Cross-Societal Variation in Norm Enforcement Systems: A Review

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Abstract

Across human societies, people are sometimes willing to punish norm violators. Such punishment can take the form of revenge from victims, seemingly altruistic intervention from third parties, or legitimized sanctioning from institutional representatives. Although prior work has documented cross-cultural regularities in norm enforcement, substantial variation exists in the prevalence and forms of punishment across societies. Such cross-societal variation may arise from cultural evolutionary processes, resulting in different moral systems and mechanisms to enforce existing or emerging norms. To date, empirical evidence from comparative studies across diverse societies has remained disconnected, due to a lack of interdisciplinary integration and a prevalent tendency of empirical studies to focus on different underpinnings of variation in norm enforcement. To provide a more complete view of the shared and unique aspects of punishment across societies, we review prior research in anthropology, economics, and psychology, and take a first step towards integrating the plethora of socio-ecological and cultural factors proposed to explain cross-societal variation in norm enforcement. We conclude by discussing how future cross-societal research can use diverse methodologies to further illuminate key questions on the domain-specificity of punishment, the diversity of tactics supporting social norms, and their role in processes of norm change.

Keywords: punishment, social norms, culture, cross-cultural research

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1. Introduction

Social norms are of vital importance to solve key societal challenges[1–3], including public goods provision, climate change mitigation, and responses to public health threats. Interdisciplinary research has provided compelling evidence that people are sometimes willing to enforce social norms through punishment[4–7], and that introducing punishment opportunities can help sustain cooperative norms[8,9]. That said, punishment can be used to support not only prosocial but *any* norms[10] and is sometimes targeted at cooperative group members rather than norm violators[11,12]. Additionally, the role of punishment in supporting norm enforcement in field settings remains debated[6,13–16], and complicated by the fact that diverse tactics with varying costs can be used against norm breakers in real-world situations[7,15,17,18].

Cultural evolutionary processes may shape the mechanisms that promote and sustain cooperation and norm abidance[19–22], giving rise to variation in patterns of norm enforcement across societies. A growing body of research in the evolutionary behavioral sciences has used diverse methods to document and explain such variation in norm enforcement systems. Several ethnographic case studies have provided detailed accounts on individual tactics and institutional responses to norm breakers in rural, nonindustrial societies, including in the Enga horticulturalists in Papua New Guinea[23], Ju/'hoansi foragers in southern Africa[7], Mentawai horticulturalists in Indonesia[16], and Turkana pastoralists in East Africa[6,24]. Yet these accounts rarely allow for direct cross-societal comparisons or broad generalizability. Groundbreaking cross-societal experiments in field settings address this limitation, allowing for systematic comparisons of punishment across societies with varying social, economic, and political organization, using standardized decision-making tasks[12,25–27]. However, such studies have often focused on specific dimensions putatively underlying variation in norm

enforcement, while ignoring others, thus making integration of evidence across studies challenging. More recent work has capitalized on large-scale datasets to examine how a broader set of socio-ecological and cultural factors shapes punishment across societies[20,28,29], though these examinations have been mostly limited to industrialized societies (for notable exceptions see[30,31]).

Existing work on cross-societal variation in punishment remains scattered across disciplines and fragmented because of a focus of different empirical studies on distinct factors underlying punishment. To provide a more holistic view of potential sources of variation in norm enforcement systems, we review evidence from research in anthropology, economics, and psychology involving explicit comparisons of punishment across societies. We focus on studies that employ the same methodology to investigate punishment across (at least two) societies, because such studies allow for direct cross-societal comparisons and an empirical examination of the role of different factors in shaping norm enforcement across societies. Next, we take a first step towards integrating the plethora of socio-ecological and cultural factors proposed to explain cross-societal variation in norm enforcement. Our review aims to shed light on the shared aspects of punishment across human societies, as well as the specific cultural contexts that promote different norm enforcement tactics.

2. Literature review approach

We used a semi-structured approach to identify and review existing studies on cross-societal variation in norm enforcement. Specifically, we first compiled a library containing all empirical studies on punishment across societies that were known to us. Second, we examined the references of all articles in this library for additional relevant articles, which were checked by at least two authors for eligibility. Third, we conducted literature searches on Web of Science using the following keyword combinations: “culture” AND “peer punishment”; “culture” AND “altruistic punishment”; “culture” AND “norm enforcement”;

"cross-cultural" AND "punishment"; "cross-cultural" AND "peer punishment"; "cross-cultural" AND "altruistic punishment"; "cross-cultural" AND "norm enforcement". The articles identified in this last step were also checked by at least two authors for eligibility. To be part of this review, papers had to meet the following pre-determined eligibility criteria: (a) be empirical studies of punishment, (b) include explicit comparisons of at least two societies, and (c) be based on either samples of adults or children.

Based on these criteria, our review includes 28 empirical studies of cross-societal variation in punishment. Table 1 provides an overview of all eligible studies we found, including information about the number and type of societies examined, the samples recruited, the method and punishment measure employed, and the potential explanatory dimensions considered (see Table S1 in the SI for detailed information). Next, we summarize insights from this literature review concerning cross-societal regularities and differences in punishment behaviors and the socio-ecological and cultural factors that shape them.

3. Cross-societal universals in norm enforcement

In recent decades, scholars have critiqued the social and behavioral sciences for focusing on a limited, unrepresentative subset of human populations[32,33], while ignoring the substantial diversity of societies around the world. This focus on samples from so-called WEIRD (Western, Educated, Industrialized, Rich, and Democratic[32]) societies can severely restrict the generalizability of research findings and cast doubt on claims about the universality of observed psychological and behavioral phenomena. As such, it is crucial to draw upon insights from cross-societal research to identify both universally shared and culturally varying aspects of norm enforcement.

Table 1. Overview of reviewed studies, including information on the societies and samples investigated, the methods and punishment measures employed, and the socio-ecological or cultural dimensions considered.

Article	Societies	Samples		Method					Measure		Dimensions
		Adults	Children	Economic games	Ethnographic	Surveys	Vignettes	Other	Self-reported	Behavior	
Barrett et al. (2016)	10 diverse societies	X					X		X		Community size, subsistence type
Brauer & Chaurand (2010)	8 countries	X					X		X		Individualism versus collectivism
Cao et al. (2021)	(a) 1,107 ethnic groups; (b) 76 countries	X			X	X			X		Reliance on herding
Enke (2019)	(a) 76 countries of residence; (b) 139 countries of birth	X				X			X		Kinship intensity
Eriksson et al. (2017)	8 countries	X					X		X		Individualism versus collectivism, indulgence, power distance
Eriksson et al. (2021)	57 countries	X					X		X		Emancipative moral judgments, gender equality, individualism versus collectivism and individual autonomy values, indulgence, median income, pathogen prevalence, power distance, pro-violence attitudes, threat, tightness-looseness

Table 1 (continued).

Article	Societies	Samples		Method					Measure		Dimensions
		Adults	Children	Economic games	Ethnographic	Surveys	Vignettes	Other	Self-reported	Behavior	
Falk et al. (2018)	76 countries	X				X			X		Absolute latitude, agricultural suitability, biological conditions, crop suitability, geographic conditions, individualism versus collectivism, family ties
Fitouchi & Singh (2023)	2 small-scale societies	X			X				X		Subsistence type
Gächter & Herrmann (2009)	4 sites in 2 countries	X		X						X	N/A
Gampe & Daum (2018)	26 countries		X					X		X	Power orientation, ingroup collectivism, gender egalitarianism, uncertainty avoidance, future orientation, institutional collectivism, human orientation, performance orientation, assertiveness
Garfield et al. (2019)	59 diverse societies	N/A	N/A		X					X	Subsistence type
Garfield et al. (2020)	59 diverse societies	N/A	N/A		X					X	Subsistence type, region, group context, leader gender
Garfield et al. (2023)	131 diverse societies	N/A	N/A		X					X	Animal husbandry, community size, dependence on hunting, food storage, external trade, social stratification

Table 1 (continued).

Article	Societies	Samples		Method					Measure		Dimensions
		Adults	Children	Economic games	Ethnographic	Surveys	Vignettes	Other	Self-reported	Behavior	
Henrich et al. (2006)	15 diverse societies	X		X						X	Subsistence type
Henrich et al. (2010)	15 diverse societies	X		X						X	Community size, market integration, religion, subsistence type
Herrmann et al. (2008)	16 industrialized societies	X		X						X	Democracy, GDP per capita, individualism versus collectivism, masculinity, norms of civic cooperation, power distance, rule of law, survival versus self-expression values, traditional versus secular values, trust, uncertainty avoidance
House et al. (2020)	6 diverse societies		X	X						X	Subsistence type
Kanngiesser et al. (2022)	8 diverse societies		X					X		X	Community size, subsistence type
Marlowe et al. (2008)	12 diverse societies	X		X						X	Population size
Marlowe et al. (2011)	12 diverse societies	X		X						X	Population size
Oosterbeek et al. (2004)	25 countries	X		X						X	Individualism versus collectivism, power distance

Table 1 (continued).

Article	Societies	Samples		Method					Measure		Dimensions
		Adults	Children	Economic games	Ethnographic	Surveys	Vignettes	Other	Self-reported	Behavior	
Pedersen et al. (2020)	2 countries	X						X		X	N/A
Rodriguez-Mosquera et al. (2008)	3 ethnic groups	X						X	X		Honor
Spitzer (1975)	48 diverse societies	X			X					X	Societal complexity (aggregate measure)
Talhelm et al. (2014)	27 provinces in China	X					X			X	Subsistence type
Uskul et al. (2023)	12 sites in 11 countries across 3 world regions	X					X			X	Honor
Wang & Leung (2010)	4 countries	X					X			X	N/A
Yamagishi (1986)	2 countries	X		X						X	Trust

Cross-societal experiments and vignette studies have provided convincing evidence that some aspects of norm enforcement are present across societies. In an influential experiment using economic decision-making tasks (i.e., ultimatum and third-party punishment games) across 13 small-scale societies and two Western societies, Henrich and colleagues[25] observed that at least some individuals in all societies were willing to punish unfairness. That was the case both when they were personally victimized (as receivers in the ultimatum game) and when in the role of uninvolved observers (in a third-party punishment game). Across societies, punishment was adjusted proportionally to the severity of offenses, with more individuals willing to punish as offers became more unequal (consistent with findings in Western samples[5]). Barrett and colleagues[34] conducted a vignette experiment in eight small-scale societies and two Western societies and found that, in all societies, individuals thought that at least some offenses (associated with food taboos, physical harm, poisoning, or theft) should be punished. Across societies, punishment was deemed more appropriate when offenses were intentional rather than unintentional, though the extent to which intentionality mattered for punishment judgments varied considerably.

Similarly, experimental and vignette studies of norm enforcement in children provide evidence for some cross-societal regularities. In a vignette study in six small-scale societies and two Western societies, Kanngiesser and colleagues[35] examined children's reactions to conventional norm violations in a sorting task. Across societies, children intervened to punish violations of conventional norms established in the experiment, although the forms of protest used varied across samples. House and colleagues[36] studied children's third-party punishment of selfish and prosocial behavior in economic decision-making tasks across six diverse societies and observed substantial similarities in the prevalence and developmental trajectories of punishment. Across societies, children were more likely to punish selfish compared to prosocial others. Additionally, norms *against* antisocial punishment were more

consistently present among children in all societies, whereas the appropriateness of free-rider punishment was less stable across societies.

These patterns are particularly interesting in light of findings on the prevalence and appropriateness of free-rider punishment and antisocial punishment across industrialized societies. In a cross-societal experiment across 16 industrialized nations, Hermann and colleagues[12] documented consistent tendencies to punish free-riders, with participants across all subject pools making similar investments to punish low contributors in public goods games. Notably, however, they documented substantial variation in antisocial punishment (i.e., punishment of high contributors) across participant pools. Similarly, Gächter & Herrmann[37] observed substantial differences in how harshly Swiss and Russian students punished others in one-shot public goods games. Russian students engaged in harsher free-rider punishment *and* antisocial punishment compared to Swiss students (among whom antisocial punishment was practically absent). Antisocial punishment has also been documented in small-scale societies, with participants in six out of the 14 populations studied by Henrich and colleagues[25] displaying punishment of 'hyperfair' offers in ultimatum games.

Recent vignette studies have further illuminated cross-societal regularities in the perceived appropriateness of punishing norm violations across industrialized nations. Eriksson and colleagues[28] documented appropriateness ratings of several reactions to norm violations in 57 countries. Consistent with findings from economic experiments in diverse societies[5,25], individuals across countries perceived punishment as more appropriate as the severity of norm violations increased, while they considered non-action as more appropriate for less severe norm violations. In a previous study using a similar methodology, Eriksson and colleagues[38] examined how students in eight industrialized nations judged the appropriateness of individual versus collective punishment of norm violations. Across countries regarded as individualistic and collectivistic, participants consistently rated

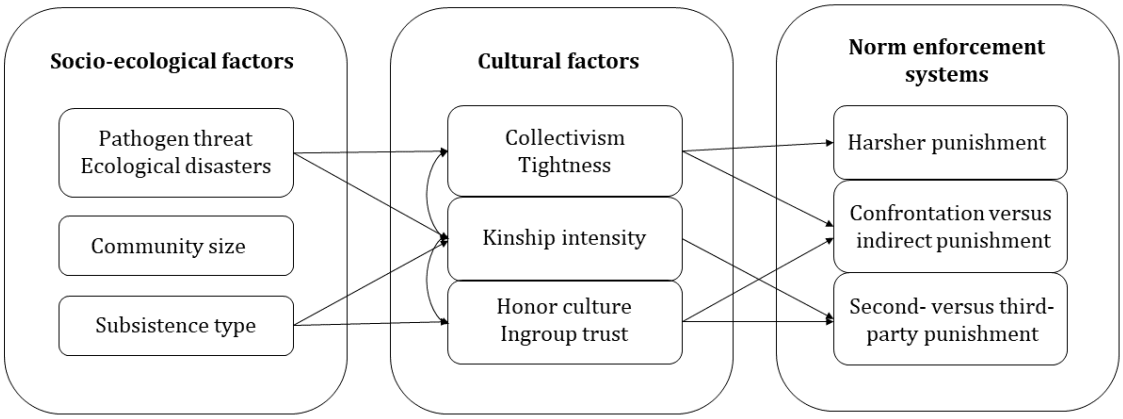
collective punishment as more appropriate than individual punishment. This tendency to perceive punishers more positively when they act as part of a collective is consistent with the idea that punishment has different consequences depending on the motives (prosocial versus selfish) ascribed to punishers[39,40]. In situations where punishment is implemented as part of or on behalf of a group, presumably with group interests rather than self-interest in mind, punishers may gain reputational benefits. In contrast, in situations where self-interested or competitive motives cannot be ruled out, punishers may even incur reputational costs, for example if they are perceived as aggressive[41].

Overall, the body of research reviewed above underscores the universality of some elements of norm enforcement across a broad range of societies, while also highlighting intriguing variation. This includes differences in the manner and intensity of punishment, the influence of intentionality on punishment judgments, and the differential acceptance and consequences of free-rider and antisocial punishment. Further work should continue to integrate insights from diverse societies to clarify when and why punishment is perceived as a signal of cooperative[42,43] versus competitive[39,41] intent, and to examine the reputational consequences of punishment in more diverse cultural settings.

4. Cross-societal variation in norm enforcement

Prior work has devoted considerable attention to describing potential sources of variation in norm enforcement systems across societies. Some theoretical perspectives emphasize the role of socio-ecological factors, such as community and population size[26,27], pathogen prevalence[20,44,45], or ecological threats and demands[29,44,46] in shaping norms and institutions that regulate social behavior. Other perspectives have rather focused on cultural sources that can affect the prevalence and forms of punishment across societies[19,21,38,47,48]. Below, we provide an overview of prior research on the socio-ecological and cultural factors proposed to underlie cross-societal variation in norm enforcement (see Figure 1).

Figure 1. Schematic depiction of socio-ecological and cultural factors, and their interrelations, putatively underlying cross-societal variation in norm enforcement. Arrows indicate relations among factors proposed in the literature.



4.1 Socio-ecological factors.

Community size. Researchers have argued that punishment becomes more important in regulating social behavior as community size increases[25–27]. While individuals in smaller communities can effectively limit free-riding via low-cost tactics such as gossip, ridicule, and ostracism[7,13,14,49], promoting cooperation in larger-scale societies may necessitate punishment, especially via third-party intervention[26,27,50]. That is because larger group sizes afford more anonymity and opportunities to free-ride, while introducing more challenging collective action problems[26,27,51,52]. To date, evidence from cross-societal studies directly testing this proposition is mixed. In their ultimatum game experiments, Henrich and colleagues[25] found that individuals living in small communities were the least likely to punish unfair offers. Extending these findings, Marlowe and colleagues[27] found little variation in second-party punishment of unfair offers across societies, but more third-party punishment with increasing community and ethnic group size. However, recent experiments on norm enforcement in children point to the opposite pattern, suggesting that the likelihood of punishing conventional norm violations decreases with larger community size[35].

Other studies have conducted more comprehensive analyses of the ethnographic record to test hypotheses on the relations of community size and societal 'complexity' with punishment. An early study by Spitzer[53] leveraged ethnographic information from 48 societies to test Durkheim's theory of social evolution and punitive systems[54], including the idea that more 'complex' societies, with higher population density, use less severe forms of punishment. To the contrary, this study found that punishment severity increased with societal complexity and density. A more recent examination of ethnographic descriptions across 131 societies[31] found little support for an association between community size and the presence of reputational, material, or physical punishment across societies, although there was a weak positive association between community size and evidence for executions. Finally, other recent investigations have more closely examined cross-societal variation in punishment enforced by leaders[55,56], to evaluate the idea that leaders who engage in free-rider punishment emerge with increasing group size[50,55]. These studies documented substantial variation across 59 societies, with evidence for free-rider punishment enforced by leaders in 1 out of 5 societies considered (and evidence against leader punishment in 5% of societies)[55], or in about half of the societies when using a broader definition of punishment[56].

Pathogen and ecological threats. Prior theoretical perspectives have proposed that the prevalence of pathogen threats in different ecologies has consequences for social organization—i.e., strong ingroup ties[45] and kinship intensity[20] (see section 4.2)—as well as norms that regulate social behavior—i.e., tightness versus looseness[44]. More specifically, tightness-looseness theory[44,57] suggests that cultures vary in the strength of their social norms and their tolerance of deviant behavior. In this framework, a high prevalence of pathogens and other ecological threats is hypothesized to favor stricter norms, resulting in harsher punishments in the context of peer interactions[28] and law enforcement[44,57]. Although influential, these ideas have scarcely been put to empirical test. To our knowledge, the only

cross-societal study that has investigated how the prevalence of pathogen and other threats, as well as tightness versus looseness, relate with peer punishment is a cross-cultural vignette study by Eriksson and colleagues[28]. In this study, pathogen prevalence[58] was positively associated with the perceived appropriateness of confrontational punishment, whereas other threats were not related to punishment appropriateness. Further, both confrontation and ostracism were more condoned in societies with tighter norms.

Subsistence type. Several studies involving explicit cross-societal comparisons have documented punishment in populations relying on different subsistence types, ranging from hunter-gatherers to pastoralists to horticulturists, and from rural communities relying on agriculture to urban communities relying on wage work[25,34–36,59]. Such studies have provided important insights on punishment across societies, for example, documenting that children in small-scale societies (Hai||om, Kikuyu, Quechua, Samburu, Wichí) react to conventional norm violations with different types of protests than children in urban areas (La Plata, Leipzig, Pun)[35]; or that adults across small-scale populations and urban areas show large differences in their willingness to punish unfairness[25]. Other studies have documented substantial variation in punishment based on subsistence type even across different regions of the same country. Specifically, Talhelm and colleagues[60] used China as a case study and observed that people from regions relying on rice farming (which presumably introduces stronger interdependence between community members) were less willing to punish friends for being dishonest[60], compared to people from wheat farming regions.

However, systematic quantitative examinations of the effects of subsistence type on norm enforcement have been rare, largely due to feasibility constraints in collecting cross-societal data in more than a small number of sites. In a study across 59 societies focusing on leader-enforced punishment, Garfield and colleagues[56] found that punishment by leaders was not predicted by subsistence type, group context, leader gender, or continental region. A

subsequent study[31] extended these results by examining how several socioecological variables capturing subsistence type related with four types of punishment (physical, material, reputational, and executions) across 131 societies. Findings indicated that societal reliance on hunting was associated with the presence of physical punishments; that the absence of food storage was associated with reputational punishments, and that the presence of food storage and increased reliance on animal husbandry were associated with more material punishments. This latter result is echoed in two large-scale studies examining how ancestral and current reliance on herding relate with punishment. In a survey of 80,000 participants from representative samples across 76 countries – the Global Preferences Survey – Falk and colleagues [29] found that the presence of large domesticable animals was positively associated with the willingness to take revenge and engage in second- and third-party punishment across societies. Cao and colleagues[30] extended these findings by showing that societies which traditionally relied on herding were more likely to emphasize themes of punishment in their cultural folklore. In a second set of analyses, these researchers linked data on ancestral reliance on herding to the Global Preferences Survey, and observed that ancestral herding was positively associated with contemporary subjects' willingness to engage in second- and third-party punishment, both across countries and across regions within countries. Together, these results support the culture of honor hypothesis[61] across a large set of societies (see section 4.2).

4.2 Cultural factors.

A growing body of research has suggested a central role of cultural evolutionary processes in shaping different moral systems—i.e., internally consistent packages of psychological mechanisms, norms, and institutions that regulate social behavior[19–22]. Below, we review extant evidence on how distinct, though interrelated, cultural dimensions relate with cross-societal variation in punishment and norm enforcement systems.

Individualism versus collectivism. One of the most influential frameworks to understand cross-societal differences was developed by Hofstede and colleagues[62] who emphasized six cultural dimensions: individualism versus collectivism, masculinity versus femininity, power distance, uncertainty avoidance, long-term versus short-term orientation, and indulgence versus restraint. Several studies have examined how differences along these dimensions, and especially individualism versus collectivism, relate with variation in punishment norms and behaviors across societies[12,28,29,38,47,63]. Researchers have argued that, in individualistic societies, people place more value on individual freedom and feel more loosely tied with their group members, which may result in weaker motivations to punish norm breakers[38]. In contrast, in collectivistic societies, people place more value on social cohesion, feel more strongly connected in extended families and ingroup networks, and may thus be more motivated to punish norm breakers[47].

In a vignette experiment across eight Western countries, Brauer and Chaurand[47] tested these ideas and found that, people in more individualistic countries were less likely to express disapproval towards norm breakers. Using a related measure of individualism versus collectivism[64], Gampe and Daum[65] studied protest reactions to norm violations among bicultural children and found a somewhat different pattern of results: children whose parents came from collectivistic countries were less likely to protest norm violations, especially through explicit norm enforcement. In vignette experiments conducted across a larger set of countries, Eriksson and colleagues[28] found that in more individualistic (versus collectivistic) countries people were less likely to endorse physical or verbal confrontation and ostracism as appropriate means to respond to norm breakers, whereas they were more likely to endorse gossip and non-action as appropriate responses. Findings from an earlier vignette experiment across eight countries[38] also showed that, in individualistic countries, participants perceived non-punishers more positively than punishers, whereas no such difference emerged in

collectivistic countries[1]. In a meta-analysis of ultimatum game experiments across 26 countries, Oosterbeek and colleagues[63] found no association between individualism (versus collectivism) and rejection rates. Similarly, findings from the Global Preference Survey[29] revealed no evidence of an association between individualism and the willingness to engage in second- and third-party punishment. Finally, in their public goods game experiments, Herrmann and colleagues[12] found that in countries scoring higher on collectivism (versus individualism), participants engaged in more antisocial punishment.

Honor. Influential research in anthropology and social psychology has proposed that some societies are characterized by a culture of honor, that is, by values and norms that emphasize protecting one's sense of self-worth and reputation (as well as the reputation of family and close allies) via negative reciprocity and revenge in response to threats[30,48,61,66]. In Section 4.1, we described evidence from cross-societal research showing that reliance on herding for subsistence is associated with a stronger cultural emphasis on honor and on punishment and negative reciprocity in response to threats. To our knowledge, two studies have more directly tested the association between a culture of honor and punishment across societies. In a study among participants with different backgrounds (Dutch, Moroccan-Dutch, and Turkish Dutch), who showed different levels of honor-related concerns, Rodriguez Mosquera and colleagues[67] observed no group differences in endorsements of punishment, verbal attack and disapproval, and withdrawal responses to threats. More recently, Uskul and colleagues[48] conducted a comprehensive investigation of tendencies to punish on behalf of friends versus strangers, across 12 sites in three world regions including the Mediterranean. Across regions, individuals were more willing to punish dishonest strangers than dishonest friends, and this tendency did not differ across societies.

[1] Across both studies, very similar patterns emerged for the cultural dimension of indulgence. Higher country scores on indulgence were associated with weaker endorsement of confrontation and ostracism, stronger endorsement of gossip, and more positive perceptions of non-punishers compared to punishers.

Kinship intensity. Anthropological research has emphasized the importance of kin-based relationships, and cultural norms related to cousin marriage, clan organization, and co-residence, for the regulation of social behaviors[21]. Specifically, intensive kinship norms are hypothesized to favor a constellation of interrelated cultural traits, including collectivism and communal moral values, conformity and obedience, and ingroup-bounded trust and cooperation[19,20]. Furthermore, in societies with intensive kinship norms, social behavior is putatively regulated via emotions of disgust and external shame, and via second-party enforcement rather than third-party punishment[20,21]. Arguably, cultural evolutionary processes have given rise to less intensive kinship norms over time (at least in Western societies[19–21]), that are hypothesized to favor different packages of interrelated cultural traits, including individualism and universal moral values, impersonal cooperation and generalized trust, and the regulation of social behavior via internal guilt and third-party enforcement[19–21]. To our knowledge, the only cross-societal examination of the idea that kinship intensity relates with distinct norm enforcement systems was provided by Enke[20], using data from the Global Preferences Survey[29]. Consistent with the hypotheses above, kinship intensity at the societal level was associated with a stronger reliance on second-party rather than third-party punishment. Consistently, second-generation immigrants whose parents migrated from countries with stronger kinship norms showed a stronger endorsement of second- versus third-party punishment.

Power distance & power centralization. In the framework developed by Hofstede and colleagues[62], power distance refers to the extent to which societal members accept hierarchical differentiations or support a more egalitarian distribution of power. Several studies have examined associations between power distance at the societal level and norm enforcement behaviors. In their vignette experiments, Eriksson and colleagues consistently observed that power distance across countries was associated with stronger norms in favor of

peer punishment[38], stronger endorsement of physical and verbal confrontation as well as ostracism as appropriate reactions to norm breakers, and weaker endorsement of gossip and non-action as appropriate[28]. These results are consistent with a recent analysis of ethnographic descriptions of norm enforcement[31], which found that social stratification was negatively associated with the presence of reputational punishment, and positively associated with the presence of harsher punishment via executions. In a meta-analysis of ultimatum games, Oosterbeek and colleagues[63] similarly expected higher rejection rates of unfair offers in countries scoring higher on power distance, but did not find evidence for this association. Finally, and consistent with the patterns of results described in this section, Herrmann and colleagues[12] found that in countries scoring higher on power distance, participants engaged in more antisocial punishment in public goods games[2].

Other cultural values. Another popular framework was developed by Inglehart and others[68,69] based on analyses of World Values Survey data to explain cross-cultural variation across two dimensions: survival versus self-expression values and traditional versus secular-rational values. Societies with strong survival values emphasize economic and physical security, whereas societies with strong self-expression values instead emphasize individual autonomy and participation in economic and political decision-making, gender equality, and other emancipatory moral judgments. Further, societies with stronger traditional values (compared to secular-rational values) emphasize the importance of religion, family ties, and deference to authority. Researchers have hypothesized that a stronger emphasis on autonomy and emancipatory judgments relates with greater tolerance of norm violations and decreased acceptance of punishment[28].

[2] The authors also examined associations between cultural dimensions of masculinity and uncertainty avoidance with antisocial punishment. In countries scoring higher on masculinity participants engaged in less antisocial punishment, whereas they engaged in more antisocial punishment in countries high on uncertainty avoidance.

A few studies have examined associations between these cultural values and punishment norms and behaviors. Eriksson and colleagues[28] observed that in countries placing a stronger emphasis on individual autonomy, gender equality, and emancipative moral judgments, participants were less approving of confrontation and ostracism as means to react to norm violations, whereas they were more favorable to gossip and non-action. However, Oosterbeek and colleagues observed no associations between dimensions of survival versus self-expression values and traditional versus secular-rational values and rejections of unfair offers in ultimatum games across 25 countries[63]. Herrmann and colleagues observed weaker antisocial punishment in societies endorsing more self-expression values, but no association between endorsement of traditional/secular values and antisocial punishment.

Trust. Finally, several studies have examined variation in punishment by comparing Eastern and Western societies (especially Japan and the US). One prominent view suggests that Japan and the US differ in terms of generalized trust (i.e., trust toward strangers) and as such may also differ in their reliance on punishment to ensure cooperation[70,71]. In this view, punishment is necessary in low-trust societies, where people cannot rely on others to behave cooperatively without external incentives, whereas it becomes redundant in high-trust societies, where cooperative norms are internalized and expectations of others' cooperation are high. In a classic study comparing punishment in public goods games conducted in Japan and the US, Yamagishi[71] observed no difference between subjects from these countries in terms of their investments to a centralized punishment system. Pedersen and colleagues[72] conducted a recall study in Japan and the US, and found that US participants reported engaging in more punishment than Japanese participants, contrary to the hypothesis above. However, across several studies using ultimatum games, there was no association between generalized trust and the rejection of unfair offers[63].

Another related view emphasizes differences between Eastern and Western countries in terms of relational mobility, i.e., the ability to choose which partners to interact with or avoid[73]. In this view, punishment is less necessary in Western societies characterized by high relational mobility, because offenders can be avoided at low cost. In contrast, obligations to punish offenses are stronger in Eastern societies characterized by lower relational mobility. Consistent with these ideas, Wang and Leung[73] observed in several vignette experiments that East Asians (Hong Kong Chinese, Singaporean Chinese, and Taiwanese) engaged in more punishment than US participants.

5. Conclusion and Future Directions

In sum, the empirical studies reviewed above are indicative of a rich and fruitful research area on the socio-ecological and cultural sources of cross-societal variation in punishment. Here, we have taken a first step at identifying and integrating the numerous and diverse socio-ecological factors (community size, subsistence type, pathogen and other environmental threats) and cultural dimensions (individualism versus collectivism, honor, kinship intensity, power distance, relational mobility, and trust) proposed to shape punishment systems across societies. At the same time, our review reveals that evidence on the role of these socio-ecological and cultural factors remains mixed and fragmented, partly because different studies focus on distinct subsets of variables putatively explaining variation in norm enforcement, while excluding other important variables. To ensure further integration, research in this area can take two steps: first, coordinate data collection efforts to obtain information on a common, larger set of theoretically relevant factors potentially underlying variation in norm enforcement across different sites; and second, develop explicit causal models, for example, to consider how distal ecological factors may influence key cultural dimensions that in turn shape norm enforcement systems (Figure 1; for an example of this approach, see[20]).

Further, as evidenced by our review, cross-societal research on punishment and norm enforcement has made use of a diverse toolkit of methods, each with its own strengths and weaknesses. Several studies have relied on vignette experiments[28,34,38,47,73] which provide participants with rich contextual information, but have the drawback of assessing only hypothetical, non-consequential reactions to norm violations. Another common methodology that addresses this limitation involves economic decision-making experiments with standardized procedures across sites[12,25,36,37]. These paradigms allow researchers to study consequential punishment decisions across societies, but have limitations in terms of ecological validity[17,74]. Future research could complement the above methodologies with observational and experience sampling studies, which allow capturing punishment behaviors closer to the real-life settings in which they occur[18,74]. Additionally, research in this area should continue to capitalize on existing datasets that provide rich ethnographic descriptions of punishment and norm enforcement across diverse societies[30,31,55]. More work is also needed to better assess the role of cultural inertia, or phylogeny, in shaping observed cross-cultural patterns. Cultural evolutionary models predict some cultural inertia in punishment systems[75], but a study by Garfield and colleagues [31] found only a limited phylogenetic signal (albeit with limitations).

Finally, as some of the studies reviewed here demonstrate[28,38], norms about punishment can themselves vary across societies. Specifically, different cultures and communities might prescribe and condone punishment in response to some types of offenses but not others[34,35]. Future research should aim to document such variation both by examining punishment across domains and by using scenarios and tasks that are culturally relevant to the populations studied. Additionally, to better understand variation in punishment and norm enforcement, researchers can move beyond a focus on costly punishment decisions among anonymous strangers, to consider how people across societies use diverse punishment

tactics[17,18,28,31] in different relational contexts[72,73]. Importantly, such broadening of the scope of punishment tactics under consideration can also inform our understanding of processes of norm change, as some tactics like gossip may prove crucial in the formation, negotiation, and spread of novel social norms.

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References

1. Andrighetto, G. & Vriens, E. A research agenda for the study of social norm change. *Phil. Trans. R. Soc. A.* **380**, 20200411 (2022).
2. Bicchieri, C. *The Grammar of Society: The Nature and Dynamics of Social Norms*. (Cambridge University Press, 2005).
3. Nyborg, K. *et al.* Social norms as solutions. *Science* **354**, 42–43 (2016).
4. Fehr, E. & Gächter, S. Cooperation and Punishment in Public Goods Experiments. *American Economic Review* **90**, 980–994 (2000).
5. Fehr, E. & Fischbacher, U. The nature of human altruism. *Nature* **425**, 785–791 (2003).
6. Mathew, S. & Boyd, R. Punishment sustains large-scale cooperation in prestate warfare. *Proceedings of the National Academy of Sciences* **108**, 11375–11380 (2011).
7. Wiessner, P. Norm enforcement among the Ju/'hoansi Bushmen. *Hum Nat* **16**, 115–145 (2005).
8. Gächter, S., Renner, E. & Sefton, M. The Long-Run Benefits of Punishment. *Science* **322**, 1510–1510 (2008).
9. Balliet, D., Mulder, L. B. & Van Lange, P. A. M. Reward, punishment, and cooperation: A meta-analysis. *Psychological Bulletin* **137**, 594–615 (2011).
10. Boyd, R. & Richerson, P. J. Punishment allows the evolution of cooperation (or anything else) in sizable groups. *Ethology and Sociobiology* **13**, 171–195 (1992).
11. Raihani, N. J. & Bshary, R. Punishment: one tool, many uses. *Evolut. Hum. Sci.* **1**, e12 (2019).
12. Herrmann, B., Thöni, C. & Gächter, S. Antisocial Punishment Across Societies. *Science* **319**, 1362–1367 (2008).
13. Guala, F. Reciprocity: Weak or strong? What punishment experiments do (and do not) demonstrate. *Behav Brain Sci* **35**, 1–15 (2012).
14. Baumard, N. Has punishment played a role in the evolution of cooperation? A critical review. *Mind Soc* **9**, 171–192 (2010).
15. Balafoutas, L., Nikiforakis, N. & Rockenbach, B. Direct and indirect punishment among strangers in the field. *Proceedings of the National Academy of Sciences* **111**, 15924–15927 (2014).

16. Singh, M. & Garfield, Z. H. Evidence for third-party mediation but not punishment in Mentawai justice. *Nat Hum Behav* **6**, 930–940 (2022).
17. Molho, C. & Wu, J. Direct punishment and indirect reputation-based tactics to intervene against offences. *Philosophical Transactions of the Royal Society B: Biological Sciences* **376**, 20200289 (2021).
18. Molho, C., Tybur, J. M., Van Lange, P. A. M. & Balliet, D. Direct and indirect punishment of norm violations in daily life. *Nat Commun* **11**, 3432 (2020).
19. Schulz, J. F., Bahrami-Rad, D., Beauchamp, J. P. & Henrich, J. The Church, intensive kinship, and global psychological variation. *Science* **366**, eaau5141 (2019).
20. Enke, B. Kinship, Cooperation, and the Evolution of Moral Systems. *The Quarterly Journal of Economics* **134**, 953–1019 (2019).
21. Henrich, J. *The Weirdest People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous*. (Penguin UK, 2020).
22. Henrich, J. & Muthukrishna, M. The Origins and Psychology of Human Cooperation. *Annu. Rev. Psychol.* **72**, 207–240 (2021).
23. Wiessner, P. The role of third parties in norm enforcement in customary courts among the Enga of Papua New Guinea. *Proc. Natl. Acad. Sci. U.S.A.* **117**, 32320–32328 (2020).
24. Mathew, S. & Boyd, R. The cost of cowardice: punitive sentiments towards free riders in Turkana raids. *Evolution and Human Behavior* **35**, 58–64 (2014).
25. Henrich, J. *et al.* Costly Punishment Across Human Societies. *Science* **312**, 1767–1770 (2006).
26. Marlowe, F. W. *et al.* More 'altruistic' punishment in larger societies. *Proc Biol Sci* **275**, 587–592 (2008).
27. Marlowe, F. W. *et al.* The 'spiteful' origins of human cooperation. *Proc Biol Sci* **278**, 2159–2164 (2011).
28. Eriksson, K. *et al.* Perceptions of the appropriate response to norm violation in 57 societies. *Nature Communications* **12**, 1–11 (2021).
29. Falk, A. *et al.* Global Evidence on Economic Preferences. *The Quarterly Journal of Economics* **133**, 1645–1692 (2018).
30. Cao, Y., Enke, B., Falk, A., Giuliano, P. & Nunn, N. Herding, Warfare, and a Culture of Honor: Global Evidence. Working Paper at https://doi.org/10.3386/w29250 (2021).
31. Garfield, Z. H. *et al.* Norm violations and punishments across human societies. *Evolut. Hum. Sci.* **5**, e11 (2023).

32. Henrich, J., Heine, S. J. & Norenzayan, A. The weirdest people in the world? *Behavioral and Brain Sciences* **33**, 61–83 (2010).
33. Rad, M. S., Martingano, A. J. & Ginges, J. Toward a psychology of Homo sapiens: Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences* **115**, 11401–11405 (2018).
34. Barrett, H. C. *et al.* Small-scale societies exhibit fundamental variation in the role of intentions in moral judgment. *Proceedings of the National Academy of Sciences* **113**, 4688–4693 (2016).
35. Kanngiesser, P. *et al.* Children across societies enforce conventional norms but in culturally variable ways. *Proceedings of the National Academy of Sciences* **119**, e2112521118 (2022).
36. House, B. R. *et al.* Social norms and cultural diversity in the development of third-party punishment. *Proc. R. Soc. B.* **287**, 20192794 (2020).
37. Gächter, S. & Herrmann, B. Reciprocity, culture and human cooperation: previous insights and a new cross-cultural experiment. *Phil. Trans. R. Soc. B* **364**, 791–806 (2009).
38. Eriksson, K. *et al.* Cultural Universals and Cultural Differences in Meta-Norms about Peer Punishment. *Manag. Organ. Rev.* **13**, 851–870 (2017).
39. Raihani, N. J. & Bshary, R. The reputation of punishers. *Trends in Ecology & Evolution* **30**, 98–103 (2015).
40. Gollwitzer, M. & Okimoto, T. G. Downstream Consequences of Post-Transgression Responses: A Motive-Attribution Framework. *Pers Soc Psychol Rev* **25**, 275–294 (2021).
41. Eriksson, K., Andersson, P. A. & Strimling, P. Moderators of the disapproval of peer punishment. *Group Processes & Intergroup Relations* **19**, 152–168 (2016).
42. Barclay, P. Reputational benefits for altruistic punishment. *Evolution and Human Behavior* **27**, 325–344 (2006).
43. Jordan, J. J., Hoffman, M., Bloom, P. & Rand, D. G. Third-party punishment as a costly signal of trustworthiness. *Nature* **530**, 473–476 (2016).
44. Gelfand, M. J. *et al.* Differences Between Tight and Loose Cultures: A 33-Nation Study. *Science* **332**, 1100–1104 (2011).
45. Fincher, C. L., Thornhill, R., Murray, D. R. & Schaller, M. Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism. *Proceedings of the Royal Society B: Biological Sciences* **275**, 1279–1285 (2008).

46. Van De Vliert, E. & Van Lange, P. A. M. Latitudinal Psychology: An Ecological Perspective on Creativity, Aggression, Happiness, and Beyond. *Perspect Psychol Sci* **14**, 860–884 (2019).
47. Brauer, M. & Chaurand, N. Descriptive norms, prescriptive norms, and social control: An intercultural comparison of people's reactions to uncivil behaviors. *European Journal of Social Psychology* **40**, 490–499 (2010).
48. Uskul, A. K. *et al.* Neither Eastern nor Western: Patterns of independence and interdependence in Mediterranean societies. *Journal of Personality and Social Psychology* Advance online publication (2023) doi:10.1037/pspa0000342.
49. Boehm, C. Egalitarian Behavior and Reverse Dominance Hierarchy. *Current Anthropology* **34**, 227–254 (1993).
50. Hooper, P. L., Kaplan, H. S. & Boone, J. L. A theory of leadership in human cooperative groups. *Journal of Theoretical Biology* **265**, 633–646 (2010).
51. Peña, J. & Nöldeke, G. Group size effects in social evolution. *Journal of Theoretical Biology*, **457**, 211–220 (2018).
52. Powers, S. T. & Lehmann, L. When is bigger better? The effects of group size on the evolution of helping behaviours. *Biological Reviews* **92**, 902–920 (2017).
53. Spitzer, S. Punishment and Social Organizaton: A Study of Durkheim's Theory of Penal Evolution. *Law and Society Review* **9**, 613–637 (1975).
54. Durkheim, E. *The Division of Labor in Society*. (Simon and Schuster, 1997).
55. Garfield, Z. H., Hubbard, R. L. & Hagen, E. H. Evolutionary Models of Leadership. *Hum Nat* **30**, 23–58 (2019).
56. Garfield, Z. H., Syme, K. L. & Hagen, E. H. Universal and variable leadership dimensions across human societies. *Evolution and Human Behavior* **41**, 397–414 (2020).
57. Harrington, J. R. & Gelfand, M. J. Tightness–looseness across the 50 united states. *PNAS* **111**, 7990–7995 (2014).
58. Murray, D. R. & Schaller, M. Historical Prevalence of Infectious Diseases Within 230 Geopolitical Regions: A Tool for Investigating Origins of Culture. *Journal of Cross-Cultural Psychology* **41**, 99–108 (2010).
59. Fitouchi, L. & Singh, M. Punitive justice serves to restore reciprocal cooperation in three small-scale societies. *Evolution and Human Behavior* (2023).
60. Talhelm, T. *et al.* Large-Scale Psychological Differences Within China Explained by Rice Versus Wheat Agriculture. *Science* (2014).

61. Nisbett, R. E. & Cohen, D. *Culture of honor: The psychology of violence in the South*. (Westview Press, 1996).
62. Hofstede, G., Hofstede, G. J. & Minkov, M. *Cultures and Organizations: Software of the Mind, Third Edition*. (McGraw-Hill Education, 2010).
63. Oosterbeek, H., Sloof, R. & van de Kuilen, G. Cultural Differences in Ultimatum Game Experiments: Evidence from a Meta-Analysis. *Experimental Economics* **7**, 171–188 (2004).
64. *Culture, Leadership, and Organizations: the GLOBE Study of 62 Societies*. (SAGE Publications, Inc, 2004).
65. Gampe, A. & Daum, M. M. How preschoolers react to norm violations is associated with culture. *Journal of Experimental Child Psychology* **165**, 135–147 (2018).
66. Boehm, C. *Blood Revenge: The Enactment and Management of Conflict in Montenegro and Other Tribal Societies*. (University of Pennsylvania Press, 1987).
67. Rodriguez Mosquera, P. M., Fischer, A. H., Manstead, A. S. R. & Zaalberg, R. Attack, disapproval, or withdrawal? The role of honour in anger and shame responses to being insulted. *Cognition and Emotion* **22**, 1471–1498 (2008).
68. Inglehart, R. & Baker, W. E. Modernization, Cultural Change, and the Persistence of Traditional Values. *American Sociological Review* **65**, 19–51 (2000).
69. Inglehart, R. *Modernization and Postmodernization: Cultural, Economic, and Political Change in 43 Societies*. (Princeton University Press, 2020).
70. Balliet, D. & Van Lange, P. A. M. Trust, Punishment, and Cooperation Across 18 Societies: A Meta-Analysis. *Perspect Psychol Sci* **8**, 363–379 (2013).
71. Yamagishi, T. The Provision of a Sanctioning System as a Public Good. *Journal of Personality and Social Psychology* **51**, 110–116 (1986).
72. Pedersen, E. J. *et al.* When and Why Do Third Parties Punish Outside of the Lab? A Cross-Cultural Recall Study. *Social Psychological and Personality Science* **11**, 846–853 (2020).
73. Wang, C. S. & Leung, A. K. -y. The Cultural Dynamics of Rewarding Honesty and Punishing Deception. *Pers Soc Psychol Bull* **36**, 1529–1542 (2010).
74. Balliet, D., Molho, C., Columbus, S. & Dores Cruz, T. D. Prosocial and punishment behaviors in everyday life. *Current Opinion in Psychology* **43**, 278–283 (2022).
75. Boyd, R., Gintis, H., Bowles, S. & Richerson, P. J. The evolution of altruistic punishment. *Proceedings of the National Academy of Sciences* **100**, 3531–3535 (2003).

Supplementary Information for

Cross-Societal Variation in Norm Enforcement Systems: A Review

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Table S1. Overview of reviewed studies, including additional details on the societies and samples investigated, the methods and punishment measures employed, and the socio-ecological or cultural dimensions considered.

Article	Societies	Samples	Method	Measure	Dimensions
Barrett et al. (2016)[1]	Hadza, Himba, Karo Batak, Los Angeles, Martu, Shuar, Storozhnitsa, Sursurunga, Tsimane, Yasawa	Adults	Vignette experiment (4 vignettes)	Punishment judgment and aggregate moral judgment (badness, punishment, and reputation)	Community size; subsistence type
Brauer & Chaurand (2010)[2]	Belgium, England, France, Germany, Italy, Portugal, Spain, USA	Adults; students and non-students	Vignette experiment (46 behaviors)	Punishment as likelihood of reacting and expressing disapproval to offender	Individualism versus collectivism
Cao et al. (2021)[3]	(a) 1,107 ethnic groups in the Ethnographic Atlas; (b) 76 countries (same as Falk et al., 2018[4])	(a) N/A; (b) Representative adult samples	(a) Historical ethnographic data; (b) Survey	(a) Punishment themes in historical folklore; (b) Willingness to engage in second- versus third-party punishment (same as Falk et al. 2018[4])	Reliance on herding
Enke (2019)[5]	(a) 76 countries of residence (same as Falk et al., 2018[4]); (b) 139 countries of birth	Representative adult samples	Survey	Willingness to engage in second- versus third-party punishment (same as Falk et al. 2018[4])	Kinship intensity
Eriksson et al. (2017)[6]	China, Japan, Netherlands, Pakistan, Russia, Sweden, United Arab Emirates, USA	Students	Vignette experiment (two animations)	Appropriateness ratings for punishment responses through retributive and restorative punishment	Individualism versus collectivism, indulgence, power distance
Eriksson et al. (2021)[7]	57 countries	Adults; students and non-students	Vignette experiment (10 scenarios including animations and verbal scenarios)	Appropriateness ratings for four punishment responses (verbal confrontation, gossip, social ostracism, and non-action)	Emancipative moral judgments, gender equality, individualism versus collectivism and individual autonomy values, indulgence, median income, pathogen prevalence, power distance, pro-violence attitudes, threat, tightness-looseness
Falk et al. (2018)[4]	76 countries	Representative adult samples	Survey	Willingness to take revenge, to punish unfair behavior toward self, and unfair behavior toward others	Absolute latitude, agricultural suitability, biological conditions, crop suitability, geographic conditions, individualism versus collectivism, family ties

Table S1 (continued).

Article	Societies	Samples	Method	Measure	Dimensions
Fitouchi & Singh (2023)[8]	Kiowa, Mentawai (excluding Nuer where there is only qualitative data)	Adults	Kiowa: Observer reports (91 cases) Mentawai: Interviews (302 cases)	Punishment as cost infliction on the offender through physical confrontation, economic sanctions, benefit withdrawal, or sorcery	Subsistence type
Gächter & Herrmann (2009)[9]	Russia (Belgorod, Yekaterinburg) and Switzerland (St. Gallen, Zurich)	Students	One-shot public goods game (PGG)	Punishment as costly deduction of points in the PGG	N/A
Gampe & Daum (2018)[10]	Biculturalism: Switzerland and 25 other countries	Bicultural children (aged 3)	Puppet show experiment	Coded protest reactions to norm violation, including descriptive, imperative, and normative protest, and nonverbal intervention	Power orientation, ingroup collectivism, gender egalitarianism, uncertainty avoidance, future orientation, institutional collectivism, human orientation, performance orientation, assertiveness
Garfield et al. (2019)[11]	59 diverse societies in the Probability Sample of the Human Relations Area Files	N/A	Ethnographic analyses of primary documents	Coded leader-enforced punishment of free-riding in collective activities	Cultural complexity; region; subsistence type
Garfield et al. (2020)[12]	59 diverse societies in the Probability Sample of the Human Relations Area Files	N/A	Ethnographic analyses of primary documents	Coded leader-enforced punishment of norm violations or free-riding	Region; subsistence type
Garfield et al. (2023)[13]	131 societies included in both the electronic Human Relations Area Files and the Standard Cross Cultural Sample	N/A	Ethnographic analyses of primary documents	Punishment as cost infliction on the offender through material, physical, or reputational costs or execution	Animal husbandry; community size; dependence on hunting; food storage; external trade; social stratification
Henrich et al. (2006)[14]	Accra, Au, Dolgan/Nganasan, Gusii, Hadza, Isanga, Maragoli, Emory, Missouri, Samburu, Sanquianga, Shuar, Sursurunga, Tsimane, Yasawa	Adults; students in Emory and non-students elsewhere	Ultimatum game (UG) and third-party punishment (TPP) game experiment	Punishment as rejection of offers in the UG and costly deduction of tokens in the TPP	Subsistence type

Table S1 (continued).

Article	Societies	Samples	Method	Measure	Dimensions
Henrich et al. (2010)[15]	Accra, Au, Dolgan/Nganasan, Gusii, Hadza, Isanga, Maragoli, Missouri, Orma, Samburu, Sanquianga, Shuar, Sursurunga, Tsimane, Yasawa	Adults; community members	UG and TPP game experiment	Punishment as rejection of offers in the UG and costly deduction of tokens in the TPP	Community size, market integration, religion, subsistence type
Herrmann et al. (2008)[16]	Athens, Bonn, Boston, Chengdu, Copenhagen, Dnipropetrovs'k, Istanbul, Melbourne, Minsk, Muscat, Nottingham, Riyadh, Samara, Seoul, St. Gallen, Zurich	Students	PGG experiment	Punishment as costly deduction of points in the PGG	Democracy; GDP per capita; individualism versus collectivism; masculinity; norms of civic cooperation; power distance; rule of law; survival versus self-expression values; traditional versus secular values; trust; uncertainty avoidance
House et al. (2020)[17]	Berlin, La Plata, Phoenix, Pune, Shuar, Wichí	Children (aged 4-14)	TPP game experiment	Punishment as costly deduction of tokens in the TPP	Subsistence type
Kanngiesser et al. (2022)[18]	Hai||om, Kikuyu, La Plata, Leipzig, Pune, Quechua, Samburu, Wichí	Children (aged 5-8)	Sorting task with different conventional norms	Coded intervention to norm violation, including imperative and normative protest, and nonverbal intervention	Community size; subsistence type
Marlowe et al. (2008)[19]	12 samples from Henrich et al. (2006)[14]: Accra, Au, Gusii, Hadza, Isanga, Maragoli, Sanquianga, Samburu, Shuar, Sursurunga, Tsimane, Yasawa,	Adults; community members	TPP game experiment	Punishment as costly deduction of tokens in the TPP	Population size: local and ethnic group
Marlowe et al. (2011)[20]	Same as in Marlowe et al. (2008)[19]	Adults; community members	UG and TPP game experiment	Punishment as rejection of offers in the UG and costly deduction of tokens in the TPP	Population size: local and ethnic group

Table S1 (continued).

Article	Societies	Samples	Method	Measure	Dimensions
Oosterbeek et al. (2004)[21]	25 countries	Students	Meta-analysis of UG experiments	Punishment as rejection of offers in the UG	Individualism versus collectivism, power distance
Pedersen et al. (2020)[22]	Japan, USA	Students and Mturk workers	Recall study	Coded intervention and punishment in recalled event descriptions	N/A
Rodriguez-Mosquera et al. (2008)[23]	Moroccan-Dutch, Turkish-Dutch, and ethnic Dutch	Students and non-students	Recall study	Desire to punish, verbally attack, verbally disapprove, and withdraw	Honor
Spitzer (1975)[24]	48 diverse societies in the Human Relations Area Files	N/A	Ethnographic analyses of primary documents	Coded punitive frequency and intensity (including material and physical punishments, executions)	Societal complexity; societal concentration (density)
Talhelm et al. (2014)[25]	27 Chinese provinces; two sites (Beijing, Sichuan)	Students	Vignette experiment (two hypothetical dishonesty vignettes)	Hypothetical punishment of a dishonest friend or a dishonest stranger	Subsistence type (rice versus wheat)
Uskul et al. (2023)[26]	12 sites (Turkish Cypriot, Greek Cypriot, Egypt, Greece, Italy, Japan, Korea, Lebanon, Spain, Turkey, UK, US) in 11 countries across 3 world regions (Anglo-Western, East Asian, Mediterranean)	Students	Vignette experiment (one hypothetical dishonesty vignette)	Hypothetical punishment of a dishonest friend or a dishonest stranger	Honor
Wang & Leung (2010)[27] Experiments 1, 2, 4, 5	Hong Kong Chinese, Singaporean Chinese, Taiwanese, US American	Students	Vignette experiment (one hypothetical dishonesty vignette)	Hypothetical and costly punishment of a dishonest stranger	N/A
Yamagishi (1986)[28]	Japan, USA	Students	PGG experiment	Punishment as costly investment in centralized punishment system	Trust

References

1. Barrett, H. C. *et al.* Small-scale societies exhibit fundamental variation in the role of intentions in moral judgment. *Proceedings of the National Academy of Sciences* **113**, 4688–4693 (2016).
2. Brauer, M. & Chaurand, N. Descriptive norms, prescriptive norms, and social control: An intercultural comparison of people's reactions to uncivil behaviors. *European Journal of Social Psychology* **40**, 490–499 (2010).
3. Cao, Y., Enke, B., Falk, A., Giuliano, P. & Nunn, N. Herding, Warfare, and a Culture of Honor: Global Evidence. Working Paper at https://doi.org/10.3386/w29250 (2021).
4. Falk, A. *et al.* Global Evidence on Economic Preferences. *The Quarterly Journal of Economics* **133**, 1645–1692 (2018).
5. Enke, B. Kinship, Cooperation, and the Evolution of Moral Systems. *The Quarterly Journal of Economics* **134**, 953–1019 (2019).
6. Eriksson, K. *et al.* Cultural Universals and Cultural Differences in Meta-Norms about Peer Punishment. *Manag. Organ. Rev.* **13**, 851–870 (2017).
7. Eriksson, K. *et al.* Perceptions of the appropriate response to norm violation in 57 societies. *Nat Commun* **12**, 1481 (2021).
8. Fitouchi, L. & Singh, M. Punitive justice serves to restore reciprocal cooperation in three small-scale societies. *Evolution and Human Behavior* (2023).
9. Gächter, S. & Herrmann, B. Reciprocity, culture and human cooperation: previous insights and a new cross-cultural experiment. *Phil. Trans. R. Soc. B* **364**, 791–806 (2009).
10. Gampe, A. & Daum, M. M. How preschoolers react to norm violations is associated with culture. *Journal of Experimental Child Psychology* **165**, 135–147 (2018).
11. Garfield, Z. H., Hubbard, R. L. & Hagen, E. H. Evolutionary Models of Leadership. *Hum Nat* **30**, 23–58 (2019).
12. Garfield, Z. H., Syme, K. L. & Hagen, E. H. Universal and variable leadership dimensions across human societies. *Evolution and Human Behavior* **41**, 397–414 (2020).
13. Garfield, Z. H. *et al.* Norm violations and punishments across human societies. *Evolut. Hum. Sci.* **5**, e11 (2023).
14. Henrich, J. *et al.* Costly Punishment Across Human Societies. *Science* **312**, 1767–1770 (2006).
15. Henrich, J. *et al.* Markets, Religion, Community Size, and the Evolution of Fairness and Punishment. *Science* **327**, 1480–1484 (2010).

16. Herrmann, B., Thöni, C. & Gächter, S. Antisocial Punishment Across Societies. *Science* **319**, 1362–1367 (2008).
17. House, B. R. *et al.* Social norms and cultural diversity in the development of third-party punishment. *Proc. R. Soc. B.* **287**, 20192794 (2020).
18. Kanngiesser, P. *et al.* Children across societies enforce conventional norms but in culturally variable ways. *Proceedings of the National Academy of Sciences* **119**, e2112521118 (2022).
19. Marlowe, F. W. *et al.* More 'altruistic' punishment in larger societies. *Proc Biol Sci* **275**, 587–592 (2008).
20. Marlowe, F. W. *et al.* The 'spiteful' origins of human cooperation. *Proc. R. Soc. B.* **278**, 2159–2164 (2011).
21. Oosterbeek, H., Sloof, R. & van de Kuilen, G. Cultural Differences in Ultimatum Game Experiments: Evidence from a Meta-Analysis. *Experimental Economics* **7**, 171–188 (2004).
22. Pedersen, E. J. *et al.* When and Why Do Third Parties Punish Outside of the Lab? A Cross-Cultural Recall Study. *Social Psychological and Personality Science* **11**, 846–853 (2020).
23. Rodriguez Mosquera, P. M., Fischer, A. H., Manstead, A. S. R. & Zaalberg, R. Attack, disapproval, or withdrawal? The role of honour in anger and shame responses to being insulted. *Cognition and Emotion* **22**, 1471–1498 (2008).
24. Spitzer, S. Punishment and Social Organizaton: A Study of Durkheim's Theory of Penal Evolution. *Law and Society Review* **9**, 613–637 (1975).
25. Talhelm, T. *et al.* Large-Scale Psychological Differences Within China Explained by Rice Versus Wheat Agriculture. *Science* (2014).
26. Uskul, A. K. *et al.* Neither Eastern nor Western: Patterns of independence and interdependence in Mediterranean societies. *Journal of Personality and Social Psychology* Advance online publication (2023) doi:10.1037/pspa0000342.
27. Wang, C. S. & Leung, A. K. -y. The Cultural Dynamics of Rewarding Honesty and Punishing Deception. *Pers Soc Psychol Bull* **36**, 1529–1542 (2010).
28. Yamagishi, T. The Provision of a Sanctioning System as a Public Good. *Journal of Personality and Social Psychology* **51**, 110–116 (1986).