Kinship intensity and the use of mental states in moral judgment across societies

Cameron M. Curtin[a,+], Clark Barrett[b,c], Alexander Bolyanatz[d], Alyssa Crittenden[e], Daniel M.T. Fessler[b,c,f], Simon Fitzpatrick[g], Michael Gurven[h], Martin Kanovsky[i], Geoff Kushnick[j], Stephen Laurence[k,l], Anne Pisor[h,m], Brooke Scelza[b,c], Stephen Stich[n,o], Chris von Rueden[p], Joseph Henrich[a]

[a] Department of Human Evolutionary Biology, Harvard University, 11 Divinity Ave, Cambridge, MA 02138

[b] Department of Anthropology, University of California, Los Angeles, CA 90095-1553

[c] Center for Behavior, Evolution, and Culture, University of California, Los Angeles, CA 90095-1553

[d] Social Sciences Subdivision, College of DuPage, Glen Ellyn, IL 60137-6599

[e] Department of Anthropology, University of Nevada, Las Vegas, NV 89154-5003

[f] Bedari Kindness Institute, University of California, Los Angeles, CA 90095-1553

[g] Philosophy Department, John Carroll University, University Heights, OH 44118

[h] Department of Anthropology, University of California, Santa Barbara, CA 93106-3210

[i] Institute of Social Anthropology, Faculty of Social and Economic Sciences, Comenius University, 820 05 Bratislava 25, Slovakia

[j] School of Archaeology and Anthropology, The Australian National University, Canberra ACT 0200, Australia

[k] Department of Philosophy, University of Sheffield, Sheffield S3 7QB, United Kingdom

[l] Hang Seng Centre for Cognitive Studies, University of Sheffield, Sheffield S3 7QB, United Kingdom

[m] Department of Anthropology, Washington State University, Pullman, WA 99164-4910

[n] Department of Philosophy, Rutgers University, New Brunswick, NJ 08901-1107

[o] Center for Cognitive Science, Rutgers University, New Brunswick, NJ 08901-1107

[p] Jepson School of Leadership Studies, University of Richmond, Richmond, VA 23173

[+] Corresponding author: cameron_curtin@g.harvard.edu

Word Count: 8,376

Abstract

Decades of research conducted in Western, Educated, Industrialized, Rich, & Democratic (WEIRD) societies have led many scholars to conclude that the use of mental states in moral judgment is a human cognitive universal, perhaps an adaptive strategy for selecting optimal social partners from a large pool of candidates. However, recent work from a more diverse array of societies suggests there may be important variation in how much people rely on mental states, with people in some societies judging accidental harms just as harshly as intentional ones. To explain this variation, we develop and test a novel cultural evolutionary theory proposing that the intensity of kin-based institutions will favor less attention to mental states when judging moral violations. Although paying close attention to mental states allows agents to pick the best social partners in settings with weak kin ties and fluid social networks, it may provide limited benefits— or worse, engender costs— in settings with intensive kinship, rigid social networks, effective exogenous behavior regulation, and few outside options. First, to better illuminate the historical distribution of the use of intentions in moral judgment, we code and analyze anthropological observations from the Human Area Relations Files. This analysis shows that notions of strict liability—wherein the role for mental states is reduced— were common across diverse societies around the globe. Then, by expanding an existing vignette-based experimental dataset containing observations from 321 people in a diverse sample of 10 societies, we show that the intensity of a society's kin-based institutions can explain some of the population-level variation in people's use of intentionality in three different kinds of moral judgments. Together, these lines of evidence suggest that people's use of mental states has coevolved culturally to fit their local kin-based institutions. We suggest that although reliance on mental states has likely been a feature of moral judgment in human communities over historical and evolutionary time, the relational fluidity and weak kin ties of today's WEIRD societies position these populations' psychology at the extreme end of the global and historical spectrum.

Keywords

Moral judgment, mental states, theory of mind, kinship intensity, cultural evolution

> *Every murder, intentional or unintentional, calls for clan vengeance. The closest clansman of the murdered… must, in the figurative expression of the Gilyak, "raise up the kindred bones", i.e., kill the murderer or at least some person of the male sex of his khal' [clan]. And the wrath of vengeance is so great that not even newborn children are spared.*
>
> — Shternberg, Bromwich, & Ward (1933), among the Nivkh (Gilyak) hunter-gatherers of eastern Siberia

1. Introduction

For many readers, the above epigraph portrays a curious and almost counter-intuitive approach to moral judgment. Whether a death comes about through an intentional act of murder or is entirely accidental, the punishment is similarly harsh. The narrow focus on outcomes at the exclusion of intent contrasts with conceptions of culpability and responsibility common in many Western, industrialized societies today. This approach to guilt, which began to develop in Western law during the Middle Ages, focuses heavily on inferences about the mental states of those involved (Berman, 1983; Harper, 2013; Henrich, forthcoming).

In recent decades, ample research on moral judgment among populations that are Western, Educated, Industrialized, Rich, and Democratic (WEIRD) has documented subjects' consistent tendency to heavily weight the mental states of agents, and particularly their intentions, when assessing the moral permissibility and punishment-worthiness of actions. For example, WEIRD subjects judge attempted harms, which involve malicious intent but a neutral outcome, more harshly than accidental harms, which involve innocent intent but a negative outcome (Young, Cushman, Hauser, & Saxe, 2007; Young & Saxe, 2008, 2009). Although intent-based moral judgment has a complex developmental trajectory (Cushman, Sheketoff, Wharton, & Carey, 2013), some evidence indicates that even infants incorporate information about intentions into their social decisions: given the choice, preverbal infants prefer a puppet who tried but failed to help a third party over a puppet who tried but failed to hinder a third party (Hamlin, 2013). These broad and replicable patterns (Cushman, 2015; Saxe, 2016; Young & Tsoi, 2013) suggest that the great importance of mental states, and particularly intentions, in making moral judgments may be a reliably developing feature of human cognition that emerges with little input from cultural evolution. Considering others' mental states may serve as an adaptive strategy that helps individuals (1) pick the best cooperative partners, (2) avoid uncooperative or dangerous individuals (Chakroff et al., 2016; Young & Tsoi, 2013; Young & Waytz, 2013), (3) learn most accurately from preferred models, or (4) punish and teach most effectively.

However, several recent studies reveal broad variation across societies in the manner and context in which people use mental states during moral judgment. In the largest cross-cultural study to date, Barrett et al. (2016a) first compared responses to moral-judgment vignettes featuring physical harm, poisoning, theft, and food taboos across ten societies. While participants from Los Angeles and rural Ukraine placed substantial weight on intentions in their judgments, pastoralists from Namibia and fishing-horticulturalists from Fiji deemed high- and low-intent harms equally bad, punishment-worthy, and reputation-damaging. Participants from the remaining six societies fell in between these extremes. In a second study, Barrett et al. (2016a)

also found substantial variation in the degree to which potentially mitigating factors like self-defense, mistake of fact, and necessity altered the severity of moral judgments. Because taking a mitigating factor into account requires considering a perpetrator's state of mind, this result further indicates population-level variation in the tendency to employ mental state reasoning during moral judgment. Replicating the noteworthy patterns found in Fiji, McNamara et al. (2019) confirmed that indigenous Fijians place more focus on outcomes than intentions when judging moral scenarios, but do take intentions into account to a degree in certain situations.

Related patterns have also been detected in industrialized Asian societies, although relatively little research has been done on this topic. In contemporary Japan, participants weigh intentions less heavily than in the U.S. when making moral judgments, particularly in some contexts (Hamilton & Sanders, 1992). So, while some inclination to consider intentions during moral judgment in at least some situations has been found in all societies studied to date, WEIRD people, with their laser-like focus on mental states, seem to lie at the extreme end of the global distribution.

This curious pattern presents a puzzle: how can we explain the observed cross-cultural variation? Here, we develop and test a cultural evolutionary theory to answer this question, arguing that a substantial part of this variation can be explained by the strength of kin-based institutions, or *kinship intensity*.

2. Theoretical framework

Theory of mind, or the ability to infer others' beliefs, thoughts, goals, and desires, is likely a reliably developing feature of human psychology (Barrett, 2015; Barrett et al., 2013; Henrich, 2016). This does not mean, however, that people everywhere employ theory of mind in the same contexts or with the same frequency; rather, social norms and other cultural technologies may shape, sharpen, and direct its use. Institutions, or packages of culturally-transmitted social norms, exert a potent influence on psychology (Henrich, 2008, 2015; McNamara & Henrich, 2017). Institutions and psychologies coevolve culturally, with social norms often responding to economic and socioecological circumstances and minds adapting themselves ontogenetically to the opportunities and incentives created by institutions. Kin-based institutions, which govern practices related to marriage, residence patterns, and mutual familial obligations, are central among these evolving institutions, and a growing literature links variations in kin-based institutions to cross-cultural differences in several aspects of psychology (Enke, 2019; Henrich, forthcoming; Schulz et al., 2019). We hypothesize that attention to mental states in moral judgment is one important domain in the psychological package shaped by kin-based institutions.

2.1 The coevolution of kin-based institutions and cultural psychology

Within an evolutionary framework, institutions represent packages of social norms that govern many aspects of human life, including patterns of exchange, religious participation, and political systems (Henrich, 2015, 2016). Social norms arise spontaneously via cultural evolution once individuals rely sufficiently heavily on learning from others and are capable of acquiring both 'what to do' in certain contexts (e.g., share food) and the standards for judging others in those contexts. Among diverse institutional forms, those rooted in kinship have historically and

cross-culturally been the most fundamental way of organizing social life across human societies (Chapais, 2010; Fox, 1967; Murdock, 1949). Anchored in various aspects of our evolved psychology, including kin altruism, incest aversion, and pair-bonding, kin-based institutions organize people's social networks, usually expanding and amplifying the genealogical relatedness found in other primates, thereby creating the diversity of kinship systems found across human societies (McNamara & Henrich, 2017). These institutions structure patterns of marriage, residence, and mutual obligation, directing, for example, who should marry whom (is a first cousin a preferred or tabooed marriage partner?), where newly-wed couples live (with the bride's or groom's relatives?), and who one's natural allies are (if a man's father's brother's son is killed, is he honor-bound to avenge the death?). However, societies vary in how central kinship is to the formation of personal identity and social relationships; we term this *kinship intensity*.

Anthropologists distinguish between "intensive" and "extensive" kinship systems, tying variation in these institutions to ecological and economic factors. Societies with extensive kinship tend to encourage the formation of broad social networks with unrelated individuals, and often feature exogamy and bilateral descent (Schulz et al., 2019; Walker & Bailey, 2014). Work among mobile hunter-gatherers suggests that extensive kin-based institutions may have culturally evolved to mitigate ecological risk by creating broad, geographically dispersed social networks that could act as social safety nets after local shocks (Wiessner, 1998, 2002). In contrast, kin-based institutions in societies with intensive kinship tightly control and constrain personal relationships. These societies are often and variously characterized by extended family networks, cousin marriage, polygyny, endogamy, unilineal descent, and a general increase in relatedness within kin groups (Schulz et al., 2019; Walker & Bailey, 2014). Scholars have argued that kinship systems often intensified with the scaling up of domesticated food production or with intensive use of fixed foraging resources, such as coastal fisheries. In this novel context, where control and defense of land parcels and stationary resources became crucial to survival, the ability to mobilize large local communities via intensive kin-based institutions culturally evolved (Bowles & Choi, 2013; Dow, Mitchell, & Reed, 2017; Flannery & Marcus, 2012; Johnson & Earle, 2000). Because there is necessarily a trade-off between the breadth of ties and the density or depth of ties, in the terms used above, societies with intensive kin-based institutions have *high kinship intensity*, while those with extensive kin-based institutions have *low kinship intensity*[1].

WEIRD societies evolved extremely low levels of kinship intensity via a different route than mobile hunter-gatherer societies, namely the dissolution of both extensive and intensive kin-based institutions and the broad weakening of kinship as a central organizing force. Rather than the tightly webbed kin ties of societies with intensive kinship or the broadly dispersed family

[1] To help clarify, kin-based institutions and kinship intensity can be conceptualized in relation to the redundancy of network connections. Imagine a society modeled as a social network of personal relationships. Take all of the individuals with whom each person interacts in the society and consider all of the network pathways between every pair. Some kin-based institutions create networks in which nearly every interaction is embedded within a dense cluster of relationships, meaning there are many redundant pathways between most interactants. This is high kinship intensity. By contrast, other institutions produce low kinship intensity, meaning that the number of redundant pathways between pairs is, on-average, fewer, and many pairs may have no redundant pathways at all.

networks of societies with extensive kinship, WEIRD societies feature weak, isolated nuclear families, a pattern that emerged in medieval Europe (Goody, 1983; Greif, 2006; Todd, 1990). While the precise cause of the weak forms of kinship in Europe remains a matter of debate, a long tradition of anthropologists (Goody, 1983), economists (Greif, 2006), historians (Mitterauer, 2010), and cultural evolutionists (Henrich, forthcoming; Schulz et al., 2019) have argued that the medieval Church systematically dismantled complex kin-based institutions in Western Europe. In particular, beginning in the early centuries of the Common Era, the branch of Christianity that would eventually become the Roman Catholic Church began to institute bans against many practices that had historically undergirded Europe's intensive kin-based institutions (Henrich, forthcoming; Schulz et al., 2019). Whatever the ultimate cause, most scholars agree that independent, neolocal, monogamous, nuclear families had stabilized in many regions of western Europe by around 1500 CE.

Today, trends towards weakening kinship have emerged in some other parts of the industrialized world, such as China and Japan, spurred in part by mid-20th century social and legal reforms (Baker, 1979; Ebrey & Watson, 1986; Hamilton & Sanders, 1992; A. Hashimoto & Traphagan, 2009). However, the shift away from intensive kin-based institutions is relatively recent in these countries, and some scholars suggest that the process of change in social organization is ongoing (Campbell & Lee, 2011; Hamilton & Sanders, 1992; A. Hashimoto & Traphagan, 2009) Together, this suggests that WEIRD societies today lie at the extreme end of the global kinship intensity spectrum.

There is reason to suspect that different kin-based institutions—being the first and often the most pervasive institutions that humans encounter during development—might shape people's psychology. Different institutions create varying incentives, normative concerns, and social network configurations that push and pull on people's preferences, heuristics, emotions, attentional biases, and other aspects of cognition (Heine, 2016; Hoemann et al., 2019). For example, researchers have linked integration into market institutions to impersonal fairness (Ensminger & Henrich, 2014; Henrich et al., 2010), cooperation in anonymous one-shot interactions (Rustagi, Engel, & Kosfeld, 2010), and the endowment effect (Apicella, Azevedo, Christakis, & Fowler, 2014). Narrowing in on the institutions that shape social networks, a large literature has connected different motivations, emotions, and perceptions to differences in interdependence and network density (Fowler & Christakis, 2010; Gelfand et al., 2011; Kitayama et al., 2017; Kitayama, Ishii, Imada, Takemura, & Ramaswamy, 2006; Kitayama & Park, 2010; Rand, Arbesman, & Christakis, 2011). In social psychology, psychological variation has been linked to both relational mobility (the porousness or fluidity of one's social network: H. Hashimoto & Yamagishi, 2013; Li, Hamamura, & Adams, 2016; Sato, Yuki, & Norasakkunkit, 2014; Schug, Yuki, & Maddux, 2010; Thomson et al., 2018a) and residential mobility (geographical relocation: Lun, Oishi, & Tenney, 2012; Oishi & Talhelm, 2012). Although researchers do not often reference kinship in their discussions of either relational or residential mobility (c.f. Henrich, forthcoming), the connections seem hard to ignore.

Finally, dovetailing with the work on network mobility, two recent papers have directly connected kin-based institutions to aspects of psychology. Schulz et al. (2019) found that people from societies with intensive kinship are more conformist and obedient, but less individualistic and prosocial towards strangers and anonymous others. Similarly, Enke (2019) linked intensive kin ties to stronger ingroup loyalty and ingroup trust, a bigger difference in beliefs about the

acceptability of violence against outgroup versus ingroup members, more experience of shame versus guilt, and a greater focus on purity during moral judgment. Here, we suggest that attention to agents' mental states during moral judgment is part of this suite of psychological traits modulated by kinship institutions.

2.2 Why would kinship intensity influence the use of mental states in moral judgment?

To understand the impact of kinship intensity on the use of mental states in moral judgments, consider an evolutionary model of partner choice in which individuals can potentially access two kinds of information: (1) internal information, which includes the inferred mental states and dispositions of potential partners, and (2) external information, which includes input about local norms, social network ties, situational constraints, and their potential partners' roles, obligations, and responsibilities. Let us further assume that external information is essentially cost-free in the context of evaluating any particular partner, because it is information that everyone needs to acquire for many reasons, simply to navigate the local social environment. By contrast, inferring and tracking other people's mental states comes with a facultative cost, a developmental cost, or both. A facultative cost implies that every time an action needs to be evaluated by considering mental states, individuals must divert some additional cognitive resources (e.g., attention) to the evaluation; a developmental cost implies that individuals could, with some costly effort while growing up, hone a cognitive ability that automatically tracks and integrates inferences about mental states at little or no cost into their evaluation of others' actions (Buon, Jacob, Loissel, & Dupoux, 2013; Martin, Buon, & Cushman, 2019). Under this model, individuals would only pay the extra cost of inferring and tracking mental states if, on average, such inferences paid off in sufficiently better partner choice. If the external input to partner evaluation is by itself sufficiently accurate relative to the boost provided by mental-state inferences, individuals may adaptively conserve their cognitive resources by not deploying their theory of mind in the evaluation of certain kinds of actions or for particular categories of people, and re-allocate these resources to more productive ends (e.g., to acquiring even better external input).

Given this model, intensive kinship will influence the costs and benefits associated with the deployment of mentalizing in moral judgment and partner choice, which may then help explain the variation observed across societies. In societies with intensive kin-based institutions, many closely monitored social norms regulate social life. Across a wide array of events, such norms often prescribe tightly-specified actions depending on the context and the relationships of the people involved. Individuals are enmeshed in dense and enduring social networks on which they depend for economic production, social insurance, and personal safety. Research has already shown that societies with intensive kin-based institutions are psychologically 'tight' and relationally stable (Gelfand et al., 2011; Thomson et al., 2018a, 2018b). Individuals in these societies tend to be relatively more conformist, obedient, and shame-oriented (Enke, 2019; Schulz et al., 2019). In this social world, knowing the social norms, network ties, and personal relationships should be highly predictive of what individuals will do. Trust, for example, is best assessed by knowing the number of shared social ties and interdependencies between you and your potential partner. Even if your partner's internal inclinations tend towards larceny, having a dense and shared social network will likely transform him into a reliable and trustworthy actor.

At the other end of the spectrum, in societies with low kinship intensity, social norms are few, poorly monitored, and often in flux. Network connections are widely dispersed, rarely inherited, and often ephemeral. Research has already shown that people in such societies tend to be individualistic, independent, self-oriented, and concerned about creativity (Enke, 2019; Schulz et al., 2019). In this social world, knowing the norms and other external information is substantially less informative for predicting people's behavior. This means that mental-state tracking and inferences usually pay off, providing substantial improvements in partner choice that cover the cognitive costs of integrating mental-state information (Chakroff et al., 2016; Young & Tsoi, 2013; Young & Waytz, 2013). Hence, in societies with weak kinship, mentalizing should be more prevalent in moral judgments and more effective in assessing novel partners for a cooperative interaction (Carter & Weber, 2010; Oishi, Schug, Yuki, & Axt, 2015; Yamagishi, Kikuchi, & Kosugi, 1999).

Intensive kinship may also influence the use of mentalizing in moral judgments by tightening the ingroup, sharpening the distinction between ingroups and outgroups, and solidifying ingroup loyalty. It is well established that group membership and intergroup dynamics modulate cognition: in many realms, including morality, how we think about "us" is not the same as how we think about "them" (Cikara & Van Bavel, 2014; Waytz & Young, 2018). Outgroup members can have very different norms and opaque intentions, making it difficult or pointless to try to predict their behavior based on mental states. As a result, people everywhere may be relatively less prone to consider intentions when interacting with socially distant outgroup members compared to close ingroup members. In support of this idea, there is some evidence that WEIRD people engage in less spontaneous mentalizing when making judgments about outgroup members (Harris & Fiske, 2006, 2009, 2014), although this pattern can reverse when the context is competitive or threatening (Cikara & Van Bavel, 2014; Tsoi & Young, 2018). In addition, WEIRD children use fewer mental-state terms when describing outgroup members compared to ingroup members (Mcloughlin & Over, 2017).

Considering these psychological patterns, intensive kinship may magnify the impact of social distance or outgroups on the use of mentalizing in moral judgments. Existing research, for example, has already demonstrated that individuals from societies with more intensive kinship show a sharper difference in their trust of family, friends, and people they know versus people from other countries, religions, and strangers (Enke, 2019; Schulz et al., 2019). While clans, kindreds, or tribes may serve as the relevant "ingroup" in populations with intensive kinship, communities with extensive or sparse kin ties may have more expansive ingroups, such as those based on national or religious identity (Brewer & Pierce, 2005). In WEIRD societies, for example, people expect their compatriots, and sometimes even citizens of other countries, to follow the same norms that they do. Thus, given (1) the tendency of people from societies with intensive kinship to avoid interaction with socially distant individuals and (2) the complexity of inferring and tracking the mental states of more socially distant individuals, the use of mental states in moral judgments may decline more rapidly with social distance in societies with intensive kinship. Figure 1 depicts the qualitative relationships suggested by this verbal analysis.

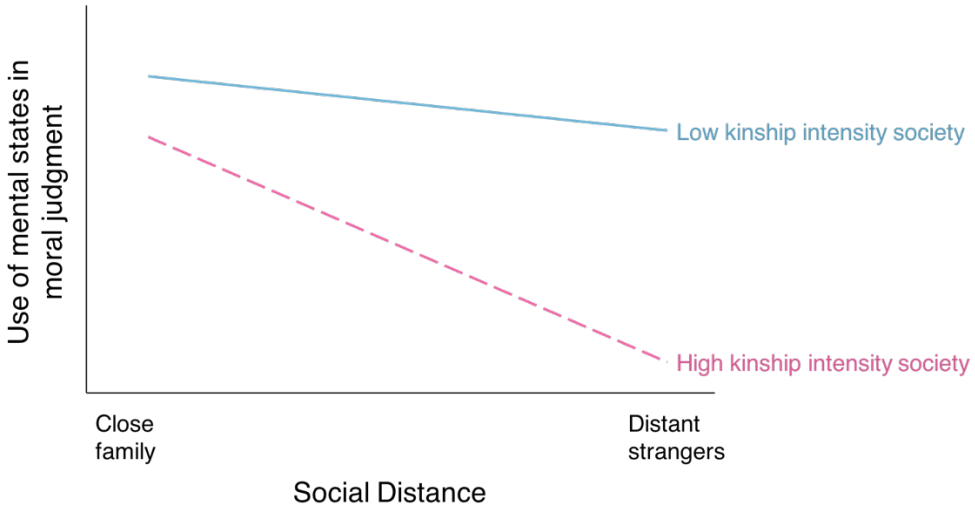

Figure 1. Visual representation of hypothesized interaction between kinship intensity and social distance on the use of mental states in moral judgment.

Above the level of the individual, communities with intensive kinship may be able to quell internal conflicts and sustain greater harmony by suppressing the use of mental states in moral judgments (Posner, 1980). Consider a community with five different clans in a region in which both economic productivity and physical security are increased when the clans all work in harmony. If someone from Clan A kills someone from Clan B, the clans may be able to agree on the facts (what happened?) but not on the perpetrator's mental states. Did the person from Clan A *intend* to murder the person from Clan B and steal his wife? Clan A is positive it was an accident, while Clan B is sure it was purposeful. When settling on the appropriate punishment (e.g., blood payment) for an action, disagreements over inferred intentions or other mental states are therefore a potentially serious source of social conflict. In such a world, there are no impartial third parties, you are either an ally of Clan A or Clan B, and this alliance determines your opinion. How can such a conflict be adjudicated? There are several ways, but one is to suppress reliance on mental states and attend only to observable outcomes.

Of course, purely outcome-based moral judgments (often called "strict liability") also have the potential to cause conflict, for example in the case of accidental harm or transgressions in the service of a greater good. However, when strict liability is a social norm– everyone expects and anticipates that others will use outcome-based judgments—dangerous conflicts may be avoided. Anyone who tries to introduce mental states into discussions about culpability or punishment breaks a local norm—see below. Consistent with this, ethnographers studying societies with strict liability argue that such outcome-based judgments—devoid of complicated and biased inferences about intentions—help alleviate resentments and heal social wounds caused by harmful acts (Moore, 1972).

By contrast, in societies lacking intensive kinship, individuals are keenly interested in the mental states of others as they search for partners and develop new relationships. Swapping information about others' mental states is a regular part of social discourse. In such social worlds, communal harmony is not greatly endangered by the prominence of mental state inferences because these societies are built on fluid network structures. This means that (1)

individuals are not ensconced within loyal kin groups ready to defend their honor against all outsiders, and (2) relatively impartial adjudicators can often be found to help resolve disagreements about the mental states of the actors involved.

Here, the available data only allows us to test for a relationship between kinship intensity and the use of mental states in moral judgments. It does not allow us to study the interaction between social distance and kinship intensity (Figure 1) or to address some of the other features of the theory just presented. However, we have provided a relatively fuller account of the theory in looking ahead to both a formal model of this evolutionary reasoning and to future empirical work.

3. Ethnographic background: opacity of mind and strict liability

In the global and historical spectrum, just how prevalent are norms and institutions that deemphasize mental states during moral judgment? Although most empirical work on this topic has focused on WEIRD societies, several studies have begun to document cross-cultural variation in this tendency (Barrett et al., 2016; McNamara, 2016; McNamara et al., 2019). Despite careful design and implementation, some researchers may worry that the results of these studies reflect participants' misunderstanding or some other experimental issue. To assuage these fears and explore the breadth of institutions that suppress mental-state reasoning, we show that such institutions appear in ethnographies worldwide. In particular, even when they were not looking for these practices, ethnographers have frequently documented the presence of (1) an *opacity of mind* (the belief that others' minds are fundamentally unknowable) and (2) *strict liability* (culpability depends only or largely on outcomes). Rather than supporting the idea that WEIRD subjects' powerful focus on intentions represents universal *Homo sapiens* psychology, these anthropological accounts instead suggest that attention to mental states in moral judgment has often been suppressed in societies around the world, and may actually have hypertrophied in Western populations over the last millennium (Berman, 1983; Henrich, forthcoming).

3.1 Opacity of mind

Norms and beliefs about the mind and about the appropriateness of discussing others' mental states may influence the extent to which people deploy mentalizing in certain contexts. Anthropologists working in the Pacific and elsewhere have documented what they term "Opacity of Mind," a cluster of norms and beliefs that, potentially in diverse ways, present others' minds as essentially unknowable or opaque (reviewed in Robbins & Rumsey, 2008). In many societies where Opacity of Mind norms operate, it is considered socially unacceptable to publicly speculate about the internal mental states of others, and anyone who gossips about others' intentions may be sanctioned (Robbins & Rumsey, 2008). Even introspection, thinking about one's *own* mind, is reportedly considered to be suspicious in some groups (Duranti, 2015, p.185). This is not to say that people who adhere to Opacity of Mind never engage in belief attribution or are unable to use theory of mind; as mentioned above, current evidence suggests that mentalizing abilities are reliably developing features of human cognition (in addition, see Supplement 3). Indeed, in his detailed treatment of Opacity of Mind among Samoans, even Duranti (2015) highlights several situations in which intentions come into play.

Nevertheless, anthropologists have documented various ways that Opacity of Mind seems to influence behavior, and perhaps cognition. For example, in her work among the Bosavi of Papua New Guinea, Schieffelen reports that caregivers do not make verbal inferences about infants' mental states or expand on (or infer the deeper meaning of) young children's unclear utterances. When children mention their own or others' mental states, adults correct them by stating what is externally evident (e.g., crying rather than sadness: Luhrmann et al., 2011; Schieffelin, 1990, 2008). This suggests that children spontaneously start to infer mental states, even when this behavior is rarely modeled for them, providing further evidence that theory of mind is an evolved psychological capacity. However, it also shows Opacity of Mind norms in action: children are socialized from a young age to deemphasize internal states and focus on real-world outcomes. In a similar vein, Robbins and Rumsey (2008) describe how people living in Opacity of Mind societies make little reference to empathy when discussing their approach to life. A common theme in these societies is the idea that internal or inferred intentions have little causal influence on the world compared to spoken or demonstrated intentions— that is, actions (Robbins & Rumsey, 2008). This view contrasts starkly with the WEIRD conception of the mind as knowable and a causal force behind actions (Luhrmann et al., 2011)— a view shared by cognitive science.

Some recent empirical evidence supports the idea that Opacity of Mind can modulate the tendency to engage in mentalizing. Several studies have investigated the relationship between Opacity of Mind norms among indigenous Fijians and mental-state attribution. First, McNamara and colleagues (2018) found that indigenous Fijians have a reduced tendency to predict an agent's behavior based on inferences about their false beliefs in an adult version of the false-belief task, compared to both Indo-Fijians and North Americans (neither of whom adhere to Opacity of Mind norms). In this same study, self-report measures indicate that indigenous Fijians think about others' internal mental states less than do either Indo-Fijians or North Americans, and that this tendency may explain their performance on the false-belief task. These results suggest that Opacity of Mind norms may reduce indigenous Fijians' propensity to engage in mental-state reasoning. Relatedly, recall that Fijians place little focus on intentions when making moral judgments, judging low- and high-intent harms equally harshly (Barrett et al., 2016; McNamara et al., 2019). Some evidence suggests that this effect is not merely behavioral. Crucially, priming Fijians to think about thoughts shifts their judgments to place more weight on intentions. This suggests that, under normal circumstances, intentions may not be highly salient for Fijians. If they were privately considering intentions but purposefully excluding this information from their explicit judgments, priming thinking about thoughts would probably not influence their performance on this task (McNamara et al., 2019). Together, this line of research suggests that Opacity of Mind modulates cognition, reducing adherents' propensity to engage in mental-state reasoning.

3.2 Strict liability may suppress the use of intentions

Cross-culturally, rules about establishing legal or normative liability for crimes represent a second category of norms that may both reflect and influence people's tendency to focus on mental states versus outcomes in the context of moral judgment. These norms relate directly to explicit moral judgments, since they dictate the conditions that must be met in order to hold a person responsible for an action. Norms of liability that place a heavy emphasis on intention

should, accordingly, make intentions particularly salient. In contrast, norms of liability that focus on outcomes should make intentions and other mental states less salient during moral judgment.

In the Western legal tradition, mental states play a crucial role in establishing liability and determining appropriate punishments. Consider, for example, the distinction in the U.S. criminal code between homicide (which involves *malice*, the legal term for intention) and manslaughter (which does not involve malice). Both acts produce the same outcome (a death), but while homicide may be punished by life in prison or capital punishment, the sentence for manslaughter tops out at 15 years of incarceration (Legal Information Institute, n.d.). While punishment for some transgressions (e.g., statutory rape) more heavily weight outcomes, establishing intent is a key feature of many Western court cases. Indeed, a commonly cited maxim in English criminal law states "*actus non facit reum misi mens sit rea*: an act does not make a man guilty unless his mind is guilty too" (Goldman, 1993, p. 63). These norms extend beyond formal legal proceedings: as noted at the beginning of this paper, many Westerners intuitively feel that intentions play a crucial role in personal responsibility and moral status, a pattern evident in numerous neuropsychological studies (Cushman, 2015; Young & Tsoi, 2013).

In striking contrast to Western conceptions of liability, the ethnographic record indicates that many societies subscribe to some form of "strict" or "absolute" liability. Here, motives, intentions, and other mental states play a diminished role in determining culpability; instead, outcomes are the central– and sometimes only– focus (Moore, 1972; Posner, 1980). In societies where strict liability is common, similarly harsh punishments are levied at both intentional and accidental transgressors. While it is important to note that people in societies with strict-liability norms do sometimes take intentions and motives into account (a fact occasionally neglected in the literature; see Ch. 1 of Goldman, 1993 for discussion), it seems plausible that the presence of these norms could down-regulate people's tendency to think about intentions when making moral judgments.

Thus, norms related to strict liability appear plausibly linked to the use of mental-state reasoning during moral judgments. However, unlike the Opacity of Mind literature, no extensive cross-cultural review exists on strict liability. To begin to fill this gap, we surveyed the ethnographic literature to determine the prevalence of strict liability across diverse societies and geographic regions. We reviewed ethnographies from the Standard Cross-Cultural Sample (SCCS) cases present in the electronic Human Relations Area Files (eHRAF, ehrafworldcultures.yale.edu, $n = 146$). Based on a total of 4,706 paragraphs of ethnography, we coded each society for the presence or absence of strict liability. Our coding scheme included the following categories: -1 (not enough data), 0 (evidence of absence), 0.5 (intermediate), or 1 (present). Most coded cases focused on punishment for harms that resulted in death. Each society was coded by two independent raters, and all disagreements were adjudicated to create the final data set (for detailed description of methods, see Supplement S1).

In our review, we also investigated a second norm of legal liability that may deemphasize mental states: collective guilt. Here, culpability is shared equally by the perpetrator's group members, whose mental states receive little weight. However, while collective guilt may reflect

Table 1. Societies with strict liability across subsistence style

	Strict Liability		
Subsistence Style	*Present*	*Intermediate*	*Absent*
Mobile Hunter-Gatherers	1	0	1
Complex Hunter-Gatherers	7	1	3
Horticulturalists	1	4	1
Pastoralists	4	1	0
Intensive Agriculturalists	3	2	5
Other Combinations	0	2	2
Total	16	10	12

Notes: Societies in the SCCS were rated for presence of strict liability based on ethnographic texts from eHRAF. Data on subsistence style comes from eHRAF. The category "Pastoralists" includes societies defined as "Pastoralist" or "Agro-pastoralist" by eHRAF, and the category "Other Combinations" includes the eHRAF classifications "Other Subsistence Combinations" and "Commercial Economy". Societies classified in eHRAF as "Hunter-Gatherers" or "Primarily Hunter-Gatherers" were divided into "Mobile" and "Complex" hunter-gatherers based on 5 SCCS variables: food storage, mobility, local hierarchy, community size, and presence of lineages. See Supplement S5 for more details.

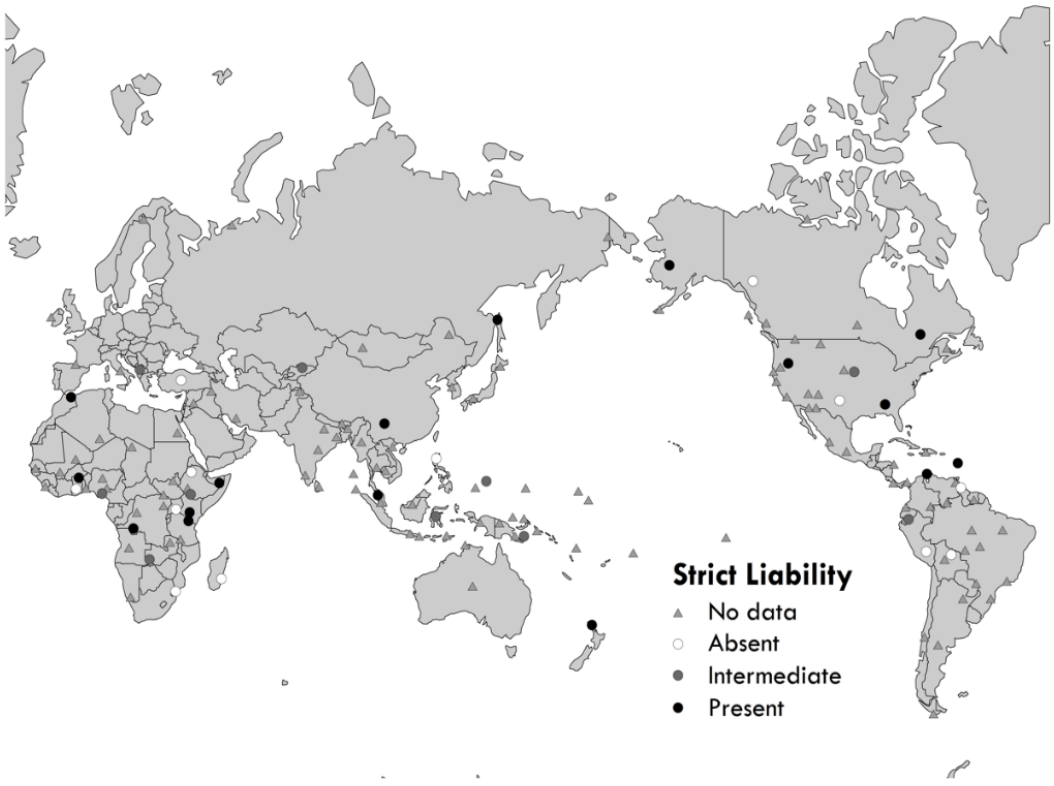

Figure 2. Strict liability is widespread in the eHRAF Standard Cross-Cultural Sample. In the 38 societies with evidence of absence or presence of strict liability, strict liability is present in 42% (n = 16), intermediate in 26% (n = 10), and absent in 32% (n = 12). Societies with strict liability appear in regions around the world. 108 societies did not have enough relevant data to judge presence or absence of strict liability.

reduced mental-state reasoning, it represents a less clear-cut case than strict liability; therefore, results for this portion of the ethnographic review are detailed in the Supplement (S3).

We find that societies with strict liability are common and widespread across subsistence modes and regions of the world (Table 1, Figure 2). Of 38 societies with enough data to code strict liability, 42% (n = 16) clearly have the norms and 26% (n = 10) provide intermediate or less clear evidence. As Figure 2 and Table 1 illustrate, societies with strict liability occur across disparate regions of the world, from sub-Saharan Africa, to East Asia, to South America, and include hunter-gatherers, horticulturalists, pastoralists, and agriculturalists. Table 2 shows a sample of ethnographic excerpts from some of the societies with strict liability.

In an effort to test our main hypothesis with this ethnographic sample, we used data from *The Ethnographic Atlas* to build a measure of kinship intensity for each society, and tested the relationship between kinship intensity and the presence of strict liability (see Supplement S4). Although the results suggest that the more intensive a society's kinship, the greater the likelihood of an ethnographer noting strict liability, the size of this relationship was not estimated with precision and fell below conventional cutoffs (see S4.3). Given our small sample size and the frequency of missing data in ethnographies, it is difficult to interpret this null finding.

In light of recent cross-cultural studies on the use of mental states, our review of the ethnographic evidence on Opacity of Mind and strict liability suggests that there may be, and certainly may have been, substantially more variation in the centrality of mental states for moral judgment than existing work in WEIRD populations suggests. Notably, we suspect that our survey may underestimate the actual prevalence of norms that suppress mentalizing, since we could only look at two well-established categories of mentalizing-related norms, and such norms can easily be missed by ethnographers. While far from conclusive given the amount of missing data, this review suggests that substantial variation may exist, and WEIRD societies likely represent one extreme.

We now turn to testing the hypothesis that this variation can be explained by kinship intensity.

4. Methods

We expanded an existing dataset from Barrett et al. (2016a), who investigated moral judgments using vignettes featuring physical harm, poisoning, theft, and food taboos in a diverse sample of ten societies that varied across subsistence mode, geography, ecology, and language (Figure 3, Table S5). In this study, 322 participants rated the badness, punishment-worthiness, and reputation-damaging effects of harms that varied across intent (intentional versus accidental harms). We combined these data on moral judgments with blind-coded ethnographic data on kinship intensity from each field site, and then examined the relationship between kinship intensity and severity of judgment for intentional versus accidental harms. In addition, we investigated the relationship between kinship intensity and the effect of potentially mitigating factors on the severity of moral judgment.

We pre-registered the hypothesis that there would be a positive relationship between kinship intensity and the use of mental states in moral judgement. Note that because this project

began as a paper for the first author's graduate coursework, pre-registration occurred after some preliminary data analysis had already been conducted. After pre-registration, the data were re-analyzed using newly blind-coded ethnographic data on kinship intensity.

4.1 Severity of Moral Judgment Index

Because the three moral judgment measures (badness, punishment-worthiness, and reputational damage) were highly internally consistent (Cronbach's $\alpha = 0.81$ [95% CIs 0.79, 0.82]), following Barrett et. al., we combined them to create an overall Severity of Moral Judgment Index. A Principal Component Analysis revealed that the first principle component (PC1) explained 72% of the variance in these three variables. The loadings on PC1 were then used as weights to generate the Severity of Moral Judgment Index, a weighted sum of judgments about badness, punishment-worthiness, and reputational damage. A high value indicates harsh moral judgment and a low value indicates a lenient judgment (for details, see S6.3).

4.2 Kinship Intensity Index

To create a measure of kinship intensity for each society, we first asked one ethnographer from each of Barrett et al.'s (2016a) ten field sites to fill out an ethnographic survey about kinship. The ethnographers were blind to the purpose of the study and to the hypotheses. The survey questions were based on the *Ethnographic Atlas* and asked about contemporary and traditional kinship practices: domestic organization, post-marital residence, cousin marriage, polygamy, descent pattern, corporate ownership of land, and presence of clans, segmentary lineages, and segmented communities (for details, see S6.1). Three blind coders rated each of these variables for kinship intensity, from 0 (low intensity) to 1 (high intensity) according to the

Figure 3. Cross-cultural sample from Barrett et al. (2016). The research team conducted moral judgment vignettes featuring intentional or accidental physical harm, poisoning, theft, and food taboo violations in ten diverse societies.

Table 3. The Kinship Intensity Survey coding scheme

		Kinship Intensity	
Survey Variable	*Description*	*Low Intensity*	*High Intensity*
Domestic organization	Prevailing form of domestic or familial organization	Independent nuclear families	Extended family households
Post-marital residence	Prevailing pattern of transfer of residence at marriage	Neo-local	Non-neo-local (e.g. patri-, matrilocal)
Descent pattern	Prevailing mode of familial affiliation	Bilateral	Unilineal (patrilineal, matrilineal)
Cousin marriage	Frequency and acceptability of marriage between cousins	Absent, forbidden	Common, preferred
Polygamy	Frequency and acceptability of marriage between a man and >1 wife	Absent, forbidden	Common, preferred
Corporate land ownership	Frequency of collective land tenure (e.g. by clans)	Absent	Common
Clans	Presence of clans, phratries, or other large kin groups	Absent	Present
Segmented communities	Residence localized by kinship (e.g clan barrios)	Absent	Present
Segmentary lineages	Kinship defined by relative position in hierarchical, branching segments	Absent	Present

Notes: An ethnographer from each of the ten field sites filled out the Kinship Intensity Survey, commenting on both contemporary and traditional practices when possible. Ethnographers were blind to the purpose of the study and to the specific hypotheses. Responses were rated for kinship intensity by three blind coders, according to this scheme. Variables were scored continuously where possible, especially when quantitative data was provided (for example, actual rates of cousin marriage). See S6.1 for more details on the coding of the Kinship Intensity Survey.

scheme presented in Table 3. A society-level Kinship Intensity Index (KII) was created by averaging across the 8 contemporary kinship measures (a separate Ancestral Kinship Intensity Index was also created; see S6.2). Kinship Intensity Index scores generated from the three blind coders were highly consistent (Intraclass Correlation Coefficient = 0.95, [95% CIs 0.86, 0.99]).

4.3 Mitigating Factors

Barrett et al. (2016a) also employed a series of vignettes featuring potentially mitigating factors that might soften the severity of moral judgments: self-defense, necessity, insanity, mistake of fact, and different moral beliefs. Taking these factors into consideration involves mental state attribution; the participant must think about what the perpetrator intended or believed about the situation (e.g., that they were acting in self-defense, or believed they had no

other option). Therefore, we hypothesized that the effect of mitigating factors on the severity of moral judgment would decline with kinship intensity. To test this, we calculated the difference between the severity of moral judgment for a control intentional vignette and vignettes featuring a mitigating factor. Because judgments were sometimes more severe when potentially mitigating factors were present, we took the absolute value of this difference. Due to the structure of the vignette sets, only subjects who completed vignettes featuring self-defense and necessity also completed the control intentional vignette. This constrains our individual-level analysis to include only 147 subjects from 9 societies (no Mitigating Factors data were collected from Himba participants).

4.4 Data Analysis

We employed Linear Mixed Effects Regressions (R package lme4, version 1.1-19) to analyze the results. All models include subject random intercepts. Models also include individual-level covariates (sex and age). Due to missing data on sex, one participant was removed from the analysis, leaving a total of 321 participants in the main sample and 147 participants in the Mitigating Factors sample. All continuous variables were standardized. Data analyses and visualizations were produced in R (version 3.5.2). Data files and code are available on OSF: https://osf.io/65krf/?view_only=0ee63a2f9c6541c3b3ab4c4fe2663a13.

4. Results: Kinship intensity predicts intentionality in moral judgments across 10 diverse societies

When pooling across all vignettes (physical harm, poisoning, theft, and food taboo violations), Table 4 (Column 2) reveals a significant negative interaction between kinship intensity and intentionality on the severity of moral judgments (ß = –0.31 [95%CIs –0.39, –0.22], $p < 0.001$). This coefficient represents the change in slope between the KII and our Severity of Moral Judgment Index when comparing low-intent scenarios to high-intent scenarios. For low-intent scenarios, moving one standard deviation on the Kinship Intensity Index scale is associated with about one-third of a standard deviation increase in the Severity of Moral Judgment Index (ß = 0.29 [95%CIs 0.21, 0.36], $p < 0.001$, Table 4 Column 2). In contrast, for high-intent scenarios, there is essentially no change in the severity of moral judgment across kinship intensities (ß = –0.022 [95%CIs –0.094, 0.050], $p = 0.54$).

As illustrated in Figure 4, these results show that people in societies with low kinship intensity tend to rely heavily on intentions when making moral judgments, while those in societies with high kinship intensity do so less. At one extreme, in societies with the lowest kinship intensity, Los Angeles and Storozhnitsa, participants substantially adjusted their judgments depending on whether a harm was accidental or intentional (1.35 and 1.80 standard deviation difference in the severity of judgment, respectively). At the other extreme, in the societies with the highest kinship intensity in the sample, Yasawa, Fiji and Sursurunga, participants judged intentional and accidental harms similarly harshly (0.078 and 0.85 standard deviation difference in the severity of judgment, respectively).

Table 4. Kinship Intensity, Intentionality, & Severity of Moral Judgment

	Severity of Judgment Index	
	(1)	(2)
Contemporary KII	0.29***	0.29***
	(0.22, 0.36)	(0.21, 0.36)
High Intent	0.66***	0.66***
	(0.57, 0.76)	(0.57, 0.76)
KII x High Intent	-0.31***	-0.31***
	(-0.39, -0.22)	(-0.39, -0.22)
Age		0.010
		(-0.054, 0.074)
Sex		0.013
		(-0.11, 0.14)
N	321	321
AIC	3412.2	3424.8
Log Likelihood	-1700.1	-1704.4

Notes: LMER estimates with 95% confidence intervals. Results pool across all 4 vignette scenarios (theft, physical harm, poisoning, & food taboo). The *Contemporary Kinship Intensity Index* combines measures of current kinship practices: domestic organization, post-marital residence, cousin marriage, polygamy, descent pattern, corporate ownership of land, and presence of clans, segmentary lineages, and segmented communities. *High Intent* indicates whether the vignette features a high intent harm (compared to a low intent, i.e. accidental, harm). *The Severity of Judgment Index* combines measures of badness, punishment-worthiness, and reputation-damaging effects of harms. Individual-level covariates include age & sex. Continuous variables have been standardized. *** p < 0.001, ** p <0.01, * p < 0.05

Looking at each vignette scenario separately, a similar pattern distinctly emerges for three out of the four scenarios (Table S6). There is a significant, negative interaction between Kinship Intensity Index and intention condition for theft (ß = –0.55, [95%CIs –0.72, –0.39], $p <$ 0.001), physical harm (ß = –0.31, [95%CIs –0.47, –0.15], $p < 0.001$), and poisoning (ß = –0.22, [95%CIs –0.37, –0.068, $p = 0.005$). For food taboo violations, the coefficient on the interaction term is negative but much smaller than the other coefficients, and the confidence interval includes zero (ß = –0.093, [95%CIs –0.28, 0.092], $p = 0.32$)— see Figure 4.

Initially, the food taboo result seems in line with work in cognitive neuroscience, which has shown that WEIRD subjects consider intentions less when judging purity violations compared to harms (Chakroff et al., 2016; Dungan & Young, 2019; Young & Saxe, 2011). For example, innocent intentions do not tend to mitigate harsh judgments of purity violations such as incest or the breaking of a food taboo; these judgments focus more on the bad outcome (Young & Saxe, 2011). Here, however, breaking a food taboo is generally judged quite *leniently* in societies with low kinship intensity, and the severity of judgments increases significantly with kinship intensity across both intention conditions (ß = 0.31, [95%CIs 0.22, 0.49], $p < 0.001$). Interestingly, this finding is consistent with recent work in economics showing that kinship intensity predicts the moral relevance of purity. Using data from the Moral Foundations Questionnaire, Enke (2019) found that when deciding whether an act is right or wrong, people from societies with intensive kinship are more likely to consider whether the act violated purity

standards than are people from societies with loose kin ties. The result for food taboos may be partially driven by this effect. However, it is also possible that the breaking of a food taboo was not a highly salient purity violation in our lower-kinship-intensity samples.

The relationship between kinship intensity and the use of intentions during moral judgment holds up to several robustness checks, including controlling for measures of ecological risk (S6.4, S7.2) and using ancestral kinship intensity as the main predictor (S7.3).

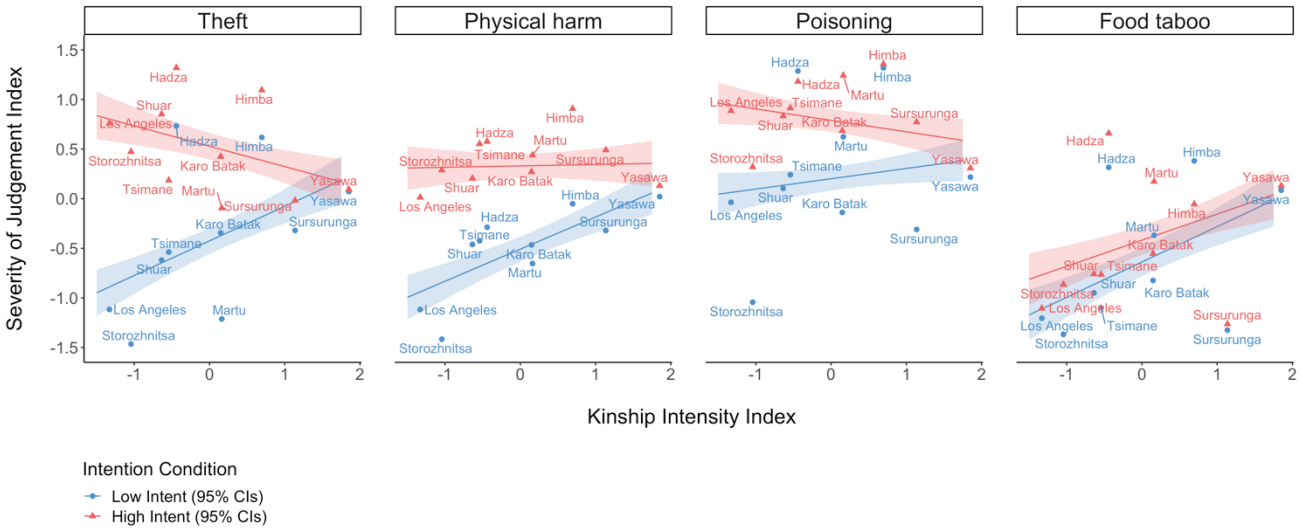

Figure 4. Reliance on intention in moral judgment decreases with kinship intensity across three vignette scenarios. The regression lines show fitted values and 95% confidence intervals produced by Linear Mixed Effects Regression predicting Severity of Judgment Index from the interaction between Kinship Intensity Index and intentionality condition in four vignette scenarios (theft, physical harm, poisoning, and food taboo violation). The Severity of Judgment Index combines measures of badness, punishment-worthiness, and reputation-damaging effects of harms. The models include subject random intercepts and individual-level covariates (sex & age). All continuous variables have been standardized. Labeled points show the average Severity of Judgment Index in each society for high and low intent harms.

Our analysis of the mitigating factor data offers further support for the kinship intensity hypothesis. Figure 5 and Table S10 reveal a significant, negative relationship between Kinship Intensity Index and the effect of mitigating factors on the severity of moral judgment (ß = –0.22, [95% CIs –0.34, –0.095], $p < 0.001$). A one standard deviation increase in kinship intensity corresponds with a 0.22 standard deviation decrease in the impact of mitigating factors, providing further support for the hypothesis that people in societies with intensive kinship have a reduced tendency to take mental states into account during moral judgment.

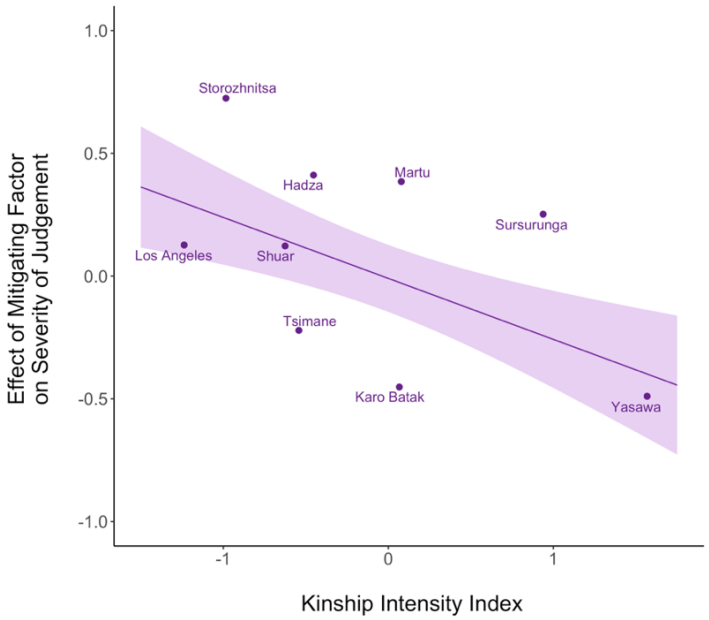

Figure 5. Effect of mitigating factors on severity of moral judgment declines with kinship intensity. The regression lines show fitted values and 95% confidence intervals produced by Linear Mixed Effects Regression predicting the impact of mitigating factors (self-defense and necessity) on moral judgment from Kinship Intensity Index. The models include subject random intercepts and individual-level covariates (sex & age). All continuous variables have been standardized. Labeled points show the average effect of mitigating factors in each society.

5. Discussion

We have argued that some of the variation in the use of mental states in moral judgment can be explained as a psychological calibration to the social incentives, informational constraints, and cognitive demands of kin-based institutions, which we have assessed using our construct of kinship intensity. Our examination of ethnographic accounts of norms that diminish the importance of mental states reveals that these are likely common across the ethnographic record, while our analysis of data on moral judgments of hypothetical violations from a diverse sample of ten societies indicates that kinship intensity is associated with a reduced tendency to rely on intentions in moral judgment. Together, these lines of ethnographic and psychological inquiry provide compelling evidence that (i) the heavy reliance of contemporary, WEIRD populations on intentions is likely neither globally nor historically representative, and (ii) kinship intensity may explain some of the population-level variation in the use of mental-state reasoning in moral judgment.

Our empirical results are correlational; accordingly, based on the current data, we cannot draw decisive causal inferences about the relationship between kinship intensity and the use of mental states in moral judgment. In addition, our sample size is small, especially given that our main predictor of interest varies at the society level. Nonetheless, against the background of a cohesive cultural evolutionary theory, the results suggest that this is a promising avenue for further investigation.

Demonstrating that kinship intensity predicts intentionality in the eHRAF ethnographic review sample would have further bolstered our hypothesis; however, despite trends in the expected directions, we lacked the statistical power in our small sample to substantiate these relationships with conventional levels of confidence. Nonetheless, it is worth noting that several authors have pointed to kin networks and relational mobility when seeking to understand the frequency of strict liability and collective guilt in small-scale societies. For example, Moore (1972) suggests that, in an interdependent community where ties cannot easily be broken, strict liability may be a means to assuage resentment or ameliorate social relationships harmed by a damaging act. This idea echoes the theory presented earlier, that reliance on intentions in moral judgment may be deemphasized in societies with intensive kinship and low relational mobility as a means to avoid conflict. Along similar lines, Gluckman (1972) links collective guilt to kin networks, suggesting that as societies shift away from complex kinship, "the individual becomes increasingly less dependent on his close relatives… [and] becomes isolable as a moral person from [them]" (p.42). These intriguing proposals fit with the hypothesis that norms of liability deemphasizing mental states may co-evolve with intensive kinship.

Alternatively, it is possible that the absence of formalized, impartial punishment institutions may favor the development of outcome-focused liability norms, potentially explaining some of the observed variation in the use of mental-state reasoning during moral judgment. For example, Boyer (2020) has recently argued that the ubiquity of divination practices in many small-scale societies may reflect people's tendency to view divination-based decisions as impartial– particularly in consequential, causally opaque, and socially risky situations such as witchcraft accusations. Following this logic, norms of liability based on observable outcomes may be more likely to culturally evolve in contexts which otherwise lack credibly impartial punishment institutions. Although we are unable to test this hypothesis in our cross-cultural sample, data comparing American and Japanese moral judgments cast doubt on at least some versions of this idea. Notably, although many of Japan's contemporary legal institutions were directly borrowed from Western models, Japanese participants take wrong-doers' mental states into account significantly less than American participants when making judgments about responsibility and punishment-worthiness (Hamilton & Sanders, 1992). Perhaps tellingly, kinship has long been a strong organizing force in Japanese society, and much of the research on the psychological impacts of low relational mobility has been conducted with Japanese participants (Hamilton & Sanders, 1992; Sato et al., 2014; Schug et al., 2010). In contrast to Boyer's view, European history suggests that the Western Church's dismantling of intensive kinship shifted people's social worlds and psychology in ways that opened the door to the creation of impersonal institutions and individual-centered laws (Henrich, forthcoming). By this account, it was a new psychology that first drove the formation of impartial judicial institutions, not the reverse.

Although our results are correlational, they suggest fertile ground for future research into the cultural evolution of intentionality in moral judgment, and more broadly, the cultural evolution of diverse conceptions of the mind. There is substantial variation in how people in different societies conceive of the mind, and potentially associated variation in the extent to which they engage in theory-of-mind reasoning in certain contexts. Anthropologists have identified six different "theories of mind" from across the ethnographic spectrum. Beyond the well-known "Western secular" conception, which situates the mind as an entity separate from but causally important to the physical world, there are a diversity of non-Western approaches. Other

conceptions of mind vary across multiple dimensions, including porousness (can minds enter other minds?), causality (do intentions play a causal role in the physical world?), and relational access (is it socially acceptable to make inferences about others' minds?) (Luhrmann et al., 2011). Here, we have built a cultural evolutionary framework for understanding a small sliver of this diversity. Moving forward, to make sense of how and why conceptions of the mind– and related psychologies– vary cross-culturally, we must carefully consider how culturally evolving beliefs, norms, and institutions direct, hone, and mold these features.

Data Availability

The data associated with this research are available at: https://osf.io/65krf/?view_only=0ee63a2f9c6541c3b3ab4c4fe2663a13

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing Interests

We declare no conflicts of interest.

Table 2. Selected ethnographic examples of strict liability

Society	*Country*	*Subsistence*	*Strict Liability*	*References*
Albanians	Albania	Intensive Agriculturalist	*Intermediate* - After an accidental murder…honor was in most places satisfied by a money payment. For example, two men of Krujë were examining a revolver together, not knowing it was loaded, when it went off suddenly and killed one of them. The other was held guilty of murder, but in view of the circumstances escaped with a payment of twenty-five napoleons, the conventional six purses.	Hasluck & Hutton (1954), p.239
Berbers of Morocco	Morocco	Agro-Pastoralist	*Present* - During the hegemony of Abd el Krim, the preceptor of Ajdir once cut off the end of the gland of a child he was circumcising. If it had not been for the intervention of Abd el Krim, who assessed five hundred dollars blood money, the preceptor would surely have been killed, since the child died shortly after the accident.	Coon (1931), p. 130
Eastern Toraja	Indonesia	Horticulturalist	*Intermediate* - If an injury not inflicted on purpose resulted in the death of the injured person, the close relatives might well have demanded the death of the perpetrator, but we know of no cases where this demand was accepted. The imprudent person paid a fine... Of two men who spent the night on an eel-bridge, one cut the other one in the leg because he thought it was an eel. The injured man bled to death, and the perpetrator paid two buffaloes as *gompate* [fine].	Adriani & Kruijt (1950), p. 323
Gikuyu	Kenya	Intensive Agriculturalist	*Present* - Murder and manslaughter were treated in the same way, for the kiama was not chiefly concerned with the motive of the crime or the way in which the crime was committed, but with the fact that one man had taken another man's life.	Kenyatta (1953), p. 227
Goajiro	Colombia	Pastoralist	*Present* - Murder, manslaughter and being the cause of another's death are the most serious crimes. They do not have these actual categories.	Bolinder (1957), p. 100
Igbo	Nigeria	Horticulturalist	*Intermediate* - If it appeared that the homicide had been accidental, the man-slayer might… be allowed to return after twenty-eight days, and on his return would be required to offer sacrifice to Ala [earth deity]. But in some communities there was no difference in the penalty for accidental homicide and murder, owing to the belief that if a man killed another by what we should term an accident he must at some previous time have committed an act abominable to Ala.	Meek & Lugard (1970), p. 210

Ingalik	Alaska	Complex Hunter-Gatherer	*Present* - When one person is killed by another, whether by foresighted intention or in a burst of passion, or even by accident, revenge may be carried out by any capable individual in the relationship of father, son, brother, or either uncle of the deceased.	Osgood (1958), p. 53
Innu	Canada	Complex Hunter-Gatherer	*Present* - A distinction between murder—the premeditated and deliberate killing of a human being—and manslaughter—the killing without prepense—is unknown to these Indians. Even the accidental killing of another person as the result of a quarrel is regarded as homicide.	Lips (1947), p. 470(A)
Kazakh	Kazakhstan	Pastoralist	*Intermediate* - For unpremeditated murder wergeld is not customary, but only a gift of clothing and covering the expenses for burial and memorial services… [In self-defense] if the defender strikes the attacker, even though unintentionally, and it results in death or injury to a part of the body, the person guilty of this pays wergild.	Grodekov & Krader (1889), p. 210
Nivkh	Russia	Complex Hunter-Gatherer	*Present* - [Blood vengeance] is obligatory not only in the case of premeditated murder, but for completely accidental murder as well, even one which is only indirectly connected with one or another person.	Shternberg et al. (1933), p. 150
Northern Paiute	United States	Complex Hunter-Gatherer	*Present* - In the memory of informants no revenge killings took place, and informants stated that the payment of blood money is the most usual type of settlement for murder. Wergild is also demanded in case of accidental homicide and it is more likely to be accepted than in cases of murder.	Whiting (1950), p. 77
Suku	Democratic Republic of Congo	Horticulturalist	*Present* - A homicide must be compensated with the payment of two slaves, regardless of whether it was accidental or premeditated...There is no place, in this system, for arguments over the amount of compensation… nor over such matters as premeditation or accident, for these are legally irrelevant and compromise cannot take place in these terms.	(1) Kopytoff (1961), p.63
Yi	China	Intensive Agriculturalist	*Present* - When Li-ch'ü Ta-i accidently killed the son of Li-ch'ü Pieh-t'u… The clansmen decided that Ta-i would have to pay with his life. Reluctantly, Ta-i accepted the decision and twice attempted suicide without success. It was only after Pieh-t'u's sudden death that no one would press for the forfeit of Ta-i's life.	Lin & Pan (1947), p.107

References

18 U.S. Code § 1111 - Murder. (n.d.). Retrieved from https://www.law.cornell.edu/uscode/text/18/1111

Adriani, N., & Kruijt, A. C. (1950). *Bare'E-Speaking Toradja Of Central Celebes (The East Toradja): First Volume*. Verhandelingen, Amsterdam: Noord-Hollandsche Uitgevers Maatschappij.

Apicella, C. L., Azevedo, E. M., Christakis, N. A., & Fowler, J. H. (2014). Evolutionary Origins of the Endowment Effect: Evidence from Hunter-Gatherers. *The American Economic Review*, *104*(6), 1793–1805. https://doi.org/10.2307/42920866

Baker, H. D. R. (1979). *Chinese Family and Kinship*. New York: Columbia University Press.

Barrett, H. C. (2015). *The Shape of Thought: How Mental Adaptations Evolve*. New York: Oxford University Press.

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

Barrett, H. C., Broesch, T., Scott, R. M., He, Z., Baillargeon, R., Wu, D., … Laurence, S. (2013). Early false-belief understanding in traditional non-Western societies. *Proceedings of the Royal Society B: Biological Sciences*, *280*(1755), 20122654–20122654. https://doi.org/10.1098/rspb.2012.2654

Berman, H. J. (1983). *Law and Revolution: The Formation of the Western Legal Tradition*. Cambridge, Mass.: Harvard University Press.

Bolinder, G. (1957). *Indians On Horseback*. London: Dennis Dobson. Retrieved from http://ehrafworldcultures.yale.edu/document?id=sc13-007

Bowles, S., & Choi, J. K. (2013). Coevolution of farming and private property during the early Holocene. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(22), 8830–8835.

Boyer, P. (2020). Why divination? Evolved psychology and strategic interaction in the production of truth. *Current Anthropology*, *XX*(X), xxx–xxx.

Brewer, M. B., & Pierce, K. P. (2005). Social identity complexity and outgroup tolerance. *Personality and Social Psychology Bulletin*, *31*(3), 428–437. https://doi.org/10.1177/0146167204271710

Buon, M., Jacob, P., Loissel, E., & Dupoux, E. (2013). A non-mentalistic cause-based heuristic in human social evaluations. *Cognition*, *126*(2), 149–155. https://doi.org/10.1016/j.cognition.2012.09.006

Campbell, C., & Lee, J. Z. (2011). Kinship and the long-term persistence of inequality in Liaoning, China, 1749-2005. *Chinese Sociology and Anthropology*, *44*(1), 71–103. https://doi.org/10.2753/CSA2162-0555440105

Carter, N. L., & Weber, J. M. (2010). Not Pollyannas: Higher Generalized Trust Predicts Lie Detection Ability. *Social Psychological and Personality Science*, *1*(3), 274–279. https://doi.org/10.1177/1948550609360261

Chakroff, A., Dungan, J., Koster-hale, J., Brown, A., Saxe, R., & Young, L. (2016). When minds matter for moral judgment : intent information is neurally encoded for harmful but not impure acts. *Social Cognitive and Affective Neuroscience*, (2016), 476–484. https://doi.org/10.1093/scan/nsv131

Chapais, B. (2010). *Primeval kinship: How pair-bonding gave birth to human society*. Cambridge, Mass.: Harvard University Press.

Cikara, M., & Van Bavel, J. J. (2014). The Neuroscience of Intergroup Relations: An Integrative Review. *Perspectives on Psychological Science*, *9*, 245–274. Retrieved from https://doi.org/10.1177/1745691614527464

Coon, C. S. (1931). *Tribes Of The Rif. Harvard African Studies*. Cambridge, Mass.: Peabody Museum of Harvard University. Retrieved from http://ehrafworldcultures.yale.edu.ezp-prod1.hul.harvard.edu/document?id=mx03-001

Cushman, F. (2015). Deconstructing intent to reconstruct morality. *Current Opinion in Psychology*, *6*, 97–103. https://doi.org/10.1016/j.copsyc.2015.06.003

Cushman, F., Sheketoff, R., Wharton, S., & Carey, S. (2013). The development of intent-based moral judgment. *Cognition*, *127*, 6–21.

Dow, G. K., Mitchell, L., & Reed, C. G. (2017). The economics of early warfare over land. *Journal of Development Economics*, *127*(April), 297–305. https://doi.org/10.1016/j.jdeveco.2017.04.002

Dungan, J. A., & Young, L. (2019). Asking "why?" Enhances theory of mind when evaluating harm but not purity violations. *Social Cognitive and Affective Neuroscience*, *14*(7), 699–708. https://doi.org/10.1093/scan/nsz048

Duranti, A. (2015). *The Anthropology of Intentions: Language in a World of Others*. Cambridge: University of Cambridge Press.

Ebrey, P. B., & Watson, J. L. (1986). Introduction. In P. B. Ebrey & J. L. Watson (Eds.), *Kinship organization in Late Imperial China, 1000-1940* (pp. 1–15). Los Angeles: University of California Press.

Enke, B. (2019). Kinship, Cooperation, and the Evolution of Moral Systems. *The Quarterly Journal of Economics*, *134*(2), 953–1019. https://doi.org/10.1093/qje/qjz001

Ensminger, J., & Henrich, J. (Eds.). (2014). *Experimenting with Social Norms: Fairness and Punishment in Cross-Cultural Perspective*. New York: Russell Sage Press.

Flannery, K., & Marcus, J. (2012). The creation of inequality: How our prehistoric ancestors set the stage for monarchy, slavery, and empire, *41*(1), 631. https://doi.org/10.1017/S0959774313000188

Fowler, J. H., & Christakis, N. A. (2010). Cooperative Behavior Cascades in Human Social Networks. *Proc Natl Acad Sci U S A*, *107*(12). https://doi.org/10.1073/pnas.0913149107

Fox, R. (1967). *Kinship and marriage: an anthropological perspective*. *Pelican anthropology library*. Harmondsworth: Penguin.

Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J. 1, Lim, B. C., … Yamaguchi, S. (2011). Differences Between Tight and Loose Cultures : A 33-Nation Study. *Science*, *332*(May), 1100–1104.

Gluckman, M. (1972). Moral crises: Magical and secular solutions. In M. Gluckman (Ed.), *Allocation of Responsibility* (pp. 1–50). Manchester: Manchester University Press.

Goldman, L. (1993). *The Culture of Coincidence: Accident and Absolute Liability in Huli*. Oxford: Clarendon Press.

Goody, J. (1983). *The Development of the Family and Marriage in Europe*. New York: Cambridge University Press.

Greif, A. (2006). Family structure, institutions, and growth: The origins and implications of western corporations. *American Economic Review*, *96*(2), 308–312. https://doi.org/10.1257/000282806777212602

Grodekov, N. I., & Krader, B. (1889). *Kazakhs And Kirgiz Of The Syr-Darya Oblast: Juridical Life*. Tashkent: The Typolithography of S. I. Lakhtin.

Hamilton, V. L., & Sanders, J. (1992). *Everyday Justice: Responsibility and the Individual in Japan and the United States*. New Haven, Conn.: Yale University Press.

Hamlin, J. K. (2013). Failed attempts to help and harm : Intention versus outcome in preverbal infants ' social evaluations. *Cognition*, *128*(3), 451–474. https://doi.org/10.1016/j.cognition.2013.04.004

Harper, K. (2013). *From Shame to Sin: The Christian Transformation of Sexual Morality in Late Antiquity*. Cambridge, Mass.: Harvard University Press.

Harris, L. T., & Fiske, S. T. (2006). Dehumanizing the Lowest of the Low. *Psychological Science*, *17*(10), 847–853.

Harris, L. T., & Fiske, S. T. (2009). Social neuroscience evidence for dehumanised perception dehumanised perception. *European Review of Social Psychology Social*, *20*(1), 192–231.

https://doi.org/10.1080/10463280902954988

Harris, L. T., & Fiske, S. T. (2014). Dehumanized Perception: A Psychological Means to Facilitate Atrocities, Torture, and Genocide? *Zeitschrift Für Psychologie*, *219*(3), 175–181. https://doi.org/10.1027/2151-2604/a000065

Hashimoto, A., & Traphagan, J. W. (2009). Changing Japanese Families. In A. Hashimoto & J. W. Traphagan (Eds.), *Imagined Families, Lived Families: Culture and Kinship in Contemporary Japan* (pp. 1–12). Albany: State University of New York Press.

Hashimoto, H., & Yamagishi, T. (2013). Two faces of interdependence: Harmony seeking and rejection avoidance. *Asian Journal of Social Psychology*, *16*, 142–151. https://doi.org/10.1111/ajsp.12022

Hasluck, M. M. H., & Hutton, J. H. (1954). *Unwritten Law In Albania*. Cambridge: Cambridge University Press. Retrieved from https://ehrafworldcultures-yale-edu.ezp-prod1.hul.harvard.edu/document?id=eg01-010

Heine, S. J. (2016). *Cultural psychology* (3rd ed.). New York: W. W. Norton & Company, Inc.

Henrich, J. (n.d.). *WEIRD: How Westerners became psychologically peculiar and particularly prosperous*.

Henrich, J. (2008). A Cultural Species. In M. Brown (Ed.), *Explaining Culture Scientifically* (pp. 184–210). Seattle: University of Washington Press.

Henrich, J. (2015). Culture and social behavior. *Current Opinion in Behavioral Sciences*, *3*, 84–89. https://doi.org/10.1016/j.cobeha.2015.02.001

Henrich, J. (2016). *The secret of our success: How culture is driving human evolution, domesticating our species, and making us smart*. Princeton: Princeton University Press.

Henrich, J., Ensminger, J., McElreath, R., Barr, A., Barrett, H. C., Bolyanatz, A., … Ziker, J. (2010). Markets, religion, community size and the evolution of fairness and punishment. *Science*, *327*(5972), 1480–1484.

Hoemann, K., Crittenden, A. N., Msafiri, S., Liu, Q., Li, C., Roberson, D., … Barrett, L. F. (2019). Context Facilitates Performance on a Classic Cross-Cultural Emotion Perception Task. *Emotion*, *19*(7), 1292–1313. https://doi.org/10.1037/emo0000501

Johnson, A. W., & Earle, T. (2000). *The Evolution of Human Societies: From Foraging Group to Agrarian State* (2nd ed.). Stanford: Stanford University Press.

Kenyatta, J. (1953). *Facing Mount Kenya: The Tribal Life Of The Gikuyu*. London: Secker and Warburg.

Kitayama, S., Ishii, K., Imada, T., Takemura, K., & Ramaswamy, J. (2006). Voluntary settlement and the spirit of independence: evidence from Japan's "Northern frontier". *Journal of*

Personality and Social Psychology, *91*(3), 369–384. https://doi.org/10.1037/0022-3514.91.3.369

Kitayama, S., & Park, J. (2010). Cultural neuroscience of the self: understanding the social grounding of the brain. *Social Cognitive and Affective Neuroscience*, *5*(2–3), 111–129.

Kitayama, S., Yanagisawa, K., Ito, A., Ueda, R., Uchida, Y., & Abe, N. (2017). Reduced orbitofrontal cortical volume is associated with interdependent self-construal. *Proceedings of the National Academy of Sciences*, *114*(30), 201704831. https://doi.org/10.1073/pnas.1704831114

Kopytoff, I. (1961). Extension Of Conflict As A Method Of Conflict Resolution Among The Suku Of The Congo. *Journal Of Conflict Resolution*, *5*(1), 61–69.

Li, L. M. W., Hamamura, T., & Adams, G. (2016). Relational Mobility Increases Social (but Not Other) Risk Propensity. *Journal of Behavioral Decision Making*, *29*(5), 481–488. https://doi.org/10.1002/bdm.1894

Lin, Y., & Pan, J. S. (1947). *The Lolo Of Liang-Shan*. Shanghai, China: The Commercial Press.

Lips, J. (1947). Naskapi Law: Law And Order In A Hunting Society. *Transactions Of The American Philosophical Society*, *37*, 379–492. Retrieved from https://ehrafworldcultures-yale-edu.ezp-prod1.hul.harvard.edu/document?id=nh06-008

Luhrmann, T. M., Astuti, R., Robbins, J., Cassaniti, J., Marrow, J., Lucy, J., … Mazza, G. (2011). Toward an Anthropological Theory of Mind. *Suomen Antropologi: Journal of the Finnish Anthropological Society*, *4*, 5–69. https://doi.org/10.1007/s13398-014-0173-7.2

Lun, J., Oishi, S., & Tenney, E. R. (2012). Residential mobility moderates preferences for egalitarian versus loyal helpers. *Journal of Experimental Social Psychology*, *48*(1), 291–297. https://doi.org/10.1016/j.jesp.2011.09.002

Martin, J. W., Buon, M., & Cushman, F. (2019). The effect of cognitive load on intent-based moral judgment. *PsyArXiv*.

Mcloughlin, N., & Over, H. (2017). Young Children Are More Likely to Spontaneously Attribute Mental States to Members of Their Own Group. *Psychological Science*, *28*(10), 1503–1509. https://doi.org/10.1177/0956797617710724

McNamara, R. A. (2016). *Morality when the mind is opaque: Intent vs. outcome across the lifespan in Yasawa, Fiji*.

McNamara, R. A., & Henrich, J. (2017). Kin and kinship psychology both influence cooperative coordination in Yasawa, Fiji. *Evolution and Human Behavior*, *38*(2), 197–207. https://doi.org/10.1016/j.evolhumbehav.2016.09.004

McNamara, R. A., Willard, A. K., Norenzayan, A., & Henrich, J. (2018). *Thinking about thoughts when the mind is unknowable: Mental state reasoning through False Belief and*

Empathy across societies.

McNamara, R. A., Willard, A. K., Norenzayan, A., & Henrich, J. (2019). Weighing outcome vs . intent across societies : How cultural models of mind shape moral reasoning. *Cognition*, *182*, 95–108. https://doi.org/10.1016/j.cognition.2018.09.008

Meek, C. K., & Lugard, Lord. (1970). *Law And Authority In A Nigerian Tribe: A Study In Indirect*. New York: Barnes & Noble. Retrieved from http://ehrafworldcultures.yale.edu.ezp-prod1.hul.harvard.edu/document?id=ff26-008

Mitterauer, M. (2010). *Why Europe?: the medieval origins of its special path*. Chicago: University of Chicago Press.

Moore, S. F. (1972). Legal liability and evolutionary interpretation: some aspects of strict liability, self-help and collective responsibility. In M. Gluckman (Ed.), *Allocation of Responsibility* (pp. 51–108). Manchester: Manchester University Press.

Murdock, G. P. (1949). *Social structure*. New York: Free Press.

Oishi, S., Schug, J., Yuki, M., & Axt, J. (2015). The Psychology of Residential and Relational Mobilities. In M. J. Gelfand, C. Chiu, & Y. Hong (Eds.), *Handbook of Advances in Culture and Psychology* (Vol. 5, pp. 221–272). New York: Oxford University.

Oishi, S., & Talhelm, T. (2012). Residential Mobility: What Psychological Research Reveals. *Current Directions in Psychological Science*, *21*(6), 425–430. https://doi.org/10.1177/0963721412460675

Osgood, C. (1958). *Ingalik Social Culture*. New Haven: Published for the Dept. of Anthropology, Yale University, by The Yale University Press.

Posner, R. A. (1980). A Theory of Primitive Society, with Special Reference to Law. *The Journal of Law & Economics*, *23*(1), 1–53.

Rand, D. G., Arbesman, S., & Christakis, N. A. (2011). Dynamic Social Networks Promote Cooperation in Experiments with Humans. *Proceedings of the National Academy of Sciences of the United States of America*, *108*, 19193–19198. https://doi.org/10.1073/pnas.

Robbins, J., & Rumsey, A. (2008). Introduction: Cultural and Linguistic Anthropology and the Opacity of Other Minds. *Anthropological Quarterly*, *81*(2), 407–420.

Rustagi, D., Engel, S., & Kosfeld, M. (2010). Conditional Cooperation and Costly Monitoring Explain Success in Forest Commons Management. *Science*, *330*, 961–965.

Sato, K., Yuki, M., & Norasakkunkit, V. (2014). A Socio-Ecological Approach to Cross-Cultural Differences in the Sensitivity to Social Rejection: The Partially Mediating Role of Relational Mobility. *Journal of Cross-Cultural Psychology*, *45*(10), 1549–1560. https://doi.org/10.1177/0022022114544320

Saxe, R. (2016). Moral status of accidents. *Proc Natl Acad Sci U S A*, *113*(17), 4555–4557. https://doi.org/10.1073/pnas.1604154113

Schieffelin, B. (1990). *The Give and Take of Everyday Life: Language Socialization of Kaluli Children*. New York: Cambridge University Press.

Schieffelin, B. (2008). Speaking Only Your Own Mind: Reflections on Talk, Gossip and Intentionality in Bosavi (PNG). *Anthropological Quarterly*, *81*(2), 431–441.

Schug, J., Yuki, M., & Maddux, W. (2010). Relational Mobility Explains Between- and Within-culture Differences in Self-disclosure to Close Friends. *Psychological Science*, *21*(10), 1471–1478. https://doi.org/10.1177/0956797610382786

Schulz, J. F., Bahrami-rad, D., Beauchamp, J. P., & Henrich, J. (2019). The Church, intensive kinship, and global psychological variation. *Science*, *366*(707). https://doi.org/10.1126/science.aau5141

Shternberg, L. I., Bromwich, L., & Ward, N. (1933). *Gilyak, Orochi, Goldi, Negidal, Ainu: Articles And Materials*. Khabarovsk: Dal'giz. Retrieved from http://ehrafworldcultures.yale.edu/document?id=rx02-001

Thomson, R., Yuki, M., Talhelm, T., Schug, J., Kito, M., Ayanian, A. H., … Visserman, M. L. (2018a). Relational mobility predicts social behaviors in 39 countries and is tied to historical farming and threat. *Proceedings of the National Academy of Sciences*, *115*(29), 7521–7526. https://doi.org/10.1073/pnas.1713191115

Thomson, R., Yuki, M., Talhelm, T., Schug, J., Kito, M., Ayanian, A. H., … Visserman, M. L. (2018b). Supplementary Information for Relational mobility predicts social behaviors in 39 countries and is tied to historical farming and threat. *Proc Natl Acad Sci U S A*, *115*(29). https://doi.org/10.1073/pnas.

Todd, E. (1990). *L'Invention de l'Europe*. Paris: Éditions du Seuil.

Tsoi, L., & Young, L. (2018). Moral reasoning. In S. Thompson-Schill & J. Wixted (Eds.), *Language & Thought. Volume 3 of The Stevens' Handbook of Experimental Psychology and Cognitive Neuroscience* (4th ed., Vol. 3). Wiley.

Walker, R. S., & Bailey, D. H. (2014). Marrying kin in small-scale societies. *American Journal of Human Biology*, *26*(3), 384–388. https://doi.org/10.1002/ajhb.22527

Waytz, A., & Young, L. (2018). Morality for Us versus Them. In K. Gray & J. Graham (Eds.), *The Atlas of Moral Psychology* (pp. 186–192). New York: The Guilford Press.

Whiting, B. B. (1950). Paiute Sorcery. In *Viking Fund Publications In Anthropology*. New York: The Viking Fund Inc.

Wiessner, P. (1998). On network analysis: The potential for understanding (and misunderstanding) !Kung Hxaro. *Current Anthropology*, *39*(4), 514–517.

Wiessner, P. (2002). Hunting, healing, and hxaro exchange: A long-term perspective on! Kung (Ju/'hoansi) large-game hunting. *Evolution and Human Behavior*, *23*, 407–436.

Yamagishi, T., Kikuchi, M., & Kosugi, M. (1999). Trust , gullibility , and social intelligence. *Asian Journal of Social Psychology*, *2*(1), 145–161. https://doi.org/10.1111/1467-839X.00030

Young, L., Cushman, F., Hauser, M., & Saxe, R. (2007). The neural basis of the interaction between theory of mind and moral judgment. *Proc Natl Acad Sci U S A*, *104*(20), 8235–8240.

Young, L., & Saxe, R. (2008). The neural basis of belief encoding and integration in moral judgment. *NeuroImage*, *40*, 1912–1920. https://doi.org/10.1016/j.neuroimage.2008.01.057

Young, L., & Saxe, R. (2009). Innocent intentions : A correlation between forgiveness for accidental harm and neural activity. *Neuropsychologia*, *47*, 2065–2072. https://doi.org/10.1016/j.neuropsychologia.2009.03.020

Young, L., & Saxe, R. (2011). When ignorance is no excuse: Different roles for intent across moral domains. *Cognition*, *120*(2), 202–214. https://doi.org/10.1016/j.cognition.2011.04.005

Young, L., & Tsoi, L. (2013). When Mental States Matter , When They Don 't, and What That Means for Morality. *Social and Personality Psychology Compass*, *7/8*, 585–604.

Young, L., & Waytz, A. (2013). Mind attribution is for morality. In S. Baron-Cohen, M. Lombardo, & H. Tager-Flusberg (Eds.), *Understanding Other Minds: Perspectives from developmental social neuroscience* (pp. 359–379). Oxford: Oxford University Press. https://doi.org/10.1093/acprof