Kinship, In-Group Favoritism, and the Radius of Trust

5.1 Empirical Approach and Covariates

Contemporary Cross-Country. In cross-country analyses, I present multiple specifications for each dependent variable. Depending on the specification, I make use of three sets of covariates: (i) control variables for three ancestral characteristics of contemporary populations from the EA, historical dependence on agriculture, number of jurisdictional hierarchies above the local level, and year of observation; (ii) additional country-level covariates, including distance from the equator, average precipitation, log land area, ethnic fractionalization, and ancestry-adjusted log population density in 1500; and (iii) continent fixed effects.

Contemporary Within-Country. The contemporary within-country analyses are all based on large-scale surveys. Here, I control for exogenous individual-level variables (age, age squared, and gender) and characteristics of the groups, on the basis of which the Kinship Tightness Index is assigned to a given individual. That is, in analyses that leverage variation across ethnic groups, I control for the following historical characteristics: dependence on agriculture, number of jurisdictional hierarchies above the local level, distance from the equator, average precipitation, and year of observation in the EA. In analyses that leverage variation across individuals with a migration background, I control for a comprehensive set of characteristics of the respondent's (or their parent's) country of birth. Specifically, I control for ancestral characteristics from the EA (dependence on agriculture, number of jurisdictional hierarchies above the local level, and year of observation) and other country-level covariates, including distance from the equator, average precipitation, ethnic fractionalization, and ancestry-adjusted log population density in 1500.

Historical Cross-Ethnicity. In historical analyses, I utilize background information in the EA on subsistence mode (e.g., dependence on agriculture), number of jurisdictional hierarchies above the local level, settlement complexity, year of observation, distance from the equator, and precipitation.

In the analysis, all dependent variables except for binary ones are transformed into z-scores, so that all regression coefficients can be easily interpreted: a coefficient of x means that increasing kinship tightness from its minimum of zero to its maximum of one is associated with an increase of x% of a standard deviation in the dependent variable. To keep the exposition concise, tables do not report the coefficients of covariates.

5.2 In-Group Favoritism

The key behavioral prediction that separates loose from tight kinship is the difference in in-group favoritism. To analyze this, I begin by considering contemporary cross-country variation in in-group (kin) favoritism in the business domain. Specifically, in a large-scale cross-cultural survey by the World Economic Forum, managers in large firms were asked to what extent senior management jobs were held by relatives, or by professional managers chosen based on superior qualification (Van de Vliert, 2011). Columns (1)–(3) of Table 2 document that ancestral kinship tightness is strongly and significantly correlated with this measure of favoritism. This result holds conditional on the set of covariates discussed above, including continent fixed effects.

Columns (4)–(5) of Table 2 present further evidence on the link between kinship tightness and in-group favoritism by considering variation across historical ethnicities in the EA. To this end, I make use of data from the Standard Cross-Cultural Sample (SCCS), which contains information on the acceptability of violence in a community, distinguished by whether violence is directed at members of the same society and against members of other societies. From these variables, I compute the difference between the acceptability of violence against out-group and in-group.[16] Columns (4) and (5) show that kinship tightness is again significantly correlated with in-group favoritism (here at the ethnic group-level).

5.3 The Radius of Trust

Recently, sociologists added a set of six survey questions to the WVS that elicit people's trust beliefs with respect to six specific groups (Delhey et al., 2011). These questions ask respondents about their level of trust in their family, their neighbors, people they know, people they meet for the first time, people of another religion, and foreigners, respectively. These data allow an evaluation of people's radius of trust. Delhey et al. (2011) propose that these variables can be used to construct indices of average in-group and average out-group trust, respectively, where in-group means family, neighbors, and people one knows, and out-group all remaining groups. My main dependent variable is the difference between in-group and out-group trust.

Given the focus of the paper on extended family systems, a perhaps natural additional way to partition the set of six groups is by distinguishing between family and everyone else. Accordingly, as an additional dependent variable, I construct the difference between trust in the family and the average trust in all other groups.

The analysis begins with cross-country regressions that relate the trust variables to

[16] See Appendix G for details on the construction of this variable.

Table 2: In-group favoritism: Evidence across contemporary countries and historical ethnicities

Variation is across:	Contemp. countries			Historical ethnic groups (EA)	
	Dependent variable:				
	Mgmt. jobs based on: Kin relations vs. qualifications			Acceptability of violence: Δ [Other – Same] society	
	(1)	(2)	(3)	(4)	(5)
Kinship tightness	0.75***	0.84***	0.96***	0.88**	0.92**
	(0.24)	(0.26)	(0.30)	(0.39)	(0.44)
Historical controls	No	Yes	Yes	No	No
Other controls	No	No	Yes	No	No
Continent FE	No	No	Yes	No	Yes
Ethnicity controls	No	No	No	No	Yes
Observations	114	113	112	60	60
R^2	0.08	0.09	0.42	0.06	0.35

Notes. OLS estimates, robust standard errors in parentheses. Columns (1)–(3) report cross-country regressions. Here, the dependent variable is the extent to which senior management jobs are held by relatives or by professional managers chosen based on superior qualifications. Columns (4)–(5) report cross-ethnicity regressions in the Ethnographic Atlas. Here, the dependent variable is the difference between the acceptability of violence against members of other societies and against members of the same society. All dependent variables are expressed as z-scores. Historical controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all computed as pertaining to contemporary populations). Other controls include distance from the equator, ethnic fractionalization, average precipitation, log land area, and ancestry-adjusted log population density in 1500. Ethnicity controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, settlement complexity, and year of observation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

kinship tightness, with and without covariates. Columns (1)–(3) of Table 3 reveal that kinship tightness is strongly and significantly correlated with the difference between in- and out-group trust. In terms of quantitative magnitudes, the point estimates suggest that moving kinship tightness from zero to one increases the difference in in-group and out-group trust by more than one standard deviation. Figure 2 visualizes this correlation. Similarly, columns (4)–(6) document that kinship tightness is significantly related to differences in trust between family and non-family.[17]

Researchers in economics have long used the "generalized trust" question (Knack and Keefer, 1997; Algan and Cahuc, 2010) in the WVS to measure people's general trust in others. Given that general trust presumably captures trust not just in in-group members but in members of society as a whole, one would expect that this variable

[17]Table 21 in Appendix F breaks these patterns down into the six different groups. The results reveal that kinship tightness is positively correlated with trust in family and neighbors. On the other hand, it is negatively correlated with trust in all other groups, and the corresponding point estimates become consistently more strongly negative as social distance increases.

Table 3: Trust across countries

	Dependent variable:								
	Trust in:								
	Δ [In-group – out-group]			Δ [Family – others]			People in general		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	1.02***	1.27***	1.35***	0.75**	0.88**	1.20**	-0.58*	-0.61*	-0.85**
	(0.30)	(0.31)	(0.37)	(0.32)	(0.37)	(0.45)	(0.31)	(0.35)	(0.36)
Historical controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Other controls	No	No	Yes	No	No	Yes	No	No	Yes
Continent FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	74	74	72	74	74	72	94	94	91
R^2	0.14	0.26	0.54	0.07	0.11	0.46	0.04	0.10	0.52

Notes. Country-level OLS estimates, robust standard errors in parentheses. In columns (1)–(3), the dependent variable is the difference between average trust in in-group members (family, neighbors, people one knows) and in out-group members (strangers, people of another religion, foreigners). In columns (4)–(6), the dependent variable is the difference between trust in family and the average trust in all other five groups. The dependent variable in columns (7)–(9) is generalized trust. All dependent variables are expressed as z-scores. Historical controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all computed as pertaining to contemporary populations). Other controls include distance from the equator, ethnic fractionalization, average precipitation, log land area, and ancestry-adjusted log population density in 1500. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

is negatively correlated with kinship tightness. Columns (7)–(9) document that this is indeed the case.[18]

To investigate whether these results are driven by omitted cross-country variables, the analysis proceeds with within-country regressions. I exploit individual-level variation in ancestral kinship tightness (i) across ethnic groups in the WVS and (ii) across second-generation migrants in the ESS. In these analyses, the unit of observation is always an individual, yet the Kinship Tightness Index is assigned (i) based on the ethnicity of the respondent (WVS), or (ii) based on the respondent's parents' countries of birth (ESS).

Table 4 presents the results. In the WVS, columns (1)–(6), the dependent variables mirror those from the cross-country analysis. As before, an individual's ancestral kinship tightness (assigned based on their ethnicity) is significantly related to differences in in-group and out-group trust, as well as to the difference between trust in the family and in all other groups (columns (1)–(4)).[19] These results all hold conditional on country fixed effects, wave fixed effects, individual-level observables, and control variables for characteristics of the historical ethnic group based on which the Kinship Tightness Index

[18]The Global Preference Survey (Falk et al., 2016) likewise contains a question that elicits a concept related to general trust, asking respondents to state their agreement with the statement: "I assume that people have only the best intentions." Responses to this question are likewise significantly negatively correlated with kinship tightness, $\rho = -0.20$, $p < 0.05$.

[19]Table 22 in Appendix F again breaks these patterns down into the separate groups and shows that that kinship tightness is positively correlated with trust in family and neighbors, yet negatively with trust in all other groups.

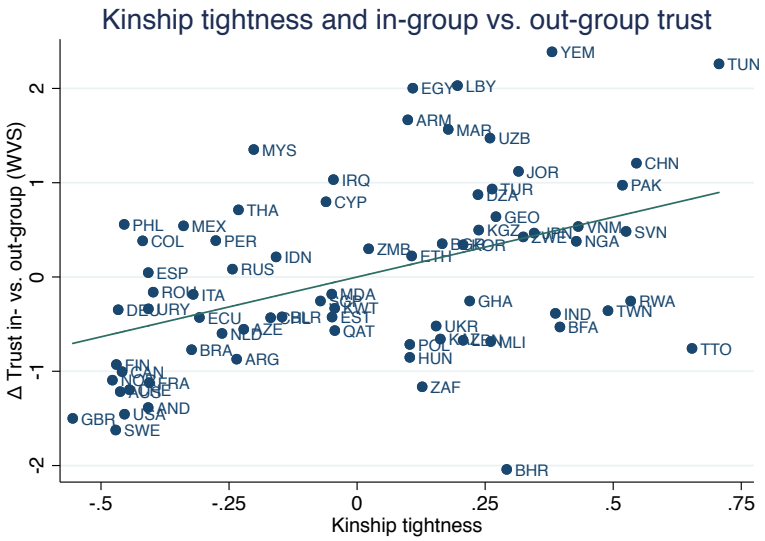


Figure 2: Relationship between kinship tightness and the difference between in-group and out-group trust in the WVS. The plot is a partial correlation plot, conditional on the historical controls in Table 3.

was assigned. Furthermore, columns (5)–(6) document that people with high ancestral kinship tightness again exhibit lower trust in people in general.

Columns (7)–(8) show that similar results hold in the ESS. Here, the dependent variable is also the general trust question from the WVS. An individual's ancestral kinship tightness (assigned based on the Kinship Tightness Index of the parents' countries of birth) is significantly related to lower generalized trust. This correlation holds conditional on individual-level controls as well as country of origin controls.

In summary, even though the nature of variation differs in various ways – across countries, across ethnicities, and across second-generation migrants – do the results consistently point to a relationship between kinship tightness and contemporary trust levels. In particular, the radius of trust matches the in-group favoritism in behavior that I identified above: tight kinship is associated with large differences in trust between in- and out-group, and generalized trust levels are low.

6 Enforcement Devices I: Historical Ethnic Groups

6.1 Institutions

As outlined above, the analysis of governance structures requires me to distinguish between institutions at the local (community) level and those that supersede separate groups, which I refer to as "global." The EA contains a five-step variable that measures the number of levels of jurisdictional hierarchies *beyond the local community* (no levels;

Table 4: Trust patterns: Within-country evidence

Variation in KTI is across:	World Values Survey: Ethnic groups						ESS: 2nd gen. migrants	
	Dependent variable:							
	Δ Trust [In- vs. out-group]		Δ Trust [Family vs. others]		Generalized trust		Generalized trust	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kinship tightness	0.43***	0.40***	0.22***	0.21***	-0.068	-0.18**	-0.12***	-0.099**
	(0.07)	(0.13)	(0.03)	(0.07)	(0.05)	(0.08)	(0.04)	(0.04)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	No	Yes	No	Yes	No	Yes
Ethnicity-level controls	No	Yes	No	Yes	No	Yes	No	No
Country of origin controls	No	No	No	No	No	No	No	Yes
Observations	22283	20987	22283	20987	45422	36924	20656	19932
R^2	0.08	0.09	0.08	0.08	0.09	0.08	0.10	0.10

Notes. Individual-level OLS estimates in the WVS / ESS, standard errors in parentheses. In columns (1)–(6), the sample consists of individuals in the WVS. The dependent variables are the difference between average trust in in-group and in out-group; the difference in trust between family and all other groups; and generalized trust, compare Table 3. The standard errors are clustered at the ethnic group level. Individual level controls include gender, age, and age squared. Ethnicity-level controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, average precipitation, distance from the equator, and year of observation in the EA. In columns (7)–(8), the sample includes individuals in the ESS and the standard errors are clustered at the level of the mother's times the father's country of birth. The dependent variable is generalized trust. Individual level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, average precipitation, ethnic fractionalization, and ancestry-adjusted log population density in 1500. All country of origin controls are computed using the same procedure as for kinship tightness, see Section 4.2. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

petty chiefdom; large chiefdom; state; large state; Q33 in the EA). In the literature, this is the standard variable used as proxy for the institutional sophistication of historical ethnic groups (e.g., Giuliano and Nunn, 2013). However, the data also contain a variable that measures the levels of jurisdictional hierarchy at the *local* level (Q32), which is used less frequently in the literature.[20] Local levels of hierarchy include nuclear family, extended family, clan, and village.

Columns (1)–(4) of Table 5 relate these two variables to the Kinship Tightness Index. As hypothesized, kinship tightness is negatively correlated with the development of institutions above the local level, but positively associated with levels of hierarchy at the local level. These correlations hold conditional on a society's dependence on agriculture and animal husbandry, respectively; settlement complexity; year of observation; distance from the equator; longitude; average elevation; and continent fixed effects.

In summary, tight kinship is associated with less developed institutions above the

[20]The two variables exhibit a correlation of $\rho = 0.04$.

Table 5: Enforcement devices of cooperation in historical ethnic groups

	Dependent variable:							
	# Levels jurisdictional hierarchy							
	Above local level		Local level		Moralizing god		Loyalty to community	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kinship tightness	-0.28**	-0.22*	1.37***	1.33***	-0.24***	-0.20***	0.86**	1.00**
	(0.14)	(0.12)	(0.11)	(0.11)	(0.06)	(0.05)	(0.40)	(0.46)
Continent FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historical controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1001	960	1012	972	702	642	82	81
R^2	0.25	0.34	0.27	0.27	0.20	0.41	0.09	0.13

Notes. Historical ethnic group-level OLS estimates in the EA, robust standard errors in parentheses. The dependent variables in columns (5)–(6) and (7)–(8) are the number of levels of jurisdictional hierarchy above the local and at the local level, respectively. The dependent variable in columns (5)–(6) is a binary indicator for whether a society honors a moralizing god. In columns (7)–(8), the dependent variable is the extent to which historical ethnic groups emphasize loyalty to the local community and "we" feelings (on a scale of 0–10). In columns (2) and (4), the historical controls include dependence on agriculture, dependence on animal husbandry, year of observation, settlement complexity, distance from the equator, and average precipitation. In column (6), the set of historical controls additionally includes the number of levels of hierarchies above the local level. Due to the smaller number of observations, in column (8) I control only for year of observation, settlement complexity, number of levels of hierarchies above the local level, and distance from the equator. All dependent variables except for belief in a moralizing god are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

local level, but powerful institutions at the local level to regulate in-group behavior. One potential concern with these regressions is that they compare ethnic groups with different subsistence modes. Chiefly, while some ethnic groups followed sophisticated farming or herding practices, others subsisted largely on hunting, gathering, and fishing. The analysis addresses this issue by controlling for (i) the extent (0-100%) to which an ethnic group subsisted on agriculture and animal husbandry, respectively, (ii) the complexity of local settlements, and (iii) the year of observation in the EA. In a further robustness check, Table 24 in Appendix F shows that very similar results hold if I exclude all hunter-gatherers from the sample.

6.2 Moralizing Gods

Columns (5) and (6) of Table 5 study the relationship between religious beliefs and kinship tightness in the EA. The dependent variable is a binary indicator that equals one if a society honors a moralizing god and zero otherwise, i.e., if the society has no high god or a god that is not moralizing (Q34 in the EA). The results show that societies with high kinship tightness were significantly less likely to develop beliefs in moralizing gods. The point estimates suggest that an increase in kinship tightness from zero to one is associated with a decrease in the probability of believing in a moralizing god by 24

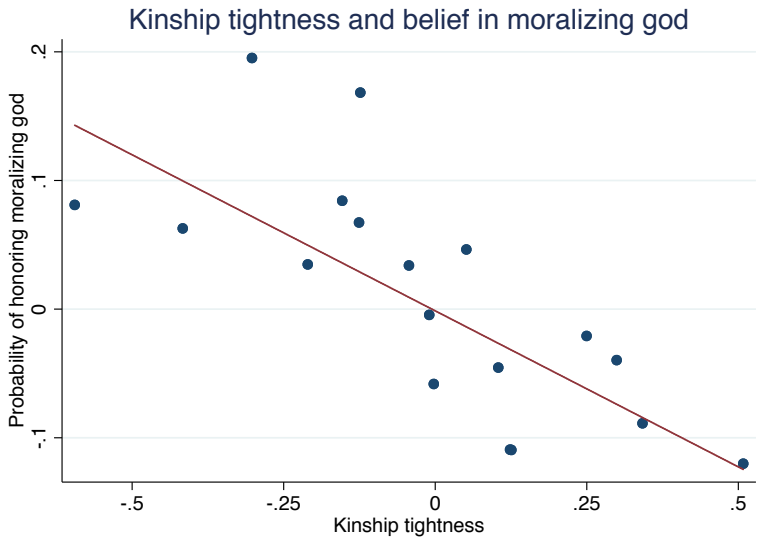


Figure 3: Bin scatter plot between kinship tightness and the probability of honoring a moralizing god. The plot is a partial correlation plots, conditional on continent fixed effects.

percentage points. This result holds up when controlling for pre-industrial heterogeneity in subsistence style, settlement patterns, institutional quality, year of observation, geography, as well as continent fixed effects.[21] Figure 3 visualizes this correlation.[22]

6.3 Moral Values

To study of the link between kinship tightness and the structure of moral values, the analysis again relies on the detailed information contained in the SCCS. Specifically, a variable (Q778) measures the extent to which people are loyal to their local community on a scale of 1–4. According to Ross (1983), who assembled these data, this variable is meant to measure the degree of in-group loyalty and "we" feelings. Columns (7)–(8) of Table 5 presents the results. Loyalty to the local community is significantly correlated with kinship tightness, both with and without covariates.

[21]Table 23 in Appendix F shows that similar results hold when I restrict the sample of ethnic groups to societies that believe in a god.

[22]Appendix D studies the relationship between kinship tightness and belief in a moralizing deity in contemporary data. Researchers such as Norenzayan (2013) have argued that the negative relationship between kinship tightness and belief might weaken or even reverse over time. The argument is that religious beliefs might become functionally redundant once their behavioral prescriptions are internalized through, say, moral values or internalized guilt. Appendix D discusses these mechanisms in more detail and provides some preliminary evidence for this theory.

7 Enforcement Devices II: Contemporary Societies

7.1 Morality: Communal vs. Individualizing Moral Values

I continue by investigating the relationship between ancestral kinship tightness and contemporary moral values, both across and within countries. For this purpose, I follow an influential recent line of work in moral psychology that exploits variation in individualizing vs. communal moral values in the MFQ (Haidt, 2012; Graham et al., 2012, 2016). The MFQ was specifically designed with the goal of measuring variation in moral principles that include both (i) "individualizing" notions of fairness, justice, and rights, and (ii) "communal" concepts such as loyalty to the in-group, betrayal, or respect for authority.

The MFQ consists of 30 questions. I work with three different dependent variables. First, for ease of interpretation, I show the results for two specific survey items that arguably directly reflect the tradeoff between a communal morality (in-group loyalty) and impartial treatment. These two questions read as follows:[23]

> *When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?*
>
> 1. *Whether or not some people were treated differently than others (0-5).*
> 2. *Whether or not someone showed a lack of loyalty (0-5).*

These two questions highlight the central conflict between a universal and communal morality, i.e., the tradeoff between impartial treatment and loyalty towards one's own group. However, to show that the results are not driven by these specific survey items, I also construct a summary statistic of the relative importance of communal over individualizing moral values by computing the first principal component, see Appendix G for details.[24]

Table 6 presents the cross-country results. Columns (1)–(3) document that kinship tightness is strongly and significantly positively correlated with the subjective moral relevance of loyalty. At the same time, kinship tightness is negatively related to the moral relevance of treating all people equally (columns (4)–(6). The stark difference between these results illustrates the more general pattern in the data, i.e., that tight

[23] I normalize responses to both questions by dividing through the sum of responses to all questions. This ensures that the procedure does not pick up variation in the overall level of concern with moral issues, but indeed captures the tradeoff between communal and individualizing values. See Enke (2017) for a detailed justification of this procedure and Appendix G for details.

[24] In Enke (2017), I show that – in a nationally representative sample of Americans – this same summary statistic is strongly correlated with individuals' propensity to favor their local community over society as a whole in issues ranging from taxation and redistribution to donations and volunteering. Thus, there is evidence that the index of the relative importance of communal moral values captures economically meaningful behavioral heterogeneity.

Table 6: Moral values across countries

	Dependent variable:								
	Moral relevance of:								
	Loyalty			Equal treatment			Rel. imp. communal values		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	0.71**	0.77**	0.85**	-0.55**	-0.62**	-1.01**	0.97***	1.00***	0.87**
	(0.28)	(0.30)	(0.33)	(0.27)	(0.28)	(0.40)	(0.28)	(0.29)	(0.38)
Historical controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Other controls	No	No	Yes	No	No	Yes	No	No	Yes
Continent FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	104	103	94	104	103	94	104	103	94
R^2	0.06	0.07	0.27	0.04	0.07	0.30	0.12	0.20	0.45

Notes. Country-level OLS estimates, robust standard errors in parentheses. The dependent variable in columns (1)–(3) is the average moral relevance of loyalty (Q14 in the MFQ). In columns (4)–(6), the dependent variable is the moral relevance of treating all people equally (Q2 in the MFQ). In columns (7)–(9), I compute the relative importance of communal moral values by computing the first principal component of the MFQ foundations fairness / reciprocity and harm / care (both of which enter with negative weights) and in-group / loyalty and respect / authority (both of which have positive weights), see Appendix G for details. The sample is restricted to countries with at least 18 respondents in the MFQ, which corresponds to the 25th percentile of the distribution. The results are robust to including the full sample of countries when I weight each observation by the square root of the number of respondents. Historical controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all computed as pertaining to contemporary populations). Other controls include distance from the equator, ethnic fractionalization, average precipitation, log land area, and ancestry-adjusted log population density in 1500. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

kinship societies place a high value on communal values. To document this formally, columns (7)–(9) show that the relative importance of communal over individualizing values is strongly positively correlated with kinship tightness, both with and without covariates. Figure 4 depicts this relationship.

Table 7 presents analogous within-country analyses in the MFQ, which is based on the sample of migrants. These regressions leverage variation in the country of birth of respondents, conditional on the same country of residence. The regressions control for both individual-level covariates and country of origin controls. Despite the different nature of variation, the results are similar to the cross-country results: kinship tightness is positively correlated with the relative importance of communal moral values.

7.2 Emotions: Shame versus Guilt

Measuring the relative importance of different emotions across cultures requires non-standard data. First, I make use of the "International Survey on Emotion Antecedents and Reactions" (ISEAR; Scherer et al., 1986; Scherer and Wallbott, 1994). In this psychological questionnaire, university students across cultures were asked to describe how they experience emotions ($N = 2,921$; 37 countries). Among other questions, respon-

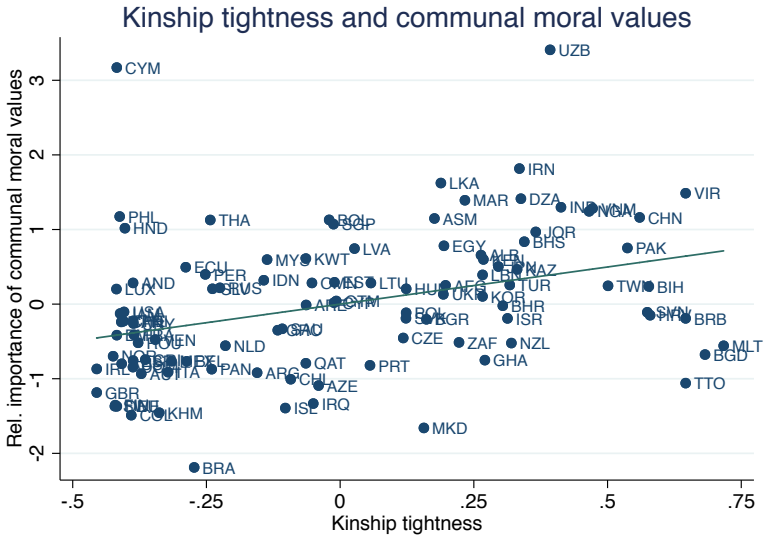


Figure 4: The figure depicts the relationship between kinship tightness and the relative importance of communal over individualizing moral values. The plot is a partial correlation plot, conditional on the historical controls in Table 6.

dents described a situation in which they experienced shame and guilt. Then, for each emotion, they were asked to describe how long-lasting (minutes, an hour, several hours, a day or more) and how intense (not very, moderately, intense, very) the feeling was.[25] I convert responses to these questions to a scale of 1–4, respectively. Then, I compute the difference in intensity and length between shame and guilt, and average these two differences to arrive at an individual-level summary statistic of the relative (self-reported) strength of shame over guilt. A country-level index is then computed as average across respondents.[26]

In addition, I develop a second measure of the relative importance of shame and guilt, which does not rely on self-reports. To this end, I exploit the idea that online search patterns reveal the salience of psychological phenomena (Stephens-Davidowitz, 2014), and analyze how often people entered shame and guilt into Google. Google Trends allows an assessment of this frequency *relative* to overall search volume, separately for each country. To avoid the potential bias that might arise from comparing search behavior across different languages, the analysis only relies on within-language variation. Accordingly, I restrict attention to languages that are an official language in at least two countries (since otherwise, no within-language variation can be exploited) and that are

[25]The ISEAR questionnaire contains many more detailed questions, including about shame and guilt. The two questions that I use are the ones that are asked initially and that represent the broadest assessment. Follow-up questions, which I have not analyzed, include detailed questions about the physiological symptoms and expressive behaviors that were associated with or following the emotion.

[26]Wallbott and Scherer (1995) analyze these data and show that they are systematically related to Hofstede's (1984) cross-cultural indices.

Table 7: Moral values: Within-country evidence (MFQ)

	Dependent variable:								
	Moral relevance of:								
	Loyalty			Equal treatment			Rel. imp. communal values		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	0.21***	0.24***	0.25***	-0.24***	-0.24***	-0.22***	0.31***	0.33***	0.32***
	(0.04)	(0.04)	(0.03)	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)	(0.05)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Country of origin controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	26506	26444	25733	26422	26360	25653	25049	24990	24319
R^2	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.05	0.05

Notes. Individual-level OLS estimates in the MFQ, standard errors (clustered at country of birth) in parentheses. The dependent variable in columns (1)–(3) is the average moral relevance of loyalty (Q14 in the MFQ). In columns (4)–(6), the dependent variable is the moral relevance of treating all people equally (Q2 in the MFQ). In columns (7)–(9), I compute the relative importance of communal moral values by computing the first principal component of the MFQ dimensions fairness / reciprocity and harm / care (both of which enter with negative weights) and in-group / loyalty and respect / authority (both of which have positive weights), see Appendix G for details. Individual level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, average precipitation, ethnic fractionalization, and ancestry-adjusted log population density in 1500. All country of origin controls are computed using the same procedure as for kinship tightness, see Section 4.2. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

covered in Jaffe et al.'s (2014) linguistic study, providing access to translations for shame and guilt. For example, in English, I entered "guilt" and "shame" separately into Google Trends and recorded how often (relative to total search volume) people across countries searched for either concept in the last five years. I repeated the same procedure for each language in the consideration set. In total, I gathered data on search frequency in 59 country-language pairs (consisting of 9 languages and 56 countries) and computed the difference in word use between shame and guilt.[27] Importantly, this procedure implies that any noise or bias in the construction of the language variable that operates at the level of languages (say, through translation) is weeded out because in the empirical analysis, I compare only populations that speak the same language.

Table 8 presents the results. Columns (1) and (2) document that kinship tightness is positively correlated with the relative strength of feelings of shame over guilt, according to the self-reports of respondents to the ISEAR. Columns (4)–(6) exploit variation within languages (by including language fixed effects) in search behavior on Google. I find that kinship tightness is significantly correlated with the relative importance of shame, also conditional on controls.

[27] See Appendix G for details.

Table 8: Shame, guilt, and punishment patterns across countries

	Dependent variable:							
	Shame – guilt					Δ Punishment [Altruistic – Revenge]		
	Self-reports		# of Google searches			Global Preference Survey		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kinship tightness	1.25***	1.46***	0.37**	0.48**	0.51**	-0.96***	-1.01***	-0.62
	(0.42)	(0.45)	(0.17)	(0.20)	(0.24)	(0.31)	(0.36)	(0.51)
Historical controls	No	Yes	No	Yes	Yes	No	Yes	Yes
Language FE	No	No	Yes	Yes	Yes	No	No	No
Other controls	No	No	No	No	Yes	No	No	Yes
Continent FE	No	No	No	No	No	No	No	Yes
Observations	35	35	59	59	57	75	75	74
R^2	0.20	0.42	0.54	0.54	0.58	0.12	0.16	0.36

Notes. Country-level OLS estimates, robust standard errors in parentheses. In columns (1)–(2), the dependent variable is the difference in the strength with which people report experiencing shame and guilt, respectively. The measure is derived by averaging the z-scores of the self-reports for the length and the intensity of the emotions, respectively. In columns (3)–(5), the dependent variable is the difference between the relative frequency of Google searches for shame and guilt in a given country-language pair, see Appendix G. In columns (6)–(8), the dependent variable is the difference between third-party and second-party punishment in the Global Preference Survey, see Appendix G for details. All dependent variables are expressed as z-scores. In columns (3)–(5), the standard errors are clustered at the country level. Historical controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all computed as pertaining to contemporary populations). Other controls include distance from the equator, ethnic fractionalization, average precipitation, log land area, and ancestry-adjusted log population density in 1500. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

7.3 Altruistic and Revenge Punishment

To study people's punishment patterns across societies, I focus on the difference between altruistic revenge and punishment. The analysis makes use of the preference measures on negative reciprocity in the GPS. The GPS explicitly includes survey items to measure both people's propensity for altruistic punishment ("How willing are you to punish someone who treats others unfairly, even if there may be costs for you?") and for second-party punishment (e.g., "How willing are you to punish someone who treats you unfairly, even if there may be costs for you?"). I again compute the difference between these variables, see Appendix G for details. Columns (6)–(8) of Table 8 show that kinship tightness is negatively correlated with the relative importance of altruistic punishment across countries.

Table 9 provides ancillary within-country regressions using the individual-level data in the GPS. Again, the dependent variable is the difference between altruistic and revenge punishment. The analysis only includes migrants, thus exploiting variation in ancestral kinship tightness across countries of birth, holding fixed respondents' current country of residence as well as other covariates. The results document that kinship tightness is negatively correlated with the relative importance of altruistic punishment.

Table 9: Punishment patterns within countries

	Dependent variable:		
	Δ Punishment [Altruistic – Revenge]		
	(1)	(2)	(3)
Kinship tightness	-0.23***	-0.21***	-0.22**
	(0.08)	(0.08)	(0.11)
Country FE	Yes	Yes	Yes
Individual level controls	No	Yes	Yes
Country of origin controls	No	No	Yes
Observations	2306	2296	2265
R^2	0.09	0.09	0.10

Notes. Individual-level OLS estimates in the GPS, standard errors (clustered at country of birth) in parentheses. The dependent variable is the difference between third-party and second-party punishment in the Global Preference Survey, see Appendix G for details. Individual-level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, average precipitation, ethnic fractionalization, and ancestry-adjusted log population density in 1500. All country of origin controls are computed using the same procedure as for kinship tightness, see Section 4.2. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

8 Robustness Checks and Extensions

8.1 Historical Institutions: A Placebo Test

The empirical analysis this paper is correlational. Still, in light of the prominence of institutional structures in in economics, it is worth asking whether the patterns established above are indeed specific to the structure of kinship systems, or whether they should more appropriately be thought of as reflecting the sophistication of institutional structures of the ethnic groups in the Ethnographic Atlas. Of course, institutional structures are plausibly endogenous to the kinship system, especially given kinship played a fundamental role in structuring people's lifes long before formal governnance structures evolved. Nevertheless, I evaluate the role of institutions in two separate ways using the standard proxy for institutional sophistication in the EA, i.e., the number of levels of jurisdictional hierarchies beyond the community level. This variable has previously been shown to be meaningful in that it is predictive of contemporary institutional sophistication (Giuliano and Nunn, 2013).

First, the analyses above explicitly control for this variable. As documented above, kinship tightness is consistently related to in-group favoritism, trust and the structure of enforcement devices conditional on institutions.

Second, I investigate whether historical institutional sophistication is similarly con-

sistently correlated with patterns of favoritism, trust, and enforcement devices as kinship tightness. To this end, Tables 14 through 19 in Appendix E present an extensive set of placebo regressions. Here, I re-run all analyses from Sections 5, 6, and 7 – across historical ethnic groups, contemporary countries, and across individuals within countries – yet with institutions instead of kinship systems as explanatory variable. The results document that institutions are not nearly as predictive of the structure of cooperation systems as kinship tightness. This is true across all levels of aggregation, but perhaps most salient in the individual-level within-country analyses: here, across the eight dependent variables that I considered above, institutions are *never* significantly correlated with the dependent variable of interest (compare Tables 17–19).

I hence conclude that the systematic relationship between kinship tightness and the structure of cooperation systems results does not reflect differences in the institutional sophistication of historical ethnic groups.

8.2 Individual-Level Income and Education

Tables 28 through 29 replicate all individual-level analyses in the World Values Survey, European Social Survey, Global Preference Survey, and Moral Foundations Questionnaire, yet additionally control for education and – if available – household income.[28] All results reported in the main text go through virtually unchanged if these additional (more endogenous) covariates are accounted for.

8.3 Excluding Countries with High Migration Inflows

The contemporary analyses rely on the matching from ethnic groups in the Ethnographic Atlas to contemporary populations (Giuliano and Nunn, 2017). A potential concern is that ancestral kinship tightness is measured with higher error in those countries that have experienced large post-Columbian migration inflows. To document that this does not spuriously generate the results, Table 30 in Appendix F.6 replicates all cross-country regressions, yet restricts the sample to countries in which at least 80% of the population are native according to the world migration matrix of Putterman and Weil (2010). This procedure excludes large parts of the Americas and Oceania from the sample. If anything, the results become even stronger.

[28]Income is not available in the MFQ. In the ESS, income is measured inconsistently across waves, so that the inclusion of this variable would result in a huge drop in the number of observations.

8.4 Separate Kinship Tightness Proxies

Thus far, the empirical analysis has relied on the summary statistic of kinship tightness that was derived from four characteristics of ethnic groups in the EA. While the idea behind this index – that kinship is a multidimensional concept – is in line with how anthropologists think about kinship, it may be of interest to ask whether any single of these four characteristics alone is sufficient to establish the results in this paper. To assess this, Tables 33–40 in Appendix F.7 replicate one specification for each dependent variable from the analyses above by using each kinship tightness variable separately. The results are strongest for the presence of lineages and localized clans. At the same time, the variables that proxy for extended family households and joint post-marital residence are also often significantly correlated with the outcome variables.

9 Kinship Tightness and Development

The key insight of this paper is that different types of kinship systems lead to distinct cooperation systems. This section provides a preliminary discussion of the perhaps obvious question: what is the relationship between these different systems and economic development?

Anthropologists, in particular Henrich (n.d.), have argued that the nature of the relationship between kinship systems and development may have changed over time. The argument has two parts. First, tight kinship is believed to have initially evolved to sustain effective medium-scale cooperation in agriculture (Johnson and Earle, 2000; Talhelm et al., 2014; Gowdy and Krall, 2016). For example, in contrast to hunter-gatherer subsistence, agriculture requires cooperation for planting or harvesting crop under time pressure, building irrigation systems, and defending territory.[29] Thus, tight kinship is not believed to have been "detrimental" at early stages of development.

Second, tight kinship might, however, have constituted a structural disadvantage in the transition from agricultural to more advanced production modes: tight kinship prevents people from cooperating and interacting broadly, trusting strangers, participating in specialization and trade, and being geographically mobile, activities that increasigly paid off after the Industrial Revolution took place (e.g., Henrich, n.d.).[30]

[29]This view is consistent with recent work in anthropology. For example, evidence suggests that farming societies are indeed especially prone to marry within clan (Walker, 2014). In contrast, both contemporary and ancient hunter-gatherers have large social networks and predominantly reside with genetically unrelated individuals (Hill et al., 2011; Sikora et al., 2017). In my data, the ethnic group-level Kinship Tightness Index is indeed strongly correlated with the extent to which an ethnic group subsisted on agriculture ($\rho = 0.31$, $p < 0.01$).

[30]See Blumberg and Winch (1972) for an early account of the "curvilinear" hypothesis discussing the non-linearity of the relationship between kinship systems and development.

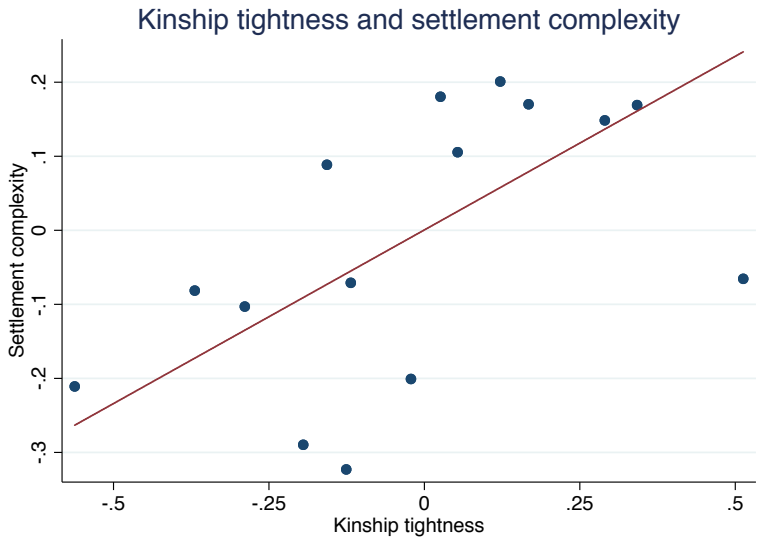


Figure 5: Bin scatter plot between kinship tightness and settlement complexity across ethnic groups in the Ethnographic Atlas. The plot is a partial correlation plot, conditional on continent fixed effects.

Empirically assessing these accounts requires a dynamic analysis. I begin by considering the relationship between kinship tightness and development in historical ethnic groups and then move on to a dynamic country-level analysis. The appropriate proxy for development in pre-industrial times is population density (Ashraf and Galor, 2011). The EA contains information on the complexity of local settlements in eight ordered categories (from nomadic to semisedentary to separated hamlets to complex). I use this variable as a proxy for local population density. Figure 5 provides a bin scatter plot of the relationship between kinship tightness and settlement complexity, conditional on continent fixed effects. The variables are significantly positively correlated ($\rho = 0.27$, $p < 0.01$). Table 41 in Appendix F investigates this relationship more rigorously through multiple regression analyses that control for an ethnic group's dependence on agriculture and animal husbandry as well as various geographic and climatic characteristics. Throughout, kinship tightness is positively linked to settlement complexity. Recall that by construction of the EA, this pattern describes living conditions *prior to Industrialization*.

In a second step, I perform a dynamic analysis at the country level. Specifically, I regress country-level log population density in any given available year since 1200 CE on kinship tightness and then analyze the evolution of OLS coefficients over time.[31] To keep the analysis meaningful in light of the changes in population structures throughout the post-Columbian migration flows, I restrict the sample to those 127 countries in which at least 50% of the current population are native, according to the migration matrix of

[31]The population density data are from the HYDE dataset, see Appendix G.

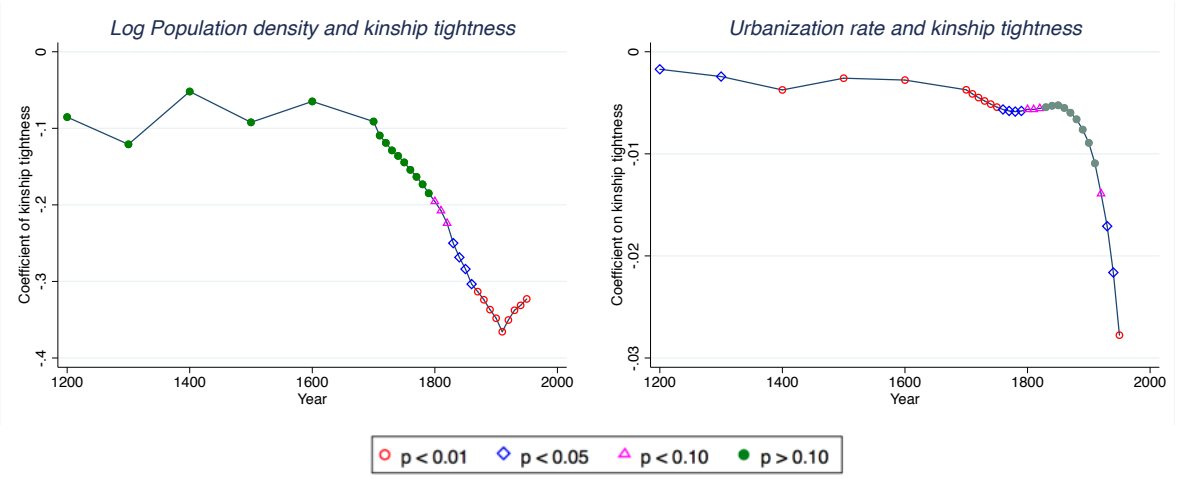


Figure 6: Kinship tightness and development over time. The left panel shows the results of OLS regressions in which I regress country-level log population density in a given year on kinship tightness. Each dot represents the OLS point estimate for the regression in the respective year, and the color coding denotes levels of significance. In all regressions, the sample is restricted to countries in which at least 50% of the population are native, resulting in a sample of 127 countries. The right panel follows an analogous logic, except that the dependent variables are urbanization rates.

Putterman and Weil (2010). The left panel of Figure 6 presents the results. In this figure, each dot represents the regression coefficient of kinship tightness from a given year and the color coding is used to denote statistical significance.[32]

As Figure 6 shows, the relationship between country-level population density and kinship tightness is initially small, statistically insignificant, and flat over time. Thus, in combination with the ethnic group-level results summarized in Figure 5, it appears as if prior to industrialization, kinship tightness was uncorrelated – or even positively correlated – with local development.

However, Figure 6 documents that around the onset of the Industrial Revolution, the kinship tightness coefficient rapidly increases in absolute size and becomes statistically significant. Moreover, a set of Seemingly Unrelated Regressions shows that the regression coefficient in 1900 is statistically significantly larger than those in, e.g., 1200, 1500, 1600, 1700, and 1800 ($p < 0.01$). That is, around the Industrial Revolution, a negative relationship between kinship tightness and development emerges.

The right panel of Figure 6 replicates the preceding analysis, but uses urbanization rates instead of population density as the dependent variable. The resulting picture is very similar.[33] Taken together, the data shows that the structure of kinship systems is systematically related to population density over time in ways that are broadly consistent with anthropological arguments about how the different cooperation systems that I documented above might be relevant for economic development.

[32]Table 42 in Appendix F shows the regressions results underlying the construction of Figure 6.
[33]Today, the correlation between kinship tightness and GDP p/c is $\rho = -0.51$.

10 Conclusion

Based on prominent theories in psychology and anthropology, this paper has presented an analysis of cultural variation in cooperation patterns and corresponding enforcement devices. The results suggest that kinship systems matter: they are intimately linked to the way people cooperate with and trust one another, as well as the formal and informal mechanisms that enforce cooperation. In particular, basic aspects of human psychology appear to have adapted to serve the functional role of enforcing cooperation within specific social structures. On the one hand, the broad cooperation and trust patterns of loose kinship societies are supported by large-scale institutions, third-party punishment, and "internal police officers" that broadly sanction wrongdoing even outside of the in-group, including moralizing gods, individualizing moral values, and guilt. On the other hand, the in-group oriented cooperation system of tight kinship societies appears to be sustained by *local* institutions, revenge-taking, communal moral values, and the increased importance of being shamed in front of others.

These results shed light on two prominent puzzles in cross-cultural research. First, the results provide a rationale for why we observe such large cultural variation along many dimensions: because some cultural traits regulate different cooperation regimes, they differ across societies. Second, the analysis illuminates the co-occurrence of various cultural traits. Across the social sciences, researchers with an interest in cultural variation have noted that cultural traits are frequently correlated, yet insights into why that is the case are rare (Alesina et al., 2015). The present paper sheds light on this issue by showing that different cultural traits serve a similar role in enforcing cooperation within a given regime, so that their co-occurrence is simply a by-product of the fact that they discipline prosocial behavior in similar ways.

A fascinating question for future study concerns the relationship between kinship systems and development over time. In particular, based on the correlations presented in this paper, it is conceivable that the internal structure of a social cooperation system that proved to be efficient in the past – tight kinship for the purposes of agricultural production – confers disadvantages under an economic system that requires increased interactions with strangers.

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ONLINE APPENDIX

A Kinship Tightness Index

A.1 Construction of Index in Ethnographic Atlas

This section describes the construction of the Kinship Tightness Index in detail. I start by describing the construction of the four components. For each component, I list how each category in the EA is classified and the number of observations in parentheses. Note that the number of observations does not perfectly correspond to the numbers in the codebook of the EA because my dataset includes the ethnic groups that were added by Giuliano and Nunn (2017).

Extended vs. nuclear family. Q8 in EA. Binary variable that takes on a value of:

- Zero, if domestic organization is:
  - Independent polyandrous families (3)
  - Polygynous: unusual co-wives pattern (59)
  - Polygynous: usual co-wives pattern (222)
  - Minimal (stem) extended families (45)
  - Small extended families (323)
  - Large extended families (236)
- One, if domestic organization is:
  - Independent nuclear family, monogamous (122)
  - Independent nuclear family, occasional polygyny (273)

Post-marital residence. Q11. Binary variable that takes on a value of:

- Zero, if post-wedding residence is:
  - Couple to either group or neolocal (164)
  - No common residence (8)
- One, if post-wedding residence is:
  - Wife to husband's group (915)
  - Husband to wife's group (200)

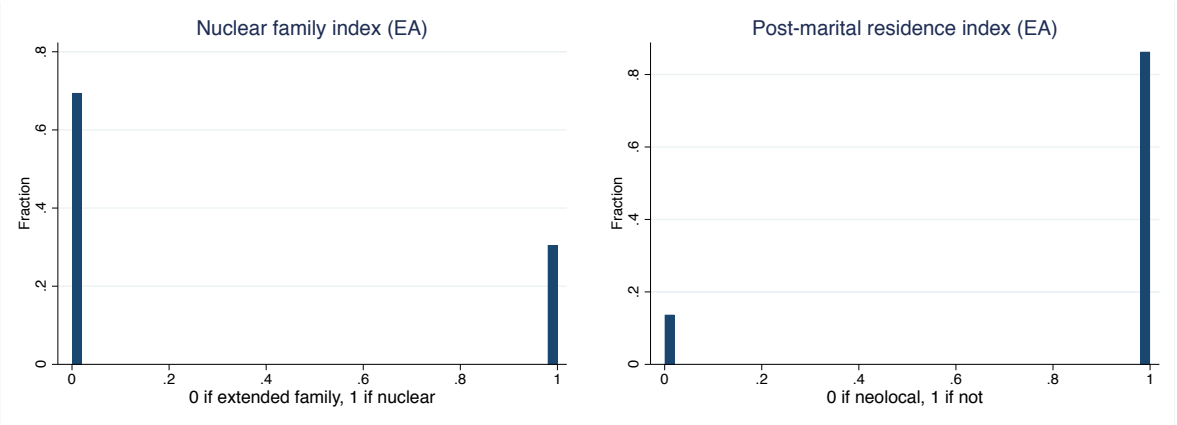


Figure 7: Distribution of extended vs. nuclear family index (left panel) and post-marital residence index (right panel).

Lineages. Q43. Binary variable that takes on a value of:

- Zero, if descent is:
  - Patrilineal (593)
  - Duolateral (52)
  - Matrilineal (161)
  - Quasi-lineages (12)
  - Ambilineal (49)
  - Mixed (50)
- One, if descent is: Bilateral (374)

Segmented communities and localized clans. Q15. Binary variable that takes on a value of:

- Zero, if community organization is:
  - Demes, not segregated into clan barrios (86)
  - Agamous communities (404)
  - Exogamous communities, not clans (119)
- One, if community organization is:
  - Segmented communities without local exogamy (262)
  - Segmented communities, localized clans, local exogamy (9)
  - Clan communities, or clan barrios (242)

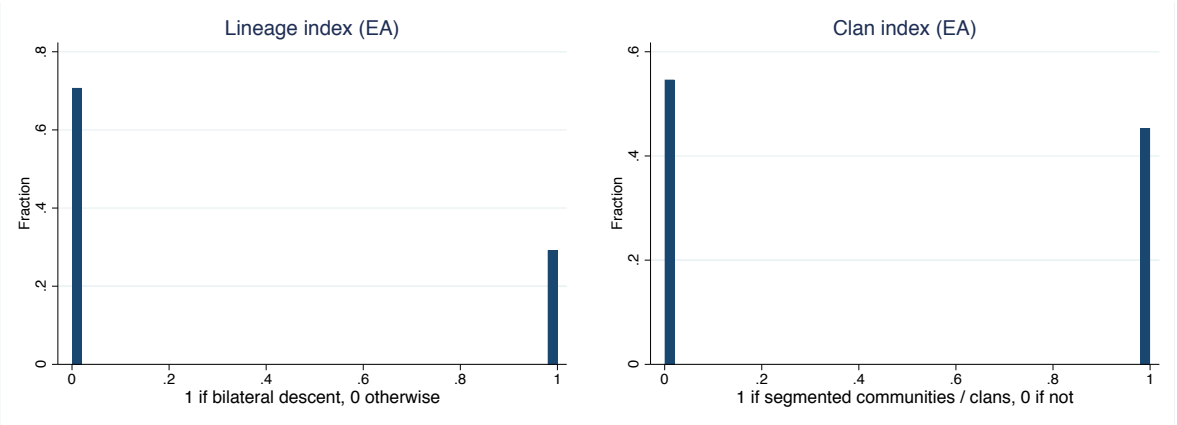


Figure 8: Distribution of lineage index (left panel) and clan index (right panel).

Kinship Tightness Index. First principal component of extended vs. nuclear family, post-wedding residence, lineages, and segmented communities / clans. The index loads negatively on independent nuclear families (weight 0.3699), positively on joint residence (0.4558), negatively on bilateral descent (0.5820), and positively on the presence of segmented communities / clans (0.5628).

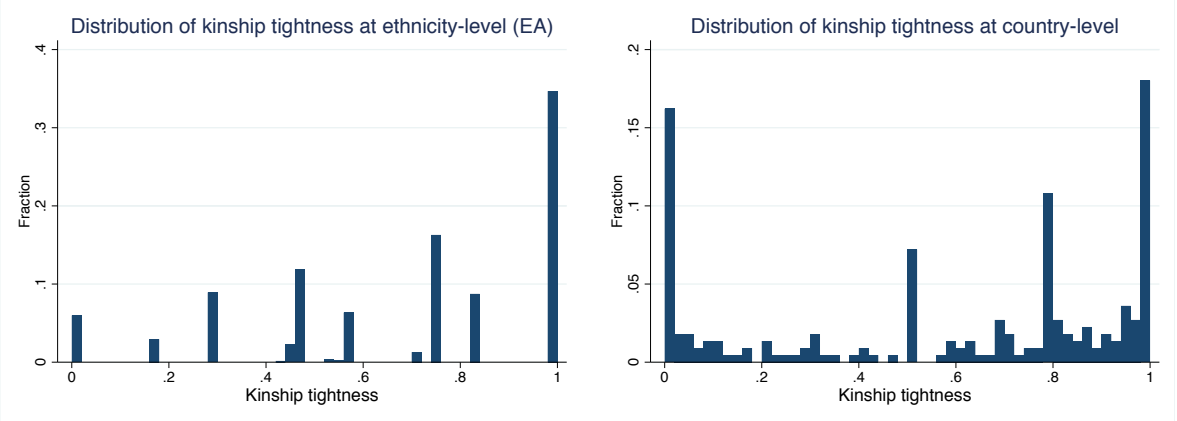


Figure 9: Distribution of kinship tightness at ethnic group level (left panel) and country level (right panel).

A.2 Distribution of Kinship Tightness

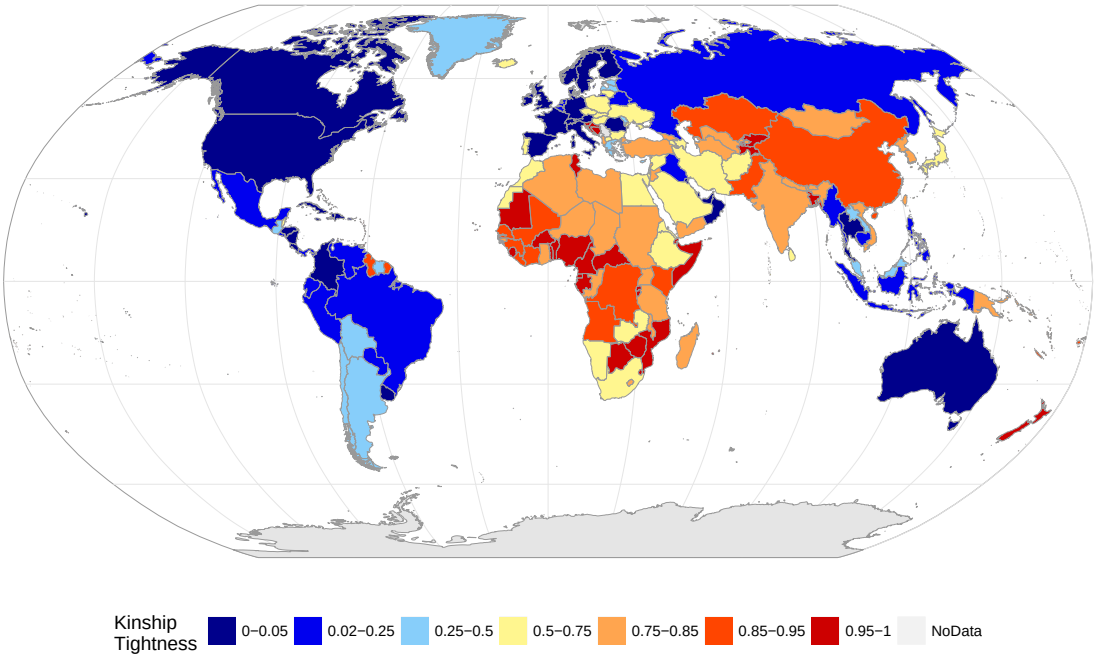


Figure 10: Distribution of Kinship Tightness Index across countries

B Within-Country Evidence on Helping In-Group Members

Table 2 has provided evidence for a cross-country difference in how members of tight kinship societies treat in- and out-group members. Table 10 shows that – analogously to the cross-country findings – tight ancestral kinship is also postively associated with people's willingness to help in-group members *within* countries. For this purpose, the analysis again exploits individual-level variation in ancestral kinship tightness in the WVS and ESS. In these analyses, the unit of observation is always an individual, yet the Kinship Tightness Index is again assigned (i) based on the ethnicity of the respondent (WVS) or (ii) based on the respondents' parents' countries of birth (ESS).

The WVS asks respondents how important it is for them to help people nearby. The ESS elicits respondents' views about the importance of (i) helping people around them

Table 10: Attitudes about helping in-group members (WVS and ESS)

Variation in KTI is across:	World Values Survey Ethnicities		European Social Survey Second-generation migrants			
	Dependent variable: Important to:					
	Help people nearby		Help people around self		Loyal to friends	
	(1)	(2)	(3)	(4)	(5)	(6)
Kinship tightness	0.35***	0.29**	0.061**	0.046	0.013	-0.00082
	(0.12)	(0.13)	(0.02)	(0.04)	(0.03)	(0.04)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	No	Yes	No	Yes
Ethnicity-level controls	No	Yes	No	No	No	No
Country of origin controls	No	No	No	Yes	No	Yes
Observations	15782	14487	20154	19480	20167	19491
R^2	0.06	0.07	0.07	0.09	0.07	0.08

Notes. Individual-level OLS estimates in the WVS / ESS, standard errors in parentheses. In columns (1)–(3), the sample consists of individuals in the WVS. The dependent variable is the importance people attach to helping others nearby. The standard errors are clustered at the ethnic group level. Individual level controls include gender, age, and age squared. Ethnicity level controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, average precipitation, distance from the equator, and year of observation in the EA. In columns (4)–(6), the sample includes individuals in the ESS and the standard errors are clustered at the level of the country of birth of the father times the country of birth of the mother. Individual level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, average precipitation, ethnic fractionalization, and ancestry-adjusted log population density in 1500. All country of origin controls are computed using the same procedure as for kinship tightness, see Section 4.2. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

and to care for their well-being and (ii) being loyal to friends. I interpret these survey questions as asking about respondents' attitudes towards their in-group.[34] Columns (1)–(2) establish that ancestral kinship tightness is positively correlated with the importance people attach to helping in-group members in the WVS. This relationship holds conditioning on individual-level covariates as well as historical ethnicity-level controls from the EA, including dependence on agriculture, number of jurisdictional hierarchies above the local level, and year of observation.

Columns (3) and (4) show that similar results obtain in the ESS regarding the survey question that asks about "helping people around oneself". However, as shown in columns (5)–(6), being loyal to friends is uncorrelated with ancestral kinship tightness.

[34]The WVS also contains a question that asks people how important it is for them to "do something for the good of society". This question is arguably difficult to interpret given that "society" could pertain either to the local community or to, e.g., the country as a whole. In any case, in analogous regressions to columns (1) and (2) of Table 10, kinship tightness is significantly positively correlated with this variable.

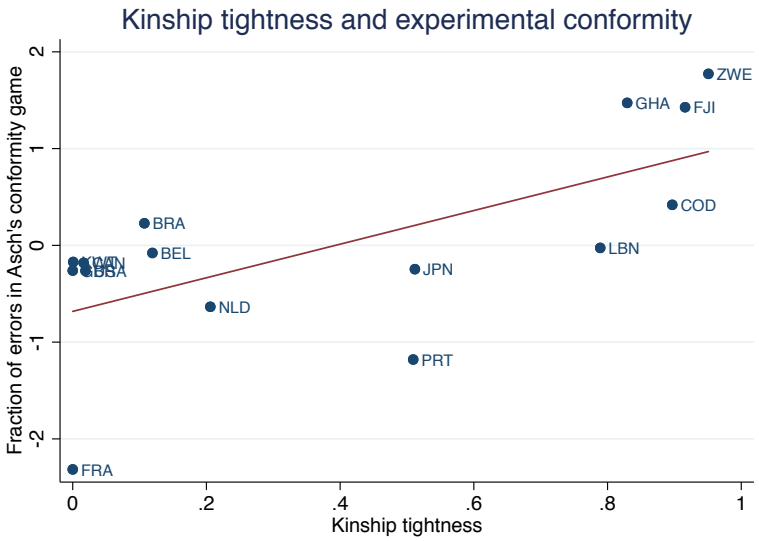


Figure 11: Relationship between country-level kinship tightness and conformity in the game of Asch (1956).

C Norm Compliance in Contemporary Societies

In historical data, tight kinship societies regulated behavior through strong local, more informal institutions, which are akin to social norms. This Appendix studies whether contemporary societies with tight ancestral kinship place a higher value on norm compliance. The study of social norms can be partitioned into people's *behavioral* conformity to social norms, and their intrinsic *values* related to norm adherence. The standard method to experimentally measure norm *compliance* in social psychology consists of Asch's (1956) famous conformity game. Here, subjects are asked to point out the longest line out of a set of three, and are implicitly induced to give blatantly obvious wrong answers because seven other "subjects" (who are actually confederates) provided the same mistaken response beforehand. That is, these confederates uniformly point to the same wrong line to make the subject feel like they "have to" conform. Since the implementation of this seminal study, researchers have replicated this design across 17 countries, as summarized in the meta-study of Bond and Smith (1996). This meta-study contains a total of 133 studies. The measure of conformity is the fraction of wrong responses in this experimental game, i.e., the fraction of subjects who follow the confederates. Figure 11 documents that kinship tightness is strongly positively correlated ($\rho = 0.69$) with conformity in Asch's game.

Second, to assess the extent to which people's conformity with group norms is driven by values related to norm adherence, the analysis makes use of a range of questions in the WVS and ESS that ask people to assess to which extent it is important to "be-

Table 11: Attitudes related to norm adherence: Within-country evidence (WVS and ESS)

Variation in KTI is across:	World Values Survey Ethnicities		European Social Survey Second-generation migrants					
	Dependent variable: Important to:							
	Behave properly		Behave properly		Follow rules		Not draw attention	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kinship tightness	0.11***	0.12	0.15***	0.095**	0.11***	0.093**	0.13***	0.040
	(0.04)	(0.08)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnicity-level controls	No	Yes	No	No	No	No	No	No
Country of origin controls	No	No	No	Yes	No	Yes	No	Yes
Observations	26025	24641	20033	19425	19991	19382	20051	19442
R^2	0.07	0.09	0.06	0.06	0.09	0.09	0.10	0.10

Notes. Individual-level OLS estimates in the WVS / ESS, standard errors in parentheses. In columns (1)–(2), the sample consists of individuals in the WVS. The dependent variable is the importance people attach to behaving properly. The standard errors are clustered at the ethnic group level. Individual level controls include gender, age, and age squared. Ethnicity level controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, average precipitation, distance from the equator, and year of observation in the EA. In columns (3)–(8), the sample includes individuals in the ESS and the standard errors are clustered at the level of the country of birth of the father times the country of birth of the mother. The dependent variables are the extent to which respondents deem (i) behaving properly, (ii) following rules, and (iii) not drawing attention important. Individual level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, average precipitation, ethnic fractionalization, and ancestry-adjusted log population density in 1500. All country of origin controls are computed using the same procedure as for kinship tightness, see Section 4.2. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

have properly", "follow the rules", and "not draw attention". This analysis takes place at the individual level within countries, see Table 11. Columns (1)–(2) exploit variation across native ethnic groups within countries in the WVS to show that valuing proper behavior is positively related to kinship tightness, although these correlations are not or only marginally statistically significant. Similarly, columns (3)–(8) exploit variation across second-generation migrants in the ESS to show that ancestral kinship tightness (of mother's and father's country of birth) are correlated with the importance of following social norms. Here, the dependent variables are the importance respondents assign to valuing proper behavior, rule-following, and not drawing attention, respectively.

D The Dynamics of Religious Beliefs: A Cautious Approach

This Appendix studies the presence of belief in a moralizing god in contemporary data. As explained above, moralizing gods in principle have a larger upside in the impersonal exchange system of loose kinship. However, the researchers outside of economics that have theorized about the evolution of prosocial religions have pointed out that the relationship between the presence of impersonal exchange and a moralizing god may weaken or even reverse over time (Norenzayan and Shariff, 2008; Norenzayan, 2013; Norenzayan et al., 2016). The argument is that once a moralizing god has allowed societies to enforce cooperation, people have internalized many of the behavioral prescriptions that are associated with a moralizing god (e.g., through individualizing moral values and internalized guilt) and / or have developed formal institutions that sanction defectors. Thus, the argument goes, at some point a belief in a moralizing deity might become functionally redundant.[35] However, these theories do not make a prediction about *when* this weakening or reversal should occur so that any correlation found in contemporary data could in principle be rationalized post hoc.

Studying the relationship between ancestral kinship tightness and belief in a moralizing god is also complicated by the fact that – due to the spread of the Abrahamic religions – the number of independent religions and hence observations is very small. In addition, classifications of the extent to which modern religions are moralizing are not readily available. I attempt to circumvent these problems by analyzing belief in hell and heaven in the WVS. Given that post-mortal punishment and reward are some of the key characteristics of moralizing religions, I use responses to these answers as proxy for the extent to which people today honor a moralizing deity. It is worth pointing out that these variables are an imperfect proxy for belief in moralizing deities because the WVS data do not allow me to evaluate whether people believe that entering hell and heaven is actually based on their prosocial behavior towards other humans.

With this caveat in mind, Table 6 investigates the relationship between ancestral kinship tightness and belief in hell and heaven across contemporary countries. The results document that kinship tightness is consistently positively related to belief in hell and heaven, respectively, yet these correlations are not statistically significant once covariates are accounted for. Table 13 documents that very similar results hold in within-country cross-ethnic group analyses.

[35]The metaphor that researchers such as Norenzayan and Shariff (2008) and Norenzayan (2013) use is that societies might initially use a moralizing god to "climb up the evolutionary ladder" of cooperation, yet once they have arrived at the top stairs, they "kick away the ladder on which they climbed up".

Table 12: Religious beliefs across countries

	Dependent variable:					
	Belief in hell			Belief in heaven		
	(1)	(2)	(3)	(4)	(5)	(6)
Kinship tightness	0.80***	0.61*	0.24	0.31	0.044	-0.28
	(0.30)	(0.33)	(0.30)	(0.32)	(0.36)	(0.38)
Historical controls	No	Yes	Yes	No	Yes	Yes
Other controls	No	No	Yes	No	No	Yes
Continent FE	No	No	Yes	No	No	Yes
Observations	79	79	78	64	64	63
R^2	0.08	0.21	0.70	0.01	0.20	0.70

Notes. Country-level OLS estimates, robust standard errors in parentheses. The dependent variable in columns (1)–(3) is belief in hell and in (4)–(6) it is belief in heaven, both from the WVS. Historical controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all computed as pertaining to contemporary populations). Other controls include distance from the equator, ethnic fractionalization, average precipitation, log land area, and ancestry-adjusted log population density in 1500. The dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: Religious beliefs: Within-country evidence (WVS)

	Dependent variable:					
	Belief in hell			Belief in heaven		
	(1)	(2)	(3)	(4)	(5)	(6)
Kinship tightness	0.14***	0.14***	0.023	0.056	0.043	0.057
	(0.03)	(0.03)	(0.03)	(0.08)	(0.08)	(0.07)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	Yes	No	Yes	Yes
Ethnicity-level controls	No	No	Yes	No	No	Yes
Observations	30004	29942	24224	15344	15337	9814
R^2	0.35	0.35	0.30	0.38	0.39	0.40

Notes. Individual-level OLS estimates in the WVS, standard errors (clustered at ethnic group level) in parentheses. The dependent variable in columns (1)–(3) is belief in hell in the WVS. In columns (4)–(6), it is belief in heaven. Individual level controls include gender, age, and age squared. Ethnicity level controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, average precipitation, distance from the equator, and year of observation in the EA. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

E Placebo Analysis: Historical Institutions as Explanatory Variable

This Appendix presents a placebo analysis. The purpose is to document that historical kinship tightness is much more consistently related to the structure of cooperation and psychological enforcement devices than historical institutions. To make this point, I relate all dependent variables from the analysis in the main text to the number of levels of jurisdictional hierarchies above the local level in the Ethnographic Atlas. This is the standard measure of institutional sophistication in the EA that the literature has used (Alesina et al., 2013; Giuliano and Nunn, 2013, 2017). To work with this variable in contemporary data (both across countries and across migrants), I again follow Giuliano and Nunn (2017) in constructing an ancestry-adjusted version of the jurisdictional hierarchies variable in exactly the same fashion as for the kinship tightness variable, i.e., by matching contemporary linguistic groups to the ethnic groups in the EA.

Table 14 presents an analysis of the dependent variables in the Ethnographic Atlas. Here, institutions are positively related to belief in a moralizing god, but uncorrelated with loyalty to the local community (moral values) or the number of levels of jurisdictional hierarchies at the local level. Moreover, institutional quality above the local level is *positively* correlated with the strength of local enforcement and the extent to which obedience is inculcated into children. Thus, institutional quality does not generate the distinctive pattern of kinship tightness, i.e., positive correlations with some and negative correlations with other enforcement devices.

Tables 15 through 16 present the contemporary country-level analyses. Here, again, historical institutional sophistication is very weakly and inconsistent related to the outcome variables and often even has the "wrong" sign. Moreover, when kinship tightness and institutional sophistication are jointly inserted into the regression, kinship tightness almost always continues to be statistically significant.

Finally, Tables 17 through 19 present the individual-level within-country analyses with institutions as explanatory variable. In the WVS, historical institutional sophistication is not significantly correlated with *any* dependent variable, i.e., the importance of helping in-group members, trust, the difference between in-group and out-group trust, and the importance of behaving properly. Similar patterns hold in analyses across second-generation migrants in the ESS (Table 17), MFQ (Table 18) and GPS (Table 19). In fact, in *none* of the within-country analyses is the sophistication of historical institutions significantly related to the structure of psychological enforcement devices.

In sum, these patterns suggest that the consistent pattern that links kinship tightness, cooperation, trust, and psychological enforcement devices, is not an artifact of variations

in institutional quality.

Table 14: Placebo analysis in Ethnographic Atlas: Historical institutions as explanatory variable

	Dependent variable:							
	Δ Violence		Moralizing god		Loyalty local community		Local jurisd. hierarchy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Jurisdictional hierarchy beyond local community	0.57*** (0.15)	0.50*** (0.16)	0.15*** (0.02)	0.15*** (0.02)	0.16 (0.14)	0.080 (0.14)	0.059* (0.04)	0.088*** (0.03)
Kinship tightness		0.76* (0.44)		-0.21*** (0.06)		0.88** (0.42)		1.36*** (0.11)
Continent FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	60	60	682	682	81	81	1000	1000
R^2	0.25	0.29	0.30	0.31	0.04	0.09	0.16	0.28

Notes. Historical ethnic group-level OLS estimates, robust standard errors in parentheses. See Table 5 for details on the dependent variables. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 15: Placebo analysis across countries: Historical institutions as explanatory variable (1/3)

	Dependent variable:							
	Favoritism		Trust					
	Frac. jobs kin		Δ [In – Out] Trust		Δ [Family – others] Trust		General trust	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Jurisdictional hierarchy beyond local community	-0.063 (0.14)	0.070 (0.14)	0.27* (0.15)	0.44*** (0.16)	0.19 (0.12)	0.32** (0.13)	0.28 (0.18)	0.22 (0.19)
Kinship tightness		0.79*** (0.24)		1.20*** (0.30)		0.88*** (0.33)		-0.47 (0.32)
Observations	114	114	74	74	74	74	94	94
R^2	0.00	0.08	0.03	0.21	0.01	0.11	0.04	0.06

Notes. Country-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 16: Placebo analysis across countries: Historical institutions as explanatory variable (2/3)

	Dependent variable:											
	Shame vs. guilt				Moral values						Δ Punishm. [Altruistic. – Revenge]	
	Google		Self-reports		Loyalty		Equal treatment		Imp. communal values		GPS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Jurisdictional hierarchy beyond local community	-0.032	0.11	-0.31	0.067	0.050	0.15	0.13	0.061	-0.23**	-0.11	0.22	0.049
	(0.14)	(0.15)	(0.23)	(0.20)	(0.12)	(0.13)	(0.17)	(0.16)	(0.11)	(0.12)	(0.14)	(0.15)
Kinship tightness		0.42**		1.31**		0.76**		-0.52*		0.92***		-0.93***
		(0.17)		(0.48)		(0.30)		(0.27)		(0.29)		(0.33)
Language FE	Yes	Yes	No	No	No	No	No	No	No	No	No	No
Observations	59	59	35	35	104	104	104	104	104	104	75	75
R^2	0.50	0.54	0.04	0.20	0.00	0.07	0.01	0.04	0.02	0.13	0.02	0.12

Notes. Country-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 17: Placebo analysis in WVS and ESS (individual level): Historical institutions as explanatory variable

Variation in KTI is across:	World Values Survey: Ethnicities						ESS: 2nd gen. migrants	
	Dependent variable:							
	Δ Trust [In- vs. out-group]		Δ Trust [Family vs. others]		General trust		General trust	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Jurisdictional hierarchy beyond local community	-0.069*	-0.022	-0.0069	0.018	0.0039	0.00077	0.0093	-0.0095
	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Kinship tightness		0.41***		0.22***		-0.070		-0.13***
		(0.08)		(0.04)		(0.05)		(0.04)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22044	22044	22044	22044	42231	42231	20656	20656
R^2	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.10

Notes. Individual-level OLS estimates in the WVS / ESS, standard errors in parentheses. In columns (1)–(6), the sample consists of individuals in the WVS. The dependent variables are pthe difference in average trust in in-group and out-group, the difference in trust between family and all other groups, and generalized trust, respectively, compare Table 3. The standard errors are clustered at the ethnic group level. In columns (7)–(8), the sample includes individuals in the ESS and the standard errors are clustered at the level of the country of birth of the father times the country of birth of the mother. The dependent variable is generalized trust. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 18: Placebo analysis in MFQ (individual level): Historical institutions as explanatory variable

	Dependent variable: Moral relevance of:					
	Loyalty		Equal treatment		Rel. imp. communal values	
	(1)	(2)	(3)	(4)	(5)	(6)
Jurisdictional hierarchy beyond local community	0.033	0.068***	-0.023	-0.061*	0.0061	0.055
	(0.04)	(0.02)	(0.05)	(0.04)	(0.05)	(0.04)
Kinship tightness		0.23***		-0.27***		0.33***
		(0.03)		(0.05)		(0.05)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26506	26506	26422	26422	25049	25049
R^2	0.01	0.02	0.02	0.03	0.02	0.03

Notes. Individual-level OLS estimates in the MFQ, robust standard errors (clustered at country of birth) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 19: Placebo analysis in GPS (individual level): Historical institutions as explanatory variable

	Dependent variable:	
	Δ Punishment [Altruistic – Revenge]	
	(1)	(2)
Jurisdictional hierarchy beyond local community	-0.0030	-0.076
	(0.05)	(0.06)
Kinship tightness		-0.28***
		(0.10)
Country FE	Yes	Yes
Observations	2306	2306
R^2	0.08	0.09

Notes. Individual-level OLS estimates in the GPS, robust standard errors (clustered at country of birth) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F Additional Tables

F.1 Ancestral Kinship Tightness and Contemporary Individualism

Table 20: Kinship tightness and proxies for individualism

	Dependent variable:								
	Individualism			Family ties			Pronoun drop allowed		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	-0.99***	-0.92***	-1.32***	0.79**	0.66*	0.96**	0.95**	1.26**	1.47***
	(0.26)	(0.27)	(0.30)	(0.34)	(0.35)	(0.40)	(0.44)	(0.48)	(0.28)
EA controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Other controls	No	No	Yes	No	No	Yes	No	No	Yes
Continent FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	100	99	97	66	66	65	110	108	94
R^2	0.13	0.25	0.70	0.08	0.21	0.67	0.12	0.22	0.58

Notes. Country-level OLS estimates, robust standard errors in parentheses. In columns (7)–(9), the standard errors are clustered at the dominant language in a country. The dependent variable in columns (1)–(3) is the individualism variable of Hofstede (1984). In columns (4)–(6), it is family ties as discussed in Alesina and Giuliano (2013), and in columns (7)–(9) it is the fraction of the population that speaks a language which allows dropping the pronoun, see Appendix G. Historical controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all computed as pertaining to contemporary populations). Other controls include distance from the equator, ethnic fractionalization, average precipitation, log land area, and ancestry-adjusted log population density in 1500. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.2 Separate Trust Questions

Table 21: Trust across countries

	Dependent variable:					
	Trust in:					
	Family	Neighbors	People know	Meet first time	Other religion	Foreigners
	(1)	(2)	(3)	(4)	(5)	(6)
Kinship tightness	0.15	0.55*	-0.60*	-0.69**	-0.77**	-1.08***
	(0.28)	(0.32)	(0.34)	(0.32)	(0.33)	(0.32)
Observations	77	75	75	74	75	74
R^2	0.00	0.04	0.05	0.06	0.08	0.16

Notes. Country-level OLS estimates, robust standard errors in parentheses. The dependent variables are people average trust levels in family, neighbors, people they know, people they meet for the first time, people of another religion, and people of foreign nationality, respectively. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 22: Trust patterns: Within-country evidence

	Dependent variable: Trust in:					
	Family	Neighbors	People know	Meet first time	Other religion	Foreigners
	(1)	(2)	(3)	(4)	(5)	(6)
Kinship tightness	0.023*	0.19***	-0.023	-0.12***	-0.39***	-0.37***
	(0.01)	(0.06)	(0.04)	(0.03)	(0.06)	(0.06)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual level controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24413	23435	23443	23262	22670	22664
R^2	0.07	0.06	0.05	0.05	0.10	0.10

Notes. Individual-level OLS estimates in WVS, standard errors (clustered at ethnic group level) in parentheses. The dependent variables are respondents' trust in specific groups of people, as explained in the notes of Table 3. Individual level controls include gender, age, and age squared. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.3 Robustness Checks for Analyses in Ethnographic Atlas

Table 23: Religious beliefs of historical ethnic groups: Robustness

	Dependent variable: Moralizing god	
	Sample restricted to: Have a high god	
	(1)	(2)
Kinship tightness	-0.42***	-0.36***
	(0.09)	(0.08)
Continent FE	Yes	Yes
Historical controls	No	Yes
Observations	442	383
R^2	0.19	0.47

Notes. Ethnic group-level OLS estimates in EA, robust standard errors in parentheses. The dependent variable is an indicator for whether a society had a moralizing god. The sample is restricted to ethnic groups that have a high god (moralizing or not), columns (1)–(2), or to Oceania and the Americas, columns (3)–(4). The historical controls include dependence on agriculture, settlement complexity, number of jurisdictional hierarchies above the local level, distance from the equator, longitude, and average elevation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 24: EA analyses excluding hunter-gatherers

	Dependent variable:					
	Global institutions		Local institutions		Religion	
	# Levels jurisdictional hierarchy					
	Above local level		Local level		Moralizing god	
	(1)	(2)	(3)	(4)	(5)	(6)
Kinship tightness	-0.56***	-0.48**	1.39***	1.42***	-0.27***	-0.25***
	(0.20)	(0.19)	(0.15)	(0.14)	(0.08)	(0.08)
Continent FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical controls	No	Yes	No	Yes	No	Yes
Observations	663	635	673	646	466	419
R^2	0.22	0.23	0.22	0.20	0.24	0.43

Notes. Historical ethnic group-level OLS estimates in EA, robust standard errors in parentheses. The dependent variables in columns (1)–(2) and (3)–(4) are the number of levels of jurisdictional hierarchy above the local and at the local level, respectively. In columns (5)–(6), the dependent variable is the presence of a moralizing god. All dependent variables are expressed as z-scores. The sample excludes ethnic groups that subsisted to at least 50% on (the sum of) hunting, gathering, and fishing. In columns (1)–(4), the historical controls include dependence on agriculture, year of observation, settlement complexity, distance from the equator, longitude, and average elevation. Column (6) additionally includes the number of levels of jurisdictional hierarchies above the local level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.4 Robustness Checks for Moral Values Analysis

Table 25: Moral values across countries: Controlling for trust

	Dependent variable:								
	Moral relevance of:								
	Loyalty			Equal treatment			Rel. imp. communal values		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	0.81***	0.97***	0.73**	-0.39	-0.48	-0.94**	1.13***	1.11***	0.89**
	(0.27)	(0.26)	(0.31)	(0.32)	(0.33)	(0.41)	(0.30)	(0.31)	(0.38)
General trust	-0.23***	-0.21***	-0.27**	0.090	0.11	0.075	-0.00056	-0.043	-0.15
	(0.07)	(0.08)	(0.12)	(0.11)	(0.11)	(0.13)	(0.10)	(0.11)	(0.11)
Historical controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Other controls	No	No	Yes	No	No	Yes	No	No	Yes
Continent FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	78	78	76	78	78	76	78	78	76
R^2	0.16	0.20	0.37	0.03	0.12	0.37	0.17	0.28	0.51

Notes. Country-level OLS estimates, robust standard errors in parentheses. The dependent variable in columns (1)–(3) is the in-group loyalty dimension in the MFQ. In columns (4)–(6), I compute the relative importance of communal moral values by computing the first principal component of the MFQ dimensions fairness / reciprocity, harm / care, in-group loyalty, and respect / authority, see Appendix G for details. Historical controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all computed as pertaining to contemporary populations). Other controls include distance from the equator, log land suitability for agriculture, and ancestry-adjusted log population density in 1500. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 26: Moral values within countries: Controlling for trust in country of birth

	Dependent variable:								
	Moral relevance of:								
	Loyalty			Equal treatment			Rel. imp. communal values		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	0.22***	0.26***	0.25***	-0.27***	-0.27***	-0.22***	0.33***	0.36***	0.32***
	(0.04)	(0.04)	(0.02)	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)	(0.04)
General trust in	0.067	0.042	0.063	-0.051	-0.051	-0.20	0.12	0.093	0.18
country of birth	(0.13)	(0.13)	(0.08)	(0.18)	(0.19)	(0.14)	(0.17)	(0.15)	(0.11)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Country of origin controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	23977	23937	23771	23907	23867	23702	22683	22645	22488
R^2	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.05	0.05

Notes. Individual-level OLS estimates in the MFQ, standard errors (clustered at country of birth) in parentheses. Individual level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, log land suitability for agriculture, and ancestry-adjusted log population density in 1500. All dependent variables are expressed as z-scores. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.5 Controlling for Individual-Level Income and Education in Within-Country Analyses

This section presents a series of robustness checks for the individual-level within-country analyses in the WVS, ESS, GPS, and MFQ. In addition to the baseline control variables discussed in the main text, I here control for household income and the respondent's educational attainment (to the extent that such information is available). The results are almost always very similar to those reported in the main text.

Table 27: Within-country GPS analyses: Controlling for individual-level income and education

	Dependent variable:					
	Δ Punishment [Altruistic – Revenge]					
	(1)	(2)	(3)	(4)	(5)	(6)
Kinship tightness	-0.19**	-0.21**	-0.19**	-0.20*	-0.20*	-0.19*
	(0.08)	(0.08)	(0.08)	(0.11)	(0.11)	(0.11)
Education level	0.16***		0.17***	0.16***		0.17***
	(0.03)		(0.03)	(0.03)		(0.03)
Log [Household income p/c]		0.0091	-0.014		0.0066	-0.016
		(0.03)	(0.02)		(0.03)	(0.03)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual level controls	Yes	Yes	Yes	Yes	Yes	Yes
Country of origin controls	No	No	No	Yes	Yes	Yes
Observations	2282	2281	2267	2252	2251	2238
R^2	0.10	0.09	0.10	0.11	0.10	0.11

Notes. Individual-level OLS estimates in the GPS, standard errors (clustered at country of birth) in parentheses. is the difference between prosocial punishment and second-party punishment in the Global Preference Survey, see Appendix G for details. Individual level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, log land suitability for agriculture, and ancestry-adjusted log population density in 1500. The dependent variable is expressed as z-score. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 28: Within-country WVS and ESS analyses: Controlling for individual-level income and education

Variation in KTI is across:	World Values Survey: Ethnicities						ESS: 2nd gen. migrants	
	Dependent variable:							
	Δ Trust [In- vs. out-group]		Δ Trust [Family vs. others]		General trust		General trust	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kinship tightness	0.45***	0.39***	0.23***	0.23***	-0.054	-0.16**	-0.12***	-0.10***
	(0.06)	(0.13)	(0.03)	(0.07)	(0.04)	(0.07)	(0.03)	(0.03)
Education	-0.031***	-0.030***	-0.013**	-0.018***	0.019**	0.016**	0.041***	0.044***
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Income	-0.00071	-0.0011	-0.0078	-0.011	0.0082	0.011		
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)		
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	No	Yes	No	Yes	No	Yes
Ethnicity-level controls	No	Yes	No	Yes	No	Yes	No	No
Country of origin controls	No	No	No	No	No	No	No	Yes
Observations	20966	19738	20966	19738	39944	33767	20495	19786
R^2	0.09	0.09	0.08	0.09	0.08	0.08	0.12	0.12

Notes. Individual-level OLS estimates in WVS, standard errors (clustered at ethnic group level) in parentheses. The dependent variables are respondents' trust in specific groups of people, as explained in the notes of Table 3. All dependent variables are expressed as z-scores. Education category is in 8 steps and income in 10 steps, see Appendix G. Individual level controls include gender, age, and age squared. Ethnicity level controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, distance from the equator, and year of observation in the EA. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 29: Within-country MFQ analyses: Controlling for individual-level education

	Dependent variable:								
	Moral relevance of:								
	Loyalty			Equal treatment			Rel. imp. communal values		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	0.21***	0.24***	0.25***	-0.23***	-0.24***	-0.22***	0.31***	0.33***	0.31***
	(0.04)	(0.04)	(0.03)	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)	(0.05)
Education category	-0.024*	-0.033*	-0.034*	0.060***	0.063***	0.065***	-0.036***	-0.032**	-0.032**
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Country of origin controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	25920	25867	25172	25838	25785	25094	24512	24462	23805
R^2	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.05	0.05

Notes. Individual-level OLS estimates in the MFQ, standard errors (clustered at country of birth) in parentheses. The dependent variable in columns (1)–(6) is the in-group loyalty dimension in the MFQ. In columns (7)–(12), I compute the relative importance of communal values by computing the first principal component of fairness / reciprocity and harm / care (both of which have negative weights) and in-group loyalty and authority / respect (both of which have positive weights). See Appendix G for details. All dependent variables are expressed as z-scores. Education category is a three-step variable: high school, college, graduate degree. Individual level controls include gender, age, and age squared. Country of origin controls include dependence on agriculture, number of levels of jurisdictional hierarchies above the local level, and year of observation (all from the EA, but computed as pertaining to contemporary populations) as well as distance from the equator, log land suitability for agriculture, and ancestry-adjusted log population density in 1500. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.6 Restrict Sample to Countries with at Least 80% Natives

Table 30: Country-level analyses: Restrict to countries with at least 80% native

	Dependent variable:									
	Favoritism	Trust			Moral values			Shame vs. guilt		Altruistic punishm.
	Frac. jobs kin	Δ [In – Out]	Δ [Family – others]	General	Loyalty	Equal treatment	Comm. values	Self-rep.	Google	GPS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Kinship tightness	1.51***	1.28***	1.14***	-1.23***	0.89**	-1.01***	1.19***	1.35**	0.49***	-0.80**
	(0.26)	(0.36)	(0.39)	(0.40)	(0.38)	(0.34)	(0.37)	(0.48)	(0.13)	(0.38)
Language FE	No	No	No	No	No	No	No	No	Yes	No
Observations	71	49	49	60	65	65	65	20	30	51
R^2	0.31	0.19	0.17	0.17	0.09	0.11	0.16	0.30	0.76	0.09

Notes. Country-level OLS estimates, robust standard errors in parentheses. The sample of observations is restricted to countries in which at least 80% are native according to the migration matrix of Putterman and Weil (2010). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.7 Separate Kinship Tightness Proxies

This section presents a set of analyses that do not rely on the composite measure of kinship tightness, but rather on each component separately.

Table 31: EA analyses: Separate kinship tightness proxies (1/2)

	Dependent variable:							
	Beliefs & values							
	Moralizing god				Loyalty to community			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nuclear family	0.081**				-0.15			
	(0.04)				(0.26)			
Joint residence		-0.081*				0.79**		
		(0.04)				(0.35)		
Bilateral descent			0.086**				-0.22	
			(0.04)				(0.30)	
Localized clans				-0.14***				0.36
				(0.04)				(0.25)
Continent FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	702	702	702	702	82	82	82	82
R^2	0.19	0.18	0.19	0.20	0.04	0.12	0.05	0.06

Notes. Historical ethnic group-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 32: EA analyses: Separate kinship tightness proxies (2/2)

	Dependent variable:							
	# levels jurisd. hierarchies							
	Above local level				Local level			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nuclear family	-0.095				-0.87***			
	(0.06)				(0.05)			
Joint residence		-0.12				0.29***		
		(0.09)				(0.09)		
Bilateral descent			0.041				-0.68***	
			(0.09)				(0.08)	
Localized clans				-0.30***				0.43***
				(0.07)				(0.07)
Continent FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1001	1001	1001	1001	1012	1012	1012	1012
R^2	0.25	0.25	0.25	0.27	0.30	0.17	0.22	0.20

Notes. Historical ethnic group-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 33: Country-level analyses: Separate kinship tightness proxies (1/4)

	Dependent variable:									
	Favoritism	Trust			Moral values			Shame vs. guilt		Altruistic punishm.
	Frac. jobs kin	Δ [In – Out]	Δ [Family – others]	General	Loyalty	Equal treatment	Comm. values	Self-rep.	Google	GPS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Nuclear family	-0.33	-0.65***	-0.39	0.30	-0.42*	0.37	-0.57**	-0.82**	-0.67**	0.72***
	(0.21)	(0.24)	(0.27)	(0.24)	(0.22)	(0.23)	(0.22)	(0.36)	(0.29)	(0.25)
Language FE	No	No	No	No	No	No	No	No	Yes	No
Observations	114	74	74	94	104	104	104	35	59	75
R^2	0.02	0.09	0.03	0.02	0.03	0.03	0.06	0.13	0.54	0.10

Notes. Country-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 34: Country-level analyses: Separate kinship tightness proxies (2/4)

	Dependent variable:									
	Favoritism	Trust			Moral values			Shame vs. guilt		Altruistic punishm.
	Frac. jobs kin	Δ [In – Out]	Δ [Family – others]	General	Loyalty	Equal treatment	Comm. values	Self-rep.	Google	GPS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Joint residence	0.63***	0.85***	0.73***	-0.55**	0.44**	-0.24	0.65***	0.67*	0.63**	-0.80***
	(0.21)	(0.23)	(0.26)	(0.25)	(0.22)	(0.22)	(0.21)	(0.36)	(0.28)	(0.27)
Language FE	No	No	No	No	No	No	No	No	Yes	No
Observations	114	74	74	94	104	104	104	35	59	75
R^2	0.08	0.14	0.10	0.06	0.04	0.01	0.09	0.09	0.55	0.12

Notes. Country-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 35: Country-level analyses: Separate kinship tightness proxies (3/4)

	Dependent variable:									
	Favoritism	Trust			Moral values			Shame vs. guilt		Altruistic punishm.
	Frac. jobs kin	Δ [In – Out]	Δ [Family – others]	General	Loyalty	Equal treatment	Comm. values	Self-rep.	Google	GPS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Lineage	-0.63***	-0.80***	-0.50**	0.37*	-0.64***	0.50**	-0.91***	-1.01***	-0.42	0.68***
	(0.18)	(0.24)	(0.24)	(0.22)	(0.21)	(0.22)	(0.21)	(0.35)	(0.31)	(0.23)
Language FE	No	No	No	No	No	No	No	No	Yes	No
Observations	114	74	74	94	104	104	104	35	59	75
R^2	0.09	0.14	0.05	0.03	0.08	0.05	0.17	0.19	0.52	0.10

Notes. Country-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 36: Country-level analyses: Separate kinship tightness proxies (4/4)

	Dependent variable:									
	Favoritism	Trust			Moral values			Shame vs. guilt		Altruistic punishm.
	Frac. jobs kin	Δ [In – Out]	Δ [Family – others]	General	Loyalty	Equal treatment	Comm. values	Self-rep.	Google	GPS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Localized clans	0.49**	0.39	0.41	-0.32	0.44	-0.52*	0.41	1.61***	0.43	-0.38
	(0.22)	(0.37)	(0.32)	(0.31)	(0.28)	(0.27)	(0.26)	(0.38)	(0.33)	(0.27)
Language FE	No	No	No	No	No	No	No	No	Yes	No
Observations	114	74	74	94	104	104	104	35	59	75
R^2	0.03	0.02	0.02	0.01	0.02	0.03	0.02	0.25	0.51	0.02

Notes. Country-level OLS estimates, robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 37: Within-country WVS analyses: Separate kinship tightness proxies

	Dependent variable:											
	Δ Trust [In – Out]				Δ Trust [Family – others]				General trust			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Nuclear family	-0.16**				-0.029				0.044			
	(0.07)				(0.04)				(0.03)			
Joint residence		0.17**				0.055				-0.051		
		(0.09)				(0.05)				(0.04)		
Lineages			-0.20				-0.14***				-0.086*	
			(0.12)				(0.04)				(0.05)	
Localized clans				0.39***				0.25***				-0.097***
				(0.11)				(0.03)				(0.03)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22225	22225	22225	22225	22225	22225	22225	22225	45317	45317	45317	45317
R^2	0.08	0.08	0.08	0.09	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09

Notes. Individual-level OLS estimates in the WVS, standard errors (clustered at ethnic group level) in parentheses. In columns (1) Each regression coefficient corresponds to a separate regression, i.e., a given column reports the results of four different regressions. The dependent variables are general trust (column (1)), the difference between in- and out-group trust (column (2)), and the importance people attach to helping people nearby (column (3)) and behaving properly (column (4)). In column (5), the dependent variable is belief in hell. Individual-level controls include age, age squared, and gender. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 38: Within-country ESS analyses: Separate kinship tightness proxies

	Dependent variable:			
	General trust			
	(1)	(2)	(3)	(4)
Nuclear family	0.038			
	(0.03)			
Joint residence		-0.081***		
		(0.02)		
Lineages			0.12***	
			(0.03)	
Localized clans				-0.028
				(0.04)
Country FE	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes
Individual-level controls	Yes	Yes	Yes	Yes
Observations	20572	20572	20572	20572
R^2	0.09	0.10	0.10	0.09

Notes. Individual-level OLS estimates in the ESS, robust standard errors (clustered at the level of the country of birth of the father times the country of birth of the mother) in parentheses. Each regression coefficient corresponds to a separate regression, i.e., a given column reports the results of four different regressions. The dependent variables are general trust (column (1)), a belief that others mostly take advantage of oneself (column (2)) as well as the importance people attach to helping people around oneself (column (3)), being loyal to friends (column (4)), behaving properly (column (5)), following rules (column (6)), and not drawing attention (column (7)). Individual-level controls include age, age squared, and gender. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 39: Within-country MFQ analyses: Separate kinship tightness proxies

	Dependent variable:											
	Moral relevance of:											
	Loyalty				Equal treatment				Rel. imp. communal values			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Nuclear family	-0.18***				0.17***				-0.23***			
	(0.03)				(0.05)				(0.05)			
Joint residence		0.18***				-0.19***				0.24***		
		(0.03)				(0.04)				(0.04)		
Lineages			-0.20***				0.21***				-0.30***	
			(0.04)				(0.05)				(0.04)	
Localized clans				0.23***				-0.21**				0.34***
				(0.08)				(0.10)				(0.10)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26444	26444	26444	26444	26360	26360	26360	26360	24990	24990	24990	24990
R^2	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.04

Notes. Individual-level OLS estimates in the MFQ, robust standard errors (clustered at country of birth) in parentheses. Each regression coefficient corresponds to a separate regression, i.e., a given column reports the results of four different regressions. The dependent variables are in-group loyalty (column (1)) and the relative importance of communal moral values (column (2)). Individual-level controls include age, age squared, and gender. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 40: Within-country GPS analyses: Separate kinship tightness proxies

	Dependent variable:							
	Δ Punishment [Altruistic – Revenge]							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nuclear family	0.19***	0.19***						
	(0.06)	(0.06)						
Joint residence			-0.16***	-0.15***				
			(0.06)	(0.06)				
Lineages					0.18***	0.16**		
					(0.06)	(0.06)		
Localized clans							-0.053	-0.039
							(0.09)	(0.08)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual level controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2306	2296	2306	2296	2306	2296	2306	2296
R^2	0.09	0.09	0.08	0.09	0.08	0.09	0.08	0.09

Notes. Individual-level OLS estimates in the GPS, robust standard errors (clustered at country of birth) in parentheses. Each regression coefficient corresponds to a separate regression, i.e., a given column reports the results of four different regressions. Individual-level controls include age, age squared, and gender. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.8 Kinship and Development over Time

Table 41: Kinship tightness and complexity of settlement patterns in the EA

	Dependent variable:		
	Settlement complexity		
	(1)	(2)	(3)
Kinship tightness	0.88***	0.47***	0.24***
	(0.10)	(0.13)	(0.09)
Continent FE	No	Yes	Yes
Historical controls	No	No	Yes
Observations	1025	1025	984
R^2	0.07	0.26	0.63

Notes. Historical ethnic group-level OLS estimates in the EA, robust standard errors in parentheses. The dependent variable is settlement complexity (expressed as z-score). The historical controls include dependence on agriculture, dependence on animal husbandry, year of observation, distance from the equator, longitude, and average elevation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 42: Kinship tightness and historical population density over time (country level)

	Dependent variable:								
	Log [Population density] in:								
	1200	1500	1600	1700	1750	1800	1850	1900	1950
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kinship tightness	-0.085	-0.092	-0.065	-0.091	-0.091	-0.20*	-0.28**	-0.35***	-0.32***
	(0.09)	(0.10)	(0.10)	(0.11)	(0.11)	(0.11)	(0.12)	(0.12)	(0.12)
Observations	127	127	127	127	127	127	127	127	127
R^2	0.01	0.01	0.00	0.01	0.01	0.03	0.05	0.07	0.06

Notes. Country-level OLS estimates in the EA, robust standard errors in parentheses. The sample is restricted to countries in which at least 50% of the population in 2010 are native to their current location according to Putterman and Weil (2010). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

G Data Description

G.1 Ethnographic Atlas

G.1.1 Construction of Kinship Tightness Index

See Section G.3.1

G.1.2 Dependent Variables

Moralizing god. Q34. Binary variable coded as one if a High Gods is present and supportive of human morality, and zero otherwise.

Number of levels of jurisdictional hierarchy above local level. Q33. Five-step categorical variable that describes the number of levels of jurisdictional hierarchies above the local level (0-4 levels).

Number of levels of jurisdictional hierarchy at local level. Q32. Three-step categorical variable that describes the number of levels of jurisdictional hierarchies at the local level (2-4 levels).

G.1.3 Covariates

Dependence on agriculture. Q5. Ranges from 2.5% to 92.5% by taking midpoint of respective interval.

Dependence on animal husbandry. Q4. Ranges from 2.5% to 92.5% by taking midpoint of respective interval.

Year of observation. Q101 and Q102. Year of observation in EA.

Settlement complexity. Q30. Eight-step categorical variable that describes settlement patterns as: 1 for nomadic or fully migratory, 2 for seminomadic, 3 for semisedentary, 4 for compact but impermanent settlements, 5 for neighborhoods of dispersed geamily homesteads, 6 for separated hamlets that form a single community, 7 for compact and relatively permanent settlements, and 8 for complex settlements.

Distance from equator, longitude. Q103, Q104.

Average elevation. Calculated based on Global 30 Arc-Second Elevation provided by USGS. For ethnicities, elevations aggregated across grid cells within a 200km radius centered at the coordinates specified in the EA.

G.2 Standard Cross-Cultural Sample

Loyalty to community. Describes the extent to which members of society feel loyal to their local community. Categorical variable ranging from 0 to 3 ("especially high", "high", "moderate", and "low").

Acceptability of violence against people from other societies. Q783 in SCCS. (Un) Acceptability of Violence toward people in other societies (valued, acceptable, tolerated, disapproved).

Acceptability of violence against people from same society. Q781 and Q782 in SCCS. Average of z-scores of two items: (Un)Acceptability of violence toward members of the local community and (Un)Acceptability of violence toward members of the same society, but outside the local community (valued, acceptable, tolerated, disapproved).

Δ Acceptability of violence against members from other societies and own society. Difference of z-scores of the two preceeding variables.

G.3 Cross-Country Data

G.3.1 Construction of Country-Level Kinship Tightness Index

Giuliano and Nunn (2017) develop a method to match ancestral ethnicity-level characteristics in the EA to contemporary populations. They do so by matching each of 7,000 contemporary language groups in the 16th edition of the Ethnologue manually to one of the ethnicities in the EA (through the language spoken by the historical ethnicities). The Ethnologue maps the current geographic distribution of languages, so that after matching historical ethnicities to language groups, average ancestral traits based on the EA can be computed at various different levels of aggregation. The analysis in this paper only relies on a country-level summary statistic. Thus, the country-level kinship tightness indexis computed by first constructing kinship tightness at the ethnicity level as described above, and then applying Giuliano and Nunn's (2017) matching procedure. My country-level variables from the EA including the kinship tightness index were constructed by Giuliano and Nunn using their original coding system.

G.3.2 Dependent Variables

In-group favoritism: Management jobs based on kin. Index reported in Van de Vliert (2011), summarizing the results of a 2005 cross-cultural survey by the World Economic Forum that asks top executives to what extent senior management positions in their country are are usually held by professional managers chosen based on superior qualification or relatives (on a scale 1–7).

General trust. Answer to WVS question: do you agree that most people can be trusted (A165). Country level results calculated as means of all individual level responses across waves.

Out-group trust. Based on answers to three WVS questions on how much one trusts people that one meets for the first time (G007_34), people of another nationality (G007_01) and people of another religion (G007_35). Country level variable constructed as average across individuals and waves, averaged across the three different trust variables.

In-group trust. Based on answers to three WVS questions on how much one trusts one's family (D001), neighbors (G007_18) and people known personally (G007_33). Country level variable constructed as average across individuals and waves, averaged across the three different trust variables.

Trust [In-group – Out-group]. Difference between in-group and out-group trust.

Trust [Family – others]. Difference between trust in family and average trust in all other groups.

Relative importance of communal moral values. Based on data in the online version of the Moral Foundations Questionnaire, www.yourmorals.org. This composite index measures the relative importance of the moral dimensions of "fairness / reciprocity" and "harm / care" (which constitute individualizing or "universal" moral values) over "in-group / loyalty" and "authority / respect", which are "comunal" or "groupish" values. The full Moral Foundations Questionnaire can be accessed here: http://www.moralfoundations.org/questionnaires. The score of the relative importance of communal moral values is computed through the following procedure: First, at the individual level, normalize each moral foundation by dividing it through the sum of all four dimensions to express the importance of values relative to each other rather than in absolute terms. Second, conduct a principal component analysis. Here, the resulting

weights in the index of the relative importance of communal moral values are -0.60 for harm / care, -0.33 for fairness / reciprocity, 0.53 for ingroup / loyalty and 0.50 for authority / respect. Finally, compute the average of this index by country of residence.

Google searches for shame and guilt. First, I restricted the set of languages to those that are an official language in at least two countries (since otherwise no within-language variation can be exploited) and that are included in Jaffe et al. (2014) so I have access to the most apt translations for shame and guilt. This is the case for English, Arabic, French, German, Portuguese, Russian, Spanish, Persian, and Slovakian. Second, for each remaining language, access the relative search frequency of "shame" and "guilt", respectively, on Google Trends, restricting attention to countries in which the respective language is an official language. Note that this procedure implies that those countries with multiple official languages appear multiple times in the resulting dataset. Second, rescale the Google Trends output such that the maximum in the consideration set of countries is always 100 (Google Trends sclaes their data to be between 0 and 100. I need to adjust these data in cases in which the maximum of 100 is a country outside of the consideration set, e.g., a country in which the respective language is not an official language.) Finally, for each country-language-pair, compute the difference between the search frequency index for shame and guilt.

ISEAR self-reports of shame and guilt. The ISEAR is a multi-national psychological study led by Klaus Scherer and Harald Wallbott. In 36 countries, researchers distributed questionnaires among university students. These questionnaires contained questions on seven emotions (joy, fear, anger, sadness, disgust, shame, and guilt). Respondents were first asked to describe a situation in which they experienced an emotion. Then, for each emotion, they were asked to describe how long-lasting (1=minutes, 2=an hour, 3=several hours, 4=a day or more) and how intense (1=not very, 2=moderately, 3=intense, 4=very) the feeling was. For each of these categories, I compute the difference between shame and guilt, standardize these differences, and then average these two standardized differences to arrive at a summary statistic of the relative strength of shame over guilt. For details and data access see http://www.affective-sciences.org/en/home/research/materials-and-online-research/research-material/.

Altruistic and revenge punishment in GPS. Relative prevalence of altruistic over revenge punishment, based on data in the GPS Falk et al. (2016). To construct this variable, I first combine two survey items that were intended to measure second-party punishment. These questions asked respondents to assess themselves regarding the statement "If I am treated very unjustly, I will take revenge at the first occasion, even if there is

a cost to do so." and to indicate "How willing are you to punish someone who treats you unfairly, even if there may be costs for you?". I aggregate these two variables by computing the average of their z-scores. Altruistic punishment, on the other hand, is the z-score of responses to the question "How willing are you to punish someone who treats others unfairly, even if there may be costs for you?". The dependent variable is then the difference between the measures of altruistic and revenge punishment.

Importance of behaving properly. Based on answers to WVS question: It is important to this person to always behave properly (A196). Aggregate to country level based on country where the interview was conducted.

Belief in hell. Binary variable from WVS that describes whether respondent believes in hell. Average within country of residence.

Belief in heaven. Binary variable from WVS that describes whether respondent believes in heaven. Average within country of residence.

Individualism. Variable generated by Hofstede (1984) and taken from https://geert-hofstede.com/countries.html. The data are available at the country level and are based on qualitative questionnaires conducted with IBM employees. According to Hofstede, this measure is meant to capture the following: "The high side of this dimension, called individualism, can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. Its opposite, collectivism, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty. A society's position on this dimension is reflected in whether people's self-image is defined in terms of "I" or "we"."

Family ties. Following Alesina and Giuliano (2013), defined as first principal component of answers to three World Values Survey questions: how important is family in life (A001), one should respect and love parents (A025) and parents have responsibilities towards their children (A026). Larger values correspond to stronger agreement to the statement. Country level results calculated as means of all individual level responses across waves.

Pronoun drop. Following Tabellini (2008a), this variable measures whether a given language allows to drop the pronoun. The argument is that languages that forbid drop-

ping the first-person pronoun give more emphasis to the individual as opposed to the group. The score is computed by applying the classification in the World Atlas of Languages, supplemented by Kashima and Kashima (1998). To arrive at a country-level score, I compute a weighted average across languages, weighted by the fraction of speakers according to Ethnologue. The analysis is restricted to countries in which I could classify at least 75% of the population.

G.3.3 Development Indicators

Log population density from 1200-1950. Computed based on grid cell level population density from the History Database of Global Environment (HYDE) data. Country average calculated as average population within contemporary boundaries of the country.

Urbanization rate from 1000 to 1900. Computed based on grid cell level urban and total population from the History Database of Global Environment (HYDE) data. Country average calculated as average population within contemporary boundaries of the country.

Log GDP per capita. GDP per capita in current US dollar in 2010, reported by the World Bank's World Development Indicators.

G.3.4 Covariates

Log population density in 1500 AD, ancestry adjusted. Population density (in persons per square km) for a 1500 AD is calculated as population in that year, as reported by McEvedy and Jones (1978), divided by total land area, as reported by the World Bank's World Development Indicators. Ancestry adjusted with World Migration Matrix by Putterman and Weil (2010).

Log land suitability for agriculture. Composite agriculture suitability index computed using FAO GAEZ dataset. Suitability measured for post-Columbian Exchange (1500) where all crops are assumed to be available. For each grid cell, we compute the average overall potential yields of all crops in the GAEZ data (unit measured in T/ha). For country level measure, aggregate across all cells within country's boundary.

G.4 World Values Survey

Education. 8-step variable: Inadequately completed elementary education, Completed (compulsory) elementary education, Incomplete secondary school / vocational, Complete secondary school: technical/vocational, Incomplete secondary: university-preparation, Complete secondary: university-preparation, Some university without degree / higher education, University with degree / higher education.

Income. Categorical 10-step variable.
Other variables coded as in cross-country analyses.

G.5 Global Preference Survey

Diff. between altruistic and second-party punishment. Coded as in cross-country case.

Education category. Three-step variable: primary, secondary, tertiary education.

G.6 Moral Foundations Questionnaire

Rel. importance of communal values. Coded as in cross-country case.

Education category. Three-step variable: 1 = (in) high school, 2 = (in) college, 3 = (in) graduate school.