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High economic inequality is linked to moralistic thinking

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Abstract

High economic inequality has been identified as a key factor in fuelling political polarization, but the underlying psychological mechanisms behind this phenomenon are not well understood. We propose that economic inequality threatens people's experience of social order and control, leading them to adopt moralistic mindsets – yet this mindset may sow divisions in society. Using data from social media, a multinational survey across 41 regions around the world, and an experimental approach, our work shows that economic inequality is associated with the use of moral language online, harsher moral judgments, and a desire for clearer social and moral rules in society. Together these findings demonstrate that economic inequality is linked to the tendency to see the world through a moral lens. Understanding how societal structures impact our moral perspectives may help us bridge the growing divisions between people and foster a more united society.

Key words: Moralistic mindset, economic inequality, threat, moral judgment, Twitter.

High economic inequality is linked to moralistic thinking

The rise of political polarization is fuelling societal division and social unrest in many nations across the world (Dimock & Wike, 2021). These divisions in society are linked to a number of concerning outcomes, including the erosion of democracy (Forrest & Daymude, 2022), a desire for populist, strong leaders (Crimston et al., 2022) and fractured interpersonal relationships (Koudenburg & Kashima, 2022; Warner et al., 2021). Research suggests that high economic inequality – where a disproportionate amount of wealth is concentrated among a small number of individuals (Kirkland et al., 2019; Wilkinson & Pickett, 2009) – is a key factor fuelling political polarization over time (Gu & Wang, 2022; Stewart et al., 2020), yet the psychological explanations for why inequality creates social division along ideological lines are not well-understood.

We posit that economic inequality may drive individuals to adopt a more moralistic mindset – that is, having a strong focus on morality and ethical behavior. This is because inequality erodes the social fabric of society (Jetten et al., 2021; Kirkland et al., 2022; Oishi et al., 2011; Sprong et al., 2019), and therefore can be a threat to group cohesion. Past work has shown that when a sense of order and control is threatened, people compensate by engaging in behaviours that preserve a sense of control (Gelfand et al., 2011; Jetten et al., 2021; Kay et al., 2009, 2010; Rucker et al., 2004; Salvador Casara et al., 2022; Sprong et al., 2019; Tetlock et al., 2007). We propose that people compensate for this loss of control by adopting a more moralistic mindset. Yet this kind of mindset can lead to black and white thinking, and may exacerbate ideological divisions in society (Skitka et al., 2021). Here we aim to find empirical evidence for the relationship between economic inequality and a general tendency to have a more moralistic mindset, by increasing the use of moral language in daily communication, making harsher moral judgements about the actions of others, and desiring clear-cut moral and social rules in society that everyone should abide by.

Economic inequality can not only create an unfavorable economic climate but also a detrimental social atmosphere (Jetten et al., 2021). Economic inequality is known to cause fractured social connections, lower trust, and reduced cooperation (Kirkland et al., 2021b; Kirkland, Crimston, et al., 2022; Oishi et al., 2011; Schmukle et al., 2019; Uslaner & Brown, 2005), and increased competitive sentiments (Kirkland et al., 2021a; Krupp & Cook, 2018; Sánchez-Rodríguez et al., 2018). Indeed, high inequality leads to perceptions that the social fabric of society is crumbling and falling apart (Crimston et al., 2022; Kirkland, Crimston, et al., 2022; Salvador Casara et al., 2022; Sprong et al., 2019). It is important to note that the perception of social fragmentation caused by economic inequality affects most individuals, largely independent of their socioeconomic status (Wilkinson & Pickett, 2009).

There are many forms of threat that a society can face, from infectious diseases and warfare to natural disasters and a lack of resources. Economic inequality erodes social cohesion in society (Crimston et al., 2022; Kirkland, Crimston, et al., 2022; Salvador Casara et al., 2022; Sprong et al., 2019), and, as an inherently cooperative species, humans are particularly reactive to threats to the social fabric. Several theories point to a similar outcome when people face these threatening environments: they act in ways to regain a sense of control (Gelfand et al., 2006; Jetten et al., 2021; Kay et al., 2009). Work on compensatory control discusses a link between a sense of loss of control and compensatory outcomes, such as increased religiosity, conspiratorial thinking and desiring autocratic political systems (Kay et al., 2009, 2010). These outcomes are thought to reduce the discomfort associated with the feelings that threatening environments may bring, such as fear, uncertainty, and lack of control. Tight-Loose Culture Theory further notes that people attempt to tighten the rules of society in the face of threat (Gelfand et al., 2006, 2011; Harrington & Gelfand, 2014). Finally, theorizing inspired by Social Identity Theory suggests that high inequality disrupts social order, and people are geared towards behaving in ways that attempt to restore a sense

of order (Jetten et al., 2017, 2021; Salvador Casara et al., 2022; Sprong et al., 2019). In short, these seemingly diverse theories find common ground; economic inequality threatens the social order of society and individuals should behave in ways that regain a sense of control.

We propose that individuals regain a sense of control by adopting a more moralistic mindset. Having a moralistic mindset refers to a strong concern for moral behavior, where one may be deeply committed to a set of moral beliefs and principles, expressed through their words and actions. A person with a moralistic mindset may be quick to judge or criticize individuals who fail to adhere to a rigorous moral code, holding not only oneself but also others to a high standard of conduct. This kind of mindset helps clarify which behaviours are considered right or wrong and in turn aids in establishing a sense of order and control. For example, using moral language (e.g., harmed, cheated, disgusting) transmits information to others in a social group about how they ought to think and behave. Likewise, harshly judging others for perceived transgressions provides a strong signal that certain actions or opinions will not be tolerated, and such judgements can provide justification for punishing those who are thought to have committed a moral wrong. Finally, desiring clearer social and moral rules that *everyone* should abide by may help create a sense of collective certainty about what will and will not be tolerated. As such, people may adopt a moralistic mindset as an adaptive response to environmental threats, because it enables them to regain a sense of order and control over the behaviour of the self and others.

Past research hints at this relationship, demonstrating an empirical link between perceived threat to the social order of society and harsher punitive behaviour towards criminals (Rucker et al., 2004; Tetlock, 2002; Tetlock et al., 2007). However, this work looks at the extreme end of immoral behavior (i.e., actions that are illegal), but cannot speak to whether people adopt a more moralistic mindset in day-to-day life. Other research has shown that various forms of threat – such as Covid-19 and social ostracism – are linked to harsher

moral condemnation (Henderson & Schnall, 2021a, 2021b; Petersen, 2013). However, it is unclear from this work whether economic inequality, a more persistent and pervasive threat to social order, elicits a similar moral response, and whether this response also generalises to language use within everyday contexts as well as a desire for clearcut social and moral rules in society.

Critically, the link between unequal environments and a moralistic mindset may shed light on why greater economic inequality is consistently linked to growing political polarization (Gu & Wang, 2022; Stewart et al., 2020). When issues become a matter of right and wrong, these views are more likely to be treated as objective and universal truths about the world (Skitka et al., 2021; van Bavel et al., 2012), and people tend to distance themselves from others with dissimilar beliefs (Garrett & Bankert, 2020; Skitka et al., 2005; Zaal et al., 2017) as well as endorse achieving their moral objectives via any means necessary (Mueller & Skitka, 2018; Skitka, 2002; Skitka & Houston, 2001; Zaal et al., 2017), including through the use of violence (Mooijman et al., 2018; Reifen Tagar et al., 2014). In short, moralistic mindsets may be a double-edged sword; while this frame of mind may help reduce uncertainty and feelings of a loss of control, it may also lead to hostility and divisiveness towards those with different views.

Indeed, the current political divisions forming in many nations often go deeper than just differing views on policies, and instead may also reflect a growing division of morals (Finkel et al., 2020). A month before the 2020 US election for example, approximately 80% of registered voters – for both Republicans and Democrats – believed differences between the parties were in core American values (Dimock & Wike, 2021), which may reflect a deeper division of moral beliefs. Likewise, around 90% were concerned that a victory by the alternative party would result in lasting harm. The link between inequality and a moralistic

mindset may thus help reconcile why political polarisation flourishes in unequal environments.

The current work aims to establish the relationship between economic inequality and the tendency to adopt a moralistic mindset across three studies with complementary methods. In particular, we examined whether inequality was linked to three manifestations of a moralistic mindset that would aid in gaining a sense of control, via: 1) the use of moral language, 2) the harshness of moral judgments, and 3) the desire for clearer social and moral rules in society. Our first study examined the link between inequality and moral language in a context where morals are frequently expressed: Twitter. To achieve this, we assessed the link between inequality in towns across the US and the use of moral language in Tweets over a period of 9 years. Study 2 then explored how both objective and subjective perceptions of inequality relate to the harshness of moral judgments across 41 locations around the world. Finally, we conducted an experiment to establish whether exposure to inequality caused a desire for clearer social rules and punishment for deviating from those rules in society. Together, these studies may shed light on how and why economic inequality may contribute to the fragmentation of society (Gu & Wang, 2022; Stewart et al., 2020).

Results

Study 1 – Moral Language on Twitter

In the social media age, much of our moral dialogue occurs online. Platforms such as Twitter run on a business model where the goal is to maintain attention on the platform, resulting in a greater flow of negative and rage-inducing content (Brady et al., 2021, 2022; Crockett, 2017; Hari, 2022; McLoughlin et al., 2021). Unlike other platforms such as Facebook or Instagram, Twitter focuses more on worded content over images and shows people a significant proportion of content outside their chosen network. Twitter is therefore a

naturalistic environment geared towards the sharing of moral content to a wide network. Here we aimed to assess whether inequality relates to the use of moral words in Tweets.

Using a random sample of six billion Tweets, we assessed the number of moral words used in posts that were geolocated to a 'place code' (e.g., city, town, or municipality) in the United States per year, from 2012 to 2020. Using the moral foundations dictionary, we assessed the number of moral words in Tweets overall, as well as the words that relate to five categories of moral concern: care/harm, fairness/cheating, authority/subversion, purity/degradation, and loyalty/betrayal foundations (Clifford et al., 2015; Graham et al., 2011; Graham & Haidt, 2021)[1]. We additionally assessed the use of virtue (e.g., 'help') and vice (e.g., 'hurt') words. To examine the role of economic inequality on the number of moral words, we gathered Gini indices from each city in the United States per year. Religiosity, presidential voting behavior and Gross Domestic Product (GDP) were additionally sourced to include as control variables. We hypothesized that greater inequality would predict more moral language used in Tweets.

The full results for all models reported below can be seen in Supplementary Materials 1. We conducted ANOVAs to compare the Akaike Information Criterion (AICs) of models with various random effect structures to establish which was most optimal. Based on these results, we included 1) year, and 2) place nested within county nested within state, as random intercepts in all models reported below. Ten negative binomial Generalized Linear Mixed Models (GLMM) were used to assess the relationship between the Gini index and a) moral words more generally, b) vice and virtue words, c) individualising and binding foundations, and d) for each of the five foundations specifically. Table 1 presents summary results for each of these models using unstandardized indices. Higher inequality was associated with harsher moral words (total), vice and virtue words, individualising and binding words, and each of

[1] The Moral Foundations Dictionary did not contain words for a sixth category, 'liberty/oppression'.

the five foundations individually. We assessed the robustness of our key finding – that high inequality relates to the use of moral words (total) – by including the Gini index as a random slope for both year and place code[2], and results remained consistent, $b = 1.08$, $SE = 0.13$, $p < .001$. Economic inequality remained a significant predictor for the remaining nine ways of categorising the moral words (vice, virtue, individualising, harm, fairness, binding, purity, authority, loyalty) when the Gini index was included as a random slope (see Supplementary Materials 1 for results).

Table 1

Unstandardized Indices for Negative Binomial Generalized Linear Mixed Models Examining the Effect of Gini Index on the Use of Moral Words in Tweets.

Outcome Variable	*b*	*S.E.*	*p*
Moral words (overall)	0.63	0.08	<.001***
Vice	0.91	0.09	<.001***
Virtue	0.56	0.08	<.001***
Individualising	0.69	0.08	<.001***
Harm	0.70	0.08	<.001***
Fairness	1.29	0.11	<.001***
Binding	0.74	0.08	<.001***
Purity	0.96	0.10	<.001***
Authority	1.20	0.11	<.001***
Loyalty	1.00	0.10	<.001***

* $p < .05$ ** $p < .01$ *** $p < .001$

We assessed whether our results for the total number of moral words held when controlling for other variables, including GDP, religiosity, and voting behavior. Our significant finding for the total moral words score held when controlling for these variables, such that higher inequality predicted more moral words in Tweets, $b = 0.61$, $SE = 0.07$, $p < .001$. Results also remained significant for all 9 ways of categorising the moral words (vice, virtue, individualising, harm, fairness, binding, purity, authority, loyalty) when controlling

[2] Models would only converge with random slopes when the random effects structure was simplified. All random slopes models contained place code and year as crossed random effects, whereas county and state were no longer included as grouping variables.

for GDP, religiosity, and voting behavior (see Supplementary Materials 1). We then lagged our data by one year to assess whether Gini index at time 1 predicted the use of moral words (overall) in Tweets at time 2, controlling for Gini at time 2 and moral words (overall) in Tweets at time 1. We divided the moral words control variable (i.e., at time 1) by the total number of Tweets to adjust for areas with greater volumes of posts as our offsetting function only affects the dependent variable. Results demonstrated that a higher Gini at time 1 predicted greater use of moral words in Tweets at time 2, $b = 0.61$, $SE = 0.11$, $p < .001$, with the effect of Gini at time 2 on moral word use at time 2 greatly reduced, $b = 0.32$, $SE = 0.10$, $p = .002$.

In Study 1, we found clear evidence that greater inequality predicted the use of moral words in Tweets in the US, across a period of 9 years. This relationship was replicated when looking at moral words generally, the use of vice and virtue words, individualising and binding foundations, and each of the five foundations separately. We further found evidence that hints at a causal pathway – namely, that high inequality predicted more moral words used one year later. While this work provides evidence for the link between inequality and more moral language use online, this is a crude level of analysis that indicates a more moralistic mindset. A critical element of having this kind of mindset is applying one's moral framework to the actions of others. In Study 2, we turned to the relationship between economic inequality and the harshness of moral judgments about the behavior of others in a multinational sample.

Study 2 – Moral Judgments Across 41 Cultures

For our second study, we aimed to establish the link between high economic inequality and the tendency to make harsher moral judgments about actions across 41 locations around the world. We assessed economic inequality on both the country-level (via available online indices) as well as subjective perceptions of inequality. To explore moral

judgments, we asked participants to judge how wrong a variety of scenarios were that broadly covered six domains of moral concern: harm, fairness, liberty, authority, loyalty, and purity. We examined the tendency to make harsher judgments collapsed across all scenarios, as well as the individualising and binding scenarios. Finally, we assessed the harshness of moral judgments for each foundation specifically. We controlled for economic and social conservativism, gender, age, subjective social status, religiosity, and GDP at Purchasing Power Parity (GDP PPP) in all analyses. We hypothesized that higher inequality, both subjective and objective, will be linked to the general tendency to make harsher moral judgments about others' actions.

See Supplementary Materials 2 for full results for all models reported below. Based on the intraclass correlation, approximately 13.4% of the variance in moral judgments can be explained at the country level[3] (see Figure 1; see Supplementary Materials 3 for average country score per foundation). Likewise, approximately 16.3% and 19.5% of the variance in the individualising and binding foundations, respectively, can be explained by differences between countries. To establish the relationship between moral judgments and the control variables, an LMM was conducted. As shown in Table 2, females ($M = 3.59$, $SD = 0.52$) tended to moralize more than males ($M = 3.51$, $SD = 0.56$). Moral judgments also became harsher with age, and participants tended to more harshly judge the moral scenarios when they had a lower subjective social status. Harsher moral judgments were also witnessed with both increased importance of religion and social conservatism (relative to social liberalism).

[3] For the sake of simplicity, we refer to the 41 locations as 'countries' throughout. However, we acknowledge that several of our samples came from different regions within the same country (e.g., Canada, China, United Kingdom, United States).

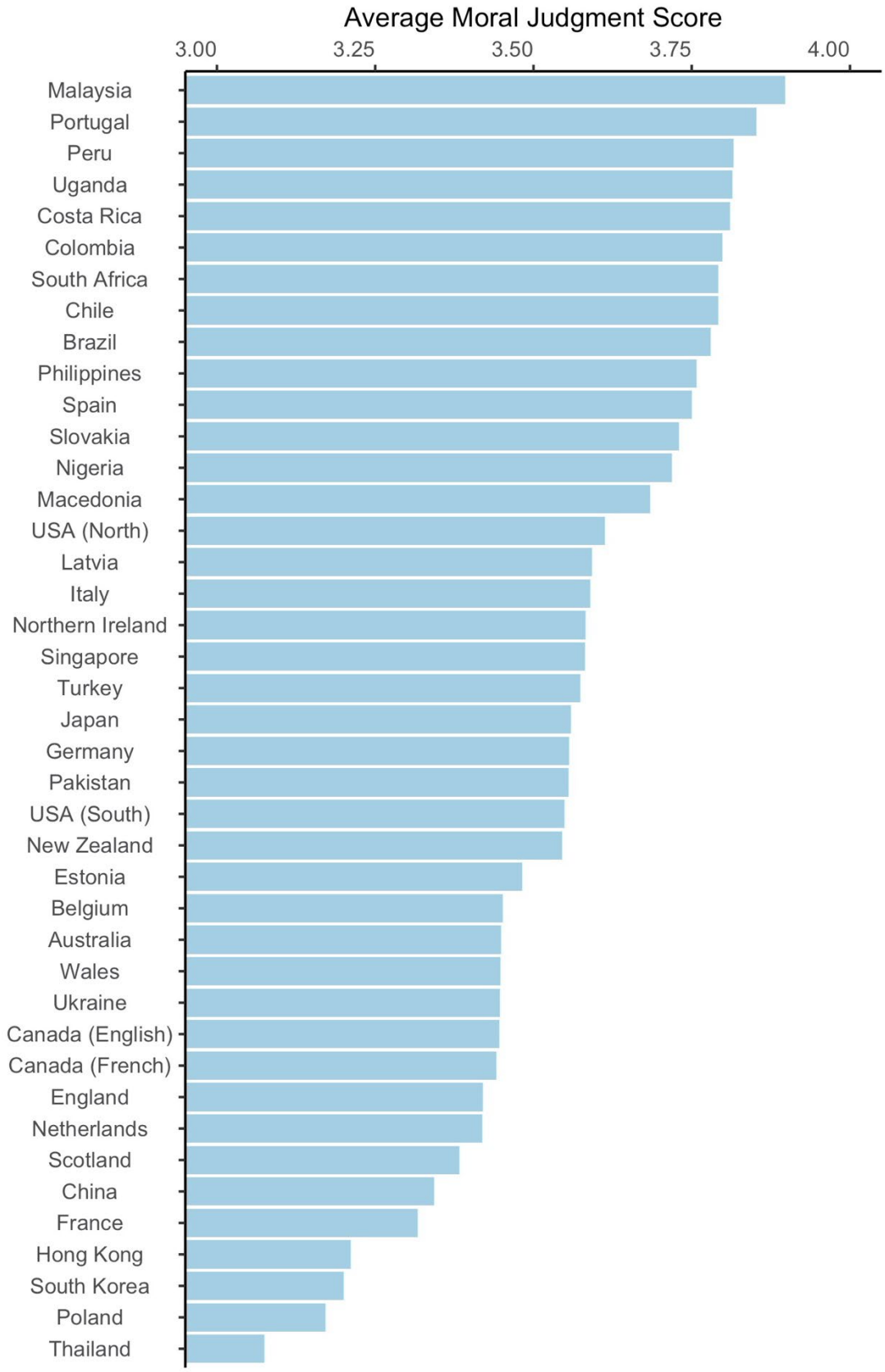

Figure 1. Average moral judgment score across locations. Higher values indicate harsher moral judgments.

Table 2

Linear Mixed Model Examining the Effect of Control Variables on Moral Judgments

		Moral Judgments	
Predictors	*Estimates*	*95% CI*	*p*
(Intercept)	-0.22	-0.33 – -0.10	**.001****
Country-Level Controls			
GDP PPP per capita	-0.11	-0.23 – 0.00	.055
Individual-Level Controls			
Gender (female)	0.29	0.24 – 0.34	**<.001*****
Age	0.04	0.01 – 0.07	**.005****
Subjective social status	-0.03	-0.06 – -0.01	**.008****
Social conservativism	0.09	0.06 – 0.12	**<.001*****
Economic conservativism	-0.03	-0.06 – 0.00	.063
Importance of religion	0.12	0.10 – 0.15	**<.001*****
Random Effects			
Residual	0.82		
Country (intercept)	0.12		
ICC	.13		
$N_{Country}$	41		
Observations	6019		
Marginal R^2 / Conditional R^2	.063 / .180		

Note: Gender was coded as male (1) and female (2). Marginal R^2 refers to fixed effects only and Conditional R^2 refers to the entire model.
* $p < .05$ ** $p < .01$ *** $p < .001$

All control variables were included in each of the models reported below. We conducted an LMM to examine the effect of country-level Gini on moral judgments. Results revealed a larger Gini index (i.e., more economic inequality) was associated with harsher moral judgments overall, $b = 0.20$, $SE = 0.06$, $p = .003$. A further LMM revealed that a larger perceived Gini index was associated with harsher moral judgments overall within-counties, *b*

= 0.04, *SE* = 0.01, $p < .001$, but this relationship was only on the cusp of significance between-countries, $b = 0.14$, *SE* = 0.07, $p = .051$ (see Figure 2). See Figure 3 for the relationship between the average perceived Gini index and the harshness of moral judgments by country. We ran several exploratory LMMs to check the moral judgments effect is not being driven by any specific moral foundation. As seen in Table 3, there is general evidence that greater inequality is linked to harsher moral judgments across a variety of moral concerns.

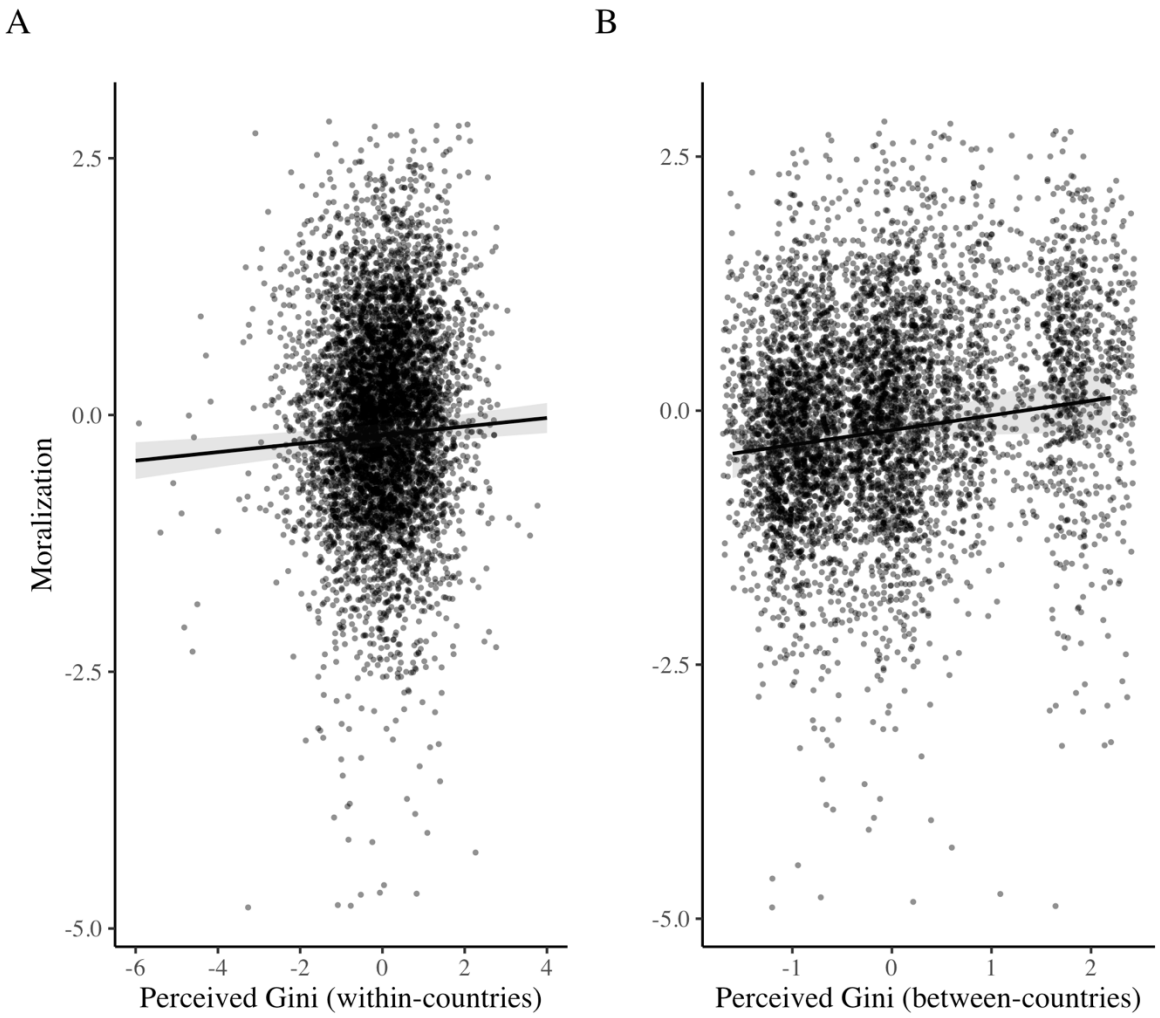

Figure 2. The relationship between the perceived Gini coefficient and moral judgments within-countries (panel A) and between-countries (panel B). All variables have been scaled and centred. Each point has been jittered for ease of interpretation and the light grey shaded

area surrounding the trend line represents confidence intervals.

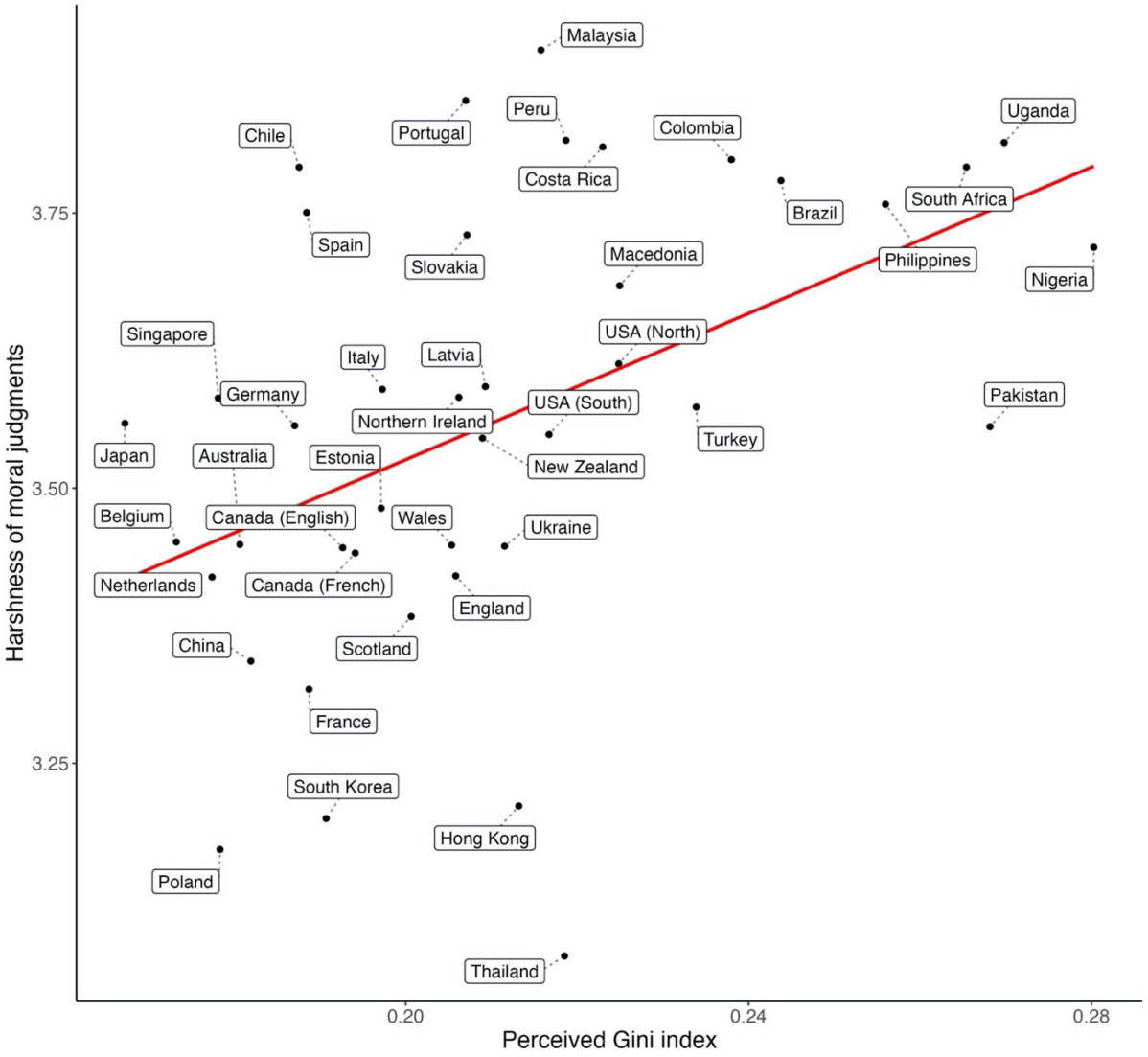

Figure 3. The relationship between the average perceived Gini index and moral judgment score by country.

Table 3

Sixteen Linear Mixed Models Examining the Effect of Inequality Predictors on Moral Foundation Vignettes.

		Within-country effects			Between-country effects		
Predictor	Outcome	*b*	*95% CI*	*p*	*b*	*95% CI*	*p*
Perceived Gini	Individualising	0.03	0.01 – 0.05	**.007****	-0.07	-0.24 – 0.10	.415
	Harm	0.03	0.01 – 0.05	**.015***	0.01	-0.13 – 0.15	.878
	Fairness	0.02	-0.01 – 0.04	.188	0.02	-0.12 – 0.16	.775
	Liberty	0.04	0.02 – 0.06	**.001****	-0.08	-0.26 – 0.10	.367
	Binding	0.03	0.01 – 0.06	**.002****	0.26	0.13 – 0.39	**<.001*****
	Purity	0.02	-0.01 – 0.04	.186	0.22	0.08 – 0.36	**.003****
	Authority	0.02	-0.00 – 0.04	.090	0.19	0.06 – 0.32	**.006****
	Loyalty	0.05	0.02 – 0.07	**<.001*****	0.20	0.10 – 0.31	**<.001*****
Country-level Gini	Individualising	–	–	–	0.17	0.02 – 0.32	**.026***
	Harm	–	–	–	0.06	-0.09 – 0.22	.404
	Fairness	–	–	–	0.19	0.07 – 0.30	**.002****
	Liberty	–	–	–	0.15	-0.01 – 0.32	.063
	Binding	–	–	–	0.16	0.02 – 0.30	**.024***
	Purity	–	–	–	0.11	-0.04 – 0.25	.138
	Authority	–	–	–	0.15	0.05 – 0.25	**.005****
	Loyalty	–	–	–	0.11	-0.01 – 0.22	.063

Note. Each line denotes a separate Linear Mixed Model, where both the within-country and between-country effects are included in the same model. * $p < .05$ ** $p < .01$ *** $p < .001$

We found that higher inequality was linked to harsher moral judgments more generally, and this effect was consistent when examining both objective inequality on the country-level as well as individual perceptions of how unequal society was. The fact that this relationship also occurred on the country-level discounts alternative individual-level explanations, such as those who make harsher moral judgments are also more attuned to unfairness, and thus inequality, in their environment. Results were mixed when examining the effect of inequality on each foundation more specifically, with high subjective inequality linked to individualising and binding foundations as well as harm, liberty and loyalty, within-countries, and linked to all three binding foundations, between-countries. Likewise, high objective inequality on the country-level was linked to harsher moral judgments in both individualising and binding foundations, but this effect may have been driven more specifically by judgments about violations of fairness and authority. Despite some variation in findings, these results suggest that high inequality is not only linked to either individualising or binding foundations, nor is it only linked to judgments that are more closely related to inequality (e.g., fairness concerns). Rather, high inequality seems to be related to a general tendency to make harsher moral judgments.

Study 2 has established that high inequality is linked to harsher moral judgments about the actions of others, suggesting individuals are more attuned to and critical of how others behave. However, merely seeing a behaviour as wrong does not explicitly suggest that, in unequal environments, individuals strongly desire others to abide by a strict code of conduct. We thus turned our attention to a third study, where we establish whether high inequality causes a desire for clearer social and moral rules in society, as well as strong disapproval for deviation from those rules.

Study 3 – Experimental Evidence

A defining feature of a moralistic mindset is the inclination to impose rigid moral standards, not only on oneself but also on others. In environments marked by high economic inequality, individuals with this mindset should be more likely to advocate for clear-cut social and moral rules that must be adhered to by all members of society. Additionally, while our previous studies have provided correlational and longitudinal evidence for a link between economic inequality and a moralistic mindset, experimental evidence is needed to confirm causality. Study 3 thus aimed to test whether being immersed in a fictitious society (Bimboola) characterized by high (versus low) economic inequality affected a desire for clearer rules in society.

Participants were told to imagine they were a member of a new society, Bimboola, that had three very unequal wealth tiers or three wealth tiers that were relatively equal. Participants were assigned to the middle wealth tier which was matched across conditions. To make the manipulation more salient, participants were then asked to choose a house, car, and holiday and were also able to see the options for those in other wealth tiers. See Figure 4 for the choices offered per condition. Finally, participants answered several questions, including their desire for clearer social and moral rules in Bimboola, perceptions of inequality between the wealth tiers, manipulation and attention checks, and basic demographic factors. We predicted that those immersed in a high inequality society would have a stronger desire for clearer social and moral rules compared to those exposed to low inequality.

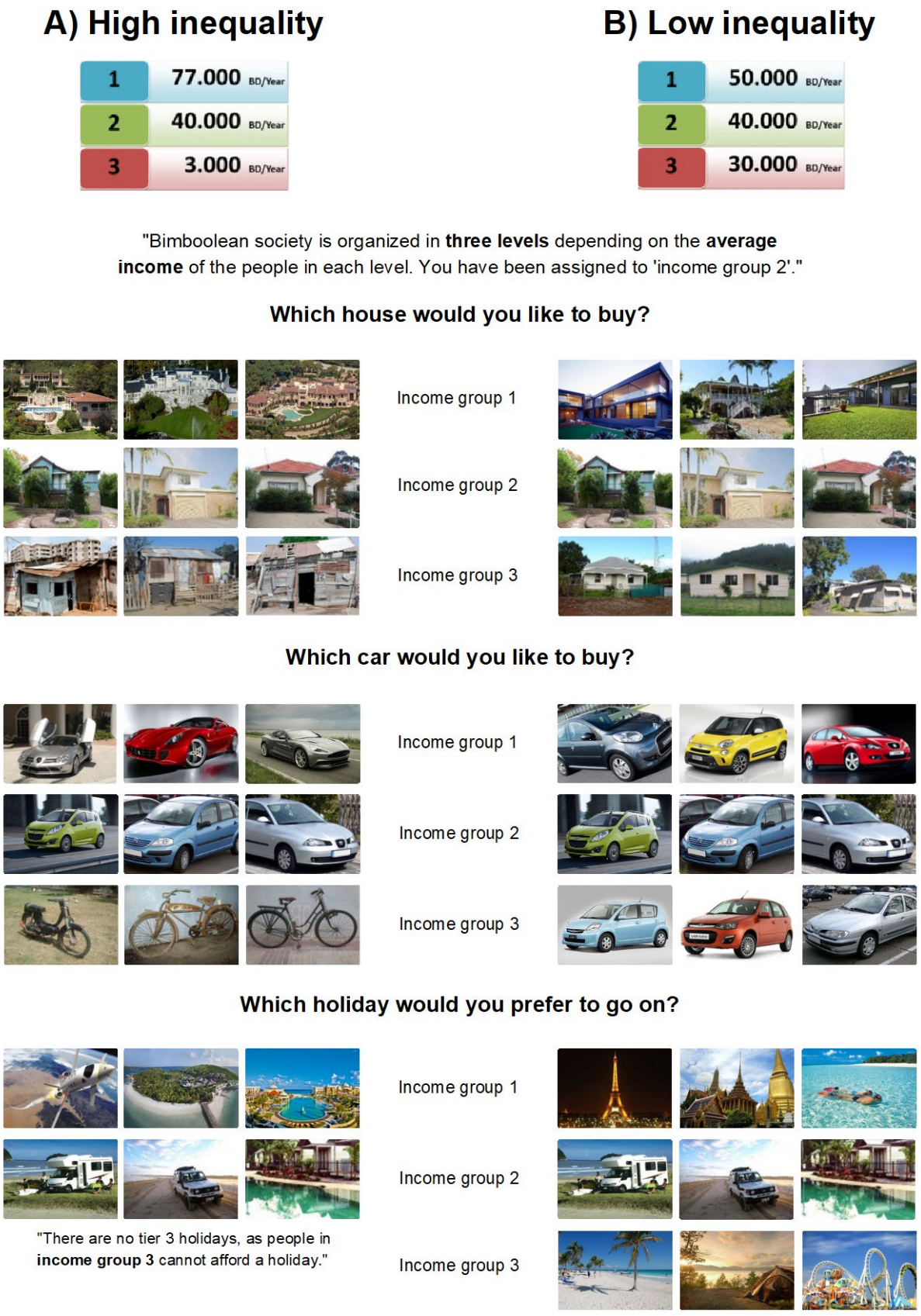

Figure 4. Houses, transportation, and holiday options offered to participants, per condition.

We first tested the relationship between condition (high verses low inequality) on a desire for clearer rules in society. A Shapiro-Wilk Normality Test revealed that the data violated the assumption of normality, $W = 0.98$, $p < .001$. We thus ran a two-tailed Mann-Whitney U test to account for non-normality, and this revealed that those in the high inequality condition ($M = 4.57$, $SD = 1.03$) had a greater desire for clearer rules in society relative to those in the low inequality condition ($M = 4.24$, $SD = 0.92$), $U = 11978$, $p < .001$. To check for the robustness of the data, we then conducted an ANCOVA on the effect of condition on a desire for clearer rules, controlling for age, gender, economic conservatism, and social conservatism. The results remained robust with a consistent, significant effect of condition, $F(1, 342) = 9.44$, $p = .002$, $\eta^2 = .03$.

Study 3 revealed that exposure to high inequality was linked to a desire for clearer social and moral rules in society compared to low inequality. This relationship remained robust when controlling for other demographic variables. The findings suggest that exposure to high levels of inequality may elicit a mindset where individuals feel a strong need for clearly defined moral and social guidelines that are adhered to by all in society.

Discussion

High economic inequality is thought to fuel the growing political polarization seen in many nations (Gu & Wang, 2022; Stewart et al., 2020). Our findings provide a psychological explanation for this effect, demonstrating that high inequality is linked to a greater tendency to adopt a moralistic mindset. Our first study found that higher inequality was related to more moral discourse on Twitter. Places in the US with higher inequality were associated with more moral words in Tweets, and higher inequality at a previous timepoint was linked to more moral words in Tweets at a later timepoint. Spanning 41 locations around the world, Study 2 found that both objective, country-level inequality and subjective perceptions of inequality were linked to harsher judgments across a broad range of moral categories. Finally,

our experiment in Study 3 found that exposure to high inequality caused a greater desire for strict moral and social rules in society. Together, these diverse methods and participant pools point to a clear conclusion – higher inequality is linked to the adoption of a more moralistic mindset among individuals.

High economic inequality is known to erode the social fabric of society (Jetten et al., 2021; Kirkland et al., 2022; Oishi et al., 2011; Sprong et al., 2019). As an inherently group-based species, cooperative networks are imperative for survival, and people may be particularly attuned to threats to social cohesion. Past work suggests that people may act in ways to regain a sense of control when facing environmental threats such as economic inequality (Gelfand et al., 2006, 2011; Jetten et al., 2021; Kay et al., 2009; Rucker et al., 2004; Tetlock, 2002; Tetlock et al., 2007). The current series of studies is the first to demonstrate that we may adopt a moralistic mindset when exposed to high inequality. People may regain a sense of control over themselves and others by adopting a moralistic mindset via increasing the use of moral language, harshly condemning the misdeeds of others and desiring clear social and moral rules that all should follow. Critically, our findings suggest that inequality is not just linked to the tendency to consider moral matters closely related to unequal distributions (e.g., matters related to fairness), nor is it only linked to moral concerns that are traditionally adopted by only one side of the political spectrum. Rather, inequality appears to relate to an increased tendency to see the world through a moral lens in a very general way and extends across a broad range of moral content.

The current work is a critical step in our understanding of the socio-environmental factors that enhance the tendency to adopt a moralistic mindset. To our knowledge, this is the first study to propose the role of economic inequality in promoting a moral frame of mind. Using correlational and longitudinal methods, we found comprehensive evidence for the link between high inequality and a moralistic mindset in both real-world discourse and

hypothetical moral judgments. We further found experimental evidence that higher inequality causes a desire for clearer rules in society, providing causal evidence for our general thesis. Critically, our approach combats the W.E.I.R.D. (Western, Educated, Industrialized, Rich, Democratic) bias frequently found in psychological research (Henrich et al., 2010), validating our findings across nations and in a representative sample of social media users.

The link between economic inequality and a moralistic mindset may offer an explanation for the growing ideological differences observed in many parts of the world. Political polarization is a major concern facing many societies, and has negative consequences for democracy (Arbatli & Rosenberg, 2021). High inequality has been linked with polarization in past research (Gu & Wang, 2022; Stewart et al., 2020), and our work provides a possible psychological explanation for this relationship. When experiencing an environmental threat such as high inequality, people may be more attuned to the perceived moral misdeeds of others, and particularly of those who do not follow the group's moral prescriptions. This may then lead to greater animosity directed towards groups of individuals who have different moral frameworks. Indeed, past work has shown that strong moral convictions about issues leads to more polarizing outcomes, such as greater distancing from those with dissimilar beliefs (Garrett & Bankert, 2020; Skitka et al., 2005; Zaal et al., 2017) and increased partisan bias (Garrett & Bankert, 2020). These polarizing effects of a moralistic mindset are all the more concerning when combined with the ever-increasing use of social media, many platforms of which are designed (whether directly or indirectly) to amplify and spread moral outrage (Brady et al., 2021; McLoughlin et al., 2021). It is therefore critical that future work builds upon our findings to better understand how and when people gravitate towards adopting moralistic mindsets in the face of environmental threats, how this interacts with social media use, and the downstream consequences for society.

The current study also has several shortcomings that should be addressed in future work. Study 1 only provided a broad analysis of moral content in Tweets. It remains unclear how people are using moral words in their Tweets, for example whether individuals are outraged, judging the actions of others, or engaging in a more open discussion of morality. Moreover, while Study 2 included individuals from many nations across the world, the participants exclusively came from university samples. Future work should replicate our findings with more representative samples. There are also several pathways that were not directly confirmed in our work, such as assessments of threat, a sense of control and polarization, and this is a promising direction for future work. We further proposed a general link between environmental threat and a moralistic mindset, and more work is needed to understand which forms of threat are related to the adoption of a moral frame of mind (Bastian et al., 2019; Gelfand et al., 2011; Henderson & Schnall, 2021a, 2021b). Finally, morality can be examined from many other angles (e.g., attitudes on specific issues, black and white moral thinking, rule-based or consequentialist approaches), and future research should explore which forms of morality may be affected by economic inequality and other environmental threats.

Every day we look at the world through a moral lens – we aim to do the right thing, and we judge others when they have committed a wrong. Our morals are a powerful determinant of our behaviour and how we treat the people around us, yet until now, little research has explored how our societal environment can foster a moralistic mindset. Across 41 culturally diverse locations and online on Twitter, we found that high economic inequality is linked to harsher moral judgments and the increased use of moral language, respectively. Critically, our evidence shows that this effect occurs across a broad range of moral content and is not specific to any one issue. We further found experimental evidence that high inequality results in a desire for clearer rules in society. Combined, these results suggest that

environmental threats such as economic inequality may activate a moralistic mindset as a way to regain a sense of order and control. As we navigate the complexities of the 21st century, it is critical we understand the influence of societal structures on our moral perspectives, how we treat others, and the growing divisions between us.

Methods

Study 1 – Moral Language on Twitter

Procedure. Moral Foundations Theory dictates that moral concern can be placed into six core foundations: care/harm, fairness/cheating, liberty/oppression, authority/subversion, purity/degradation, and loyalty/betrayal (Clifford et al., 2015; Graham et al., 2011). To extract moral posts on Twitter, we used a previously validated dictionary of moral words – the moral foundations dictionary (Graham & Haidt, 2021). We further validated the use of each term by searching Twitter and confirming that each word was typically used in a moral context (see Supplementary Materials 4 for amended dictionary). The dictionary was subdivided into 11 categories: general moral words, as well as a virtue (moral words that would be typically classified as positive e.g., help) and vice (moral words that would be typically classified as negative e.g., hurt) category for five moral foundations: harm, fairness, authority, loyalty, and purity[4].

We applied this dictionary of words to a database of 6 billion Tweets spanning the years 2012 to 2020. This pool of Tweets was downloaded from the Sprinkler Application Programming Interface (API), which provides a random sample of approximately 1% of the public Twitter feed. Each Tweet was geolocated to a 'place code' (e.g., city, town or municipality) in the United States using a previously validated geolocation algorithm (Blake et al., 2018), resulting in a total of 5434 cities per year. We ascertained the number of Tweets that contained at least one word for each of the 11 moral categories as well as the total

[4] Liberty/oppression words were not available in the Moral Foundations Dictionary.

number of Tweets more generally from that location to control for places with greater Tweet volume. Approximately 28 million Tweets contained at least one moral word and were ultimately retained for analysis.

Materials. To model the effect of economic inequality on moral Tweets, we gathered the Gini indices for each city and year from the US Census Bureau (United States Census Bureau, 2020). The Gini index ranged from (0) least inequality to (1) most inequality. We also gathered several control variables to assess the robustness of our findings. First, we assessed real Gross Domestic Product (GDP) – a measure that has been adjusted for inflation – per year on the county-level from the Bureau of Economic Analysis (Bureau of Economic Analysis, 2022), as income inequality can be associated with economic growth (Naguib, 2017), and prior work has shown that scarcity of resources predicts a stronger moral identity (Elbaek et al., 2021). We further controlled for religiosity, as places with higher inequality are typically more religious (Jordan, 2014), and religious individuals tend to adopt group binding principles more so than non-religious individuals (Labouff et al., 2017). The data for religiosity was obtained from the Pew Research Centre (Pew Research Centre, 2016) with only one time point available on the state level, and dictates the percentage of people who believe that religion was "very important" to them. Finally, we controlled for political orientation as there are significant differences between political liberals and conservatives in the kinds of moral foundations they adopt (Graham et al., 2011), and liberals perceive greater levels of inequality relative to conservatives (Norton & Ariely, 2011). We thus included presidential election data and more specifically, the percentage of individuals who voted for the Republican party (MIT Election Data and Science Lab, 2018). This data was available on the four-year election cycle for each county, and we thus applied the vote percentage to the proceeding four years after an election (i.e., 2012 results applied for the years spanning 2012 to 2015).

Method of analysis. Given our dependent variable was count data (i.e., number of Tweets), we used negative binomial Generalized Linear Mixed Models (GLMM) to assess the effect of economic inequality on number of moral Tweets. We accounted for areas that had larger Tweet volumes by offsetting the total number of Tweets more generally from each place, and included two random intercepts: 1) year, and 2) place nested within county nested within state. We first assessed the effect of economic inequality on a) moral words more generally, b) vice and virtue words, c) individualising and binding foundations, and d) for each of the five foundations specifically. We then tested the robustness of our results by assessing the effect of economic inequality on total number of moral words, controlling for GDP (scaled), religiosity and voting behavior. Finally, to better understand causality, we lagged our data and explored whether the Gini index at time 1 predicted moral Tweets at time 2, controlling for Gini at time 2, and moral Tweets at time 1.

Study 2 – Moral Judgments Across 41 Cultures

Ethical approval was obtained by the last author from the <BLINDED> Behavioural and Social Sciences Ethical Review Committee, project no. 2009001486. Informed consent was obtained in line with the requirements of ethical approval. This study meets the relevant ethical guidelines for each country involved. This study drew on data from an existing multinational dataset and has been used for other studies with diverging hypotheses (Hornsey et al., 2022; Kirkland, Crimston, et al., 2022; Kirkland, Lange, et al., 2022).

Participants. Participants were recruited between 2018 and 2019 from 41 universities across 35 countries: Australia, Belgium, Brazil, Canada (English-speaking), Canada (French-speaking), Chile, China, Colombia, Costa Rica, England, Estonia, France, Germany, Hong Kong (HKSAR, China), Italy, Japan, Latvia, Macedonia, Malaysia, Netherlands, New Zealand, Nigeria, Northern Ireland, Pakistan, Peru, Philippines, Poland, Portugal, Scotland, Singapore, Slovakia, South Africa, South Korea, Spain, Thailand, Turkey, Uganda, Ukraine,

United States (North), United States (South) and Wales[5]. In total, 6,665 participants (M = 21.59 years, SD = 5.72 years; 63% female) completed the questionnaire. See Supplementary Materials 5 for information regarding sample size and data collection.

Measures. The individual measures discussed below were taken from a larger multinational survey, and country-level measures were taken from existing online databases. Details of the individual-level measures can be found in Supplementary Materials 6.

Moral judgments. We assessed how wrong participants believed various actions were through a selection of Clifford Vignettes (Clifford et al., 2015) that detail a variety of potentially morally relevant scenarios spanning the six moral foundations. Participants were presented with 24 scenarios and were asked to judge how morally wrong they consider each of the behaviours on a scale from (1) not at all wrong to (5) extremely wrong. Participants were asked 9 harm items (α = .82), spanning physical harm towards humans (3 items, e.g., "You see a woman spanking her child with a spatula for getting bad grades at school"), psychological harm towards humans (3 items, e.g., "You see a girl laughing at another student for forgetting her lines in a school play") and physical harm towards animals (3 items, e.g., "You see a boy setting a series of traps to kill stray cats in his neighbourhood"). Items also assessed fairness (3 items, e.g., "You see a politician using federal tax dollars to build an extension on his home"; α = .65), liberty (3 items, e.g., "You see a man forbidding his wife to wear clothing that he has not first approved"; α = .63), loyalty (3 items, e.g., "You see a teacher publicly saying she hopes another school wins the math contest"; α = .73) and authority violations (3 items, e.g., "You see an employee trying to undermine all of her boss' ideas in front of others"; α = .72). Two items were used to assess the purity foundation (e.g.,

[5]One country was excluded from analyses due to complete missing data on a critical control variable, subjective social status.

"You see a man searching through the trash to find women's discarded underwear")[6]. We created a total moral judgment measure by averaging the means of each foundation (α = .73). This approach adjusted for the higher number of harm items and lower number of purity items to ensure that each foundation was appropriately weighted in the combined measure. Using a similar approach, we also averaged the means of the harm, fairness, and liberty items to create an individualising measure (α = .72), and averaged the means of the loyalty, authority, and purity foundations to create a binding measure (α = .70).

Inequality. We measured inequality in two ways: Gini index (country-level) and perceived Gini index (individual-level)[7]. We first included a measure of country-level economic inequality with the Gini index from The World Bank (The World Bank, 2019b). This assesses the degree to which wealth is un/evenly spread in a population.

We also measured subjective perceptions of inequality. Many individuals may not know how unequal their society actually is (Oshio & Urakawa, 2014) and individuals in the same country may experience more equal or unequal local environments (Knell & Stix, 2020). Subjective and objective inequality only moderately correlate (Kirkland, Crimston, et al., 2022; Schmalor & Heine, 2021) and prior work has shown that subjective perceptions of wealth are often more predictive of psychological outcomes relative to objective measures (Kirkland, Crimston, et al., 2022; Sprong et al., 2019). We therefore measured perceived inequality using a quasi-Gini index (Sprong et al., 2019). Participants were told to imagine 100 members of their country and asked to dictate how many of these 100 people they thought were 'very poor', 'poor', 'average in wealth', 'wealthy' and 'very wealthy'. Both

[6]A third item assessing purity (i.e., "You see a man having sex with a frozen chicken before cooking it for dinner") was initially included in the survey but was removed in several locations and was therefore dropped from analyses.

[7]Our survey contained a third measure of economic inequality – perceptions of the wealth gap between the rich and the poor (Kirkland, Crimston, et al., 2022). We have included details on this measure as well as the relationship between this measure and moral judgments in the Supplementary Materials 7. Broadly speaking, this measure predicted moral judgments in a similar way to the country-level and perceived Gini Index.

Gini measures were calculated in a similar way, and scores could range from (0) most equal, to (1) most unequal.

Control variables. We controlled for several variables that may be related to moral judgments and levels of economic inequality. Liberals and conservatives tend to differ in their adoption of the moral foundations (Clifford et al., 2015; Graham et al., 2011), and liberals tend to believe inequality is greater compared to conservatives (Norton & Ariely, 2011). To account for this, we measured economic and social conservatism, and responses to both questions were coded from (1) left/liberal, to (7) right/conservative. The adoption of certain foundations tend to differ by gender (Graham et al., 2011) as females also tend to perceive lower inequality relative to males (Norton & Ariely, 2011). We thus measured gender as (1) male or (2) female. Age was measured in years. Socioeconomic status is known to affect perceptions of how wealth is distributed (Knell & Stix, 2020; Norton & Ariely, 2011) and we controlled for social status using the MacArthur Scale of Subjective Social Status (Glei et al., 2018; Goodman et al., 2001; Singh-Manoux et al., 2003). Participants were shown a 10-rung ladder and asked to indicate where they felt they fit on the ladder relative to others in their society in terms of money, education, and job prestige, and this was coded from (1) bottom rung/worst off in society, to (10) top rung/best off in society.

Certain foundations are also more likely to be adopted by those who are religious (e.g., purity; Graham et al., 2011) and religious countries also tend to be more unequal (Jordan, 2014). We accounted for this by including a measure of the importance of religion. Participants were asked if they followed a religion, and if so, how important religion is in their daily life. Responses were recorded from (1) not at all important to (7) extremely important. For those who do not follow a religion, their missing data was recoded as 1. Finally, we accounted for the wealth of each country as economic growth can correlate with inequality (Naguib, 2017). We thus included a measure of Gross Domestic Product at

Purchasing Power Parity (GDP PPP) per capita from the World Bank in international dollars (The World Bank, 2019a).

Inclusion and ethics statement. Local researchers were included throughout the research progress and the project was designed in collaboration with these partners. Roles and responsibilities were agreed amongst collaborators prior to data collection, including authorship protocols for publication. The research followed the ethical protocols relevant for each location.

Method of analysis. Our data came from 41 samples, and this was accounted for by using a series of Linear Mixed Models (LMM), with a random intercept of country. The analyses were conducted in R studio (R Core Team, 2008) with the lme4 package to estimate our models (Bates et al., 2015). We included the within-country (country-mean centered) and between-country (grand-mean centered country averages) estimate for each predictor variable in each model. In addition, all control variables were included as fixed effects. Canada (French speaking and English speaking), China (China and Hong Kong), United Kingdom (England, Northern Ireland, Scotland, and Wales) and United States (North and South) samples were collected from different locations and were treated as separate countries for the sake of analyses.

Study 3 – Experimental Evidence

This study, including the hypotheses, survey material and analysis plan, was pre-registered on the Open Science Framework (OSF): https://osf.io/4ukr7/?view_only=b8709c12821b4c1d9e29ee5e93e0c0d9. Ethical approval was obtained by the first author from the <BLINDED> Human Research Ethics Committee, project no. 2022-23182-24737-3. Informed consent was obtained in line with the requirements of ethical approval.

Participants and design. An a-priori power analysis on G*Power revealed that 352 participants were needed to find a small to medium effect (d = 0.30) with 80% power. In total, 352 participants were collected from the online data collection platform, Prolific. Participants were required to be currently residing in the United Kingdom to take part in the study. One participant was excluded after completing the survey incorrectly, and the final sample was comprised of 351 participants (M = 39.90 years, SD = 12.90 years; 50.4% male, 48.7% female, 0.9% other identity).

Procedure. We used the Bimboola paradigm to experimentally manipulate exposure to high and low inequality (Jetten et al., 2015; Sánchez-Rodríguez et al., 2018; Sprong et al., 2019; Tanjitpiyanond et al., 2022). Participants were told they were a part of a fictitious society called Bimboola. In Bimboola, there were three income groups: high, middle, and low income. Participants were always assigned to the middle-income group, which earned 40,000 Bimboolean dollars a year. In the high inequality condition, the difference between the high- and low-income group was larger (77,000 and 3,000, respectively; n = 175), whereas in the low inequality condition, this difference was smaller (50,000 and 30,000, respectively; n = 176). To further immerse participants in the fictitious society, they were asked to choose a house, a mode of transport and a holiday based on what they could afford. Participants were shown low-, middle- and high-income houses, transportation, and holidays. While the middle-income choices were consistent across both conditions, the low- and high-income choices differed based on the high and low inequality conditions. As middle-income earners, participants could only select choices from the low- or middle-income category.

Measures. At the conclusion of this task, participants filled out a number of survey items.

Manipulation and attention checks. Participants were first asked "Which income level were you assigned to" and could choose "Income group 1", "Income group 2", or

"Income group 3". All participants correctly chose income group 2. To check our manipulation, participants were also asked "To what extent do you see Bimboola as an equal society (i.e., a society that has equality amongst its members)?" and responses were recorded from (1) very unequal, to (9) very equal. Those in the high inequality condition believed Bimboola was less equal (M = 1.58, SD = 1.13) compared to those in the low inequality condition (M = 4.99, SD = 1.84), $t(349) = 20.94$, $p < .001$. Finally, participants were also asked the following bot check: "Finally, to show us you are a real person, please answer the following question: Old is to young as adult is to...." All participants responded to this question appropriately (e.g., child).

Desire for clearer rules in society. Participants were asked five questions relating to a desire for clearer rules in society[8], adapted from prior research (Gelfand et al., 2011). Participants were told, "Using the scale below, please indicate the extent to which you agree with the following statements regarding what you think Bimboola should be like". Questions included items such as "In Bimboola, if someone acts in an inappropriate way, others should strongly disapprove" and responses were recorded on a scale from (1) strongly disagree, to (7) strongly agree, with higher values indicating a greater desire for clearer rules in society (α = .80). See Supplementary Materials 8 for items.

Demographic variables. We controlled for a number of demographic variables, including age and gender. We also measured political conservatism with two separate items indicating social, "Please indicate your political beliefs from left/liberal to right/conservative on social issues (e.g., immigration, same-sex marriage, abortion)", and economic conservativism, "Please indicate your political beliefs from left/liberal to right/conservative

[8]Participants also received a sixth question: "People in Bimboola have too little freedom in deciding how they want to behave in most situations". This question led to poor reliability (α = .68) as it correlated negatively with the other items. This is likely due to the ambiguous wording of this question, and we chose to remove it from analyses.

on issues of the economy (e.g., social welfare, government spending, tax cuts)". Responses for both items were recorded on a scale from (1) left/liberal, to (7) right/conservative.

Data Availability

Original and secondary data were used in the current paper. Data and analysis code for Study 1 and Study 2 are available on the Open Science Framework: https://osf.io/3mhs8/?view_only=13a8c5a4838942829b86397fdf97a19a. Data and analysis code for Study 3 are also available on the Open Science Framework: https://osf.io/4ukr7/?view_only=b8709c12821b4c1d9e29ee5e93e0c0d9. Further use of the multinational data from Study 2 for future publications is restricted, and the Data Use Agreement can be found on the OSF link provided above.

Code Availability

Data for Study 1 was downloaded from TwitPlat using Kibana version 7.5.1. All analyses were performed on R studio version 2022.07.0. All R code, including the packages used, can be found on the Open Science Framework via the links provided above.

References

Arbatli, E., & Rosenberg, D. (2021). United we stand, divided we rule: how political polarization erodes democracy. *Democratization*, *28*(2), 285–307. https://doi.org/10.1080/13510347.2020.1818068

Bastian, B., Vauclair, C. M., Loughnan, S., Bain, P., Ashokkumar, A., Becker, M., Bilewicz, M., Collier-Baker, E., Crespo, C., Eastwick, P. W., Fischer, R., Friese, M., Gómez, Á., Guerra, V. M., Guevara, J. L. C., Hanke, K., Hooper, N., Huang, L. L., Junqi, S., … Swann, W. B. (2019). Explaining illness with evil: Pathogen prevalence fosters moral vitalism. *Proceedings of the Royal Society B: Biological Sciences*, *286*(1914). https://doi.org/10.1098/rspb.2019.1576

Bates, D., Mächler, M., Bolker, B. M., & Walker, S. C. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Blake, K. R., Bastian, B., Denson, T. F., Grosjean, P., & Brooks, R. C. (2018). Income inequality not gender inequality positively covaries with female sexualization on social media. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(35), 8722–8727. https://doi.org/10.1073/pnas.1717959115

Brady, W. J., McLoughlin, K., Doan, T. N., & Crockett, M. J. (2021). How social learning amplifies moral outrage expression in online social networks. *Science Advances*, *7*(33), 1–15. https://doi.org/10.1126/sciadv.abe5641

Brady, W. J., Mcloughlin, K. L., Torres, M. P., Luo, K., & Gendron, M. (2022). Overperception of moral outrage in online social networks inflates beliefs about intergroup hostility. *PsyArXiv*, 1–23. https://doi.org/10.31219/osf.io/k5dzr

Bureau of Economic Analysis. (2022). *Gross Domestic Product*. Bureau of Economic Analysis. https://www.bea.gov/data/gdp/gross-domestic-product

Clifford, S., Iyengar, V., Cabeza, R., & Sinnott-Armstrong, W. (2015). Moral foundations vignettes: a standardized stimulus database of scenarios based on moral foundations theory. *Behavior Research Methods*, *47*(4), 1178–1198. https://doi.org/10.3758/s13428-014-0551-2

Crimston, C. R., Selvanathan, H. P., & Jetten, J. (2022). Moral Polarization Predicts Support for Authoritarian and Progressive Strong Leaders via the Perceived Breakdown of Society. *Political Psychology*, *43*(4), 671–691. https://doi.org/10.1111/pops.12787

Crockett, M. J. (2017). Moral outrage in the digital age. *Nature Human Behaviour*, *1*(11), 769–771. https://doi.org/10.1038/s41562-017-0213-3

Dimock, M., & Wike, R. (2021). *America Is Exceptional in Its Political Divide*. Pew Research Center. https://www.pewtrusts.org/en/trust/archive/winter-2021/america-is-exceptional-in-its-political-divide

Elbaek, C., Mitkidis, P., Aarøe, L., & Otterbring, T. (2021). Social Class and Income Inequality is Associated with Morality: Empirical Evidence from 67 Countries. *Research Square*, 1–16. https://doi.org/https://doi.org/10.21203/rs.3.rs-1082570/v1

Finkel, E. J., Bail, C. A., Cikara, M., Ditto, P. H., Iyengar, S., Klar, S., Mason, L., McGrath, M. C., Nyhan, B., Rand, D. G., Skitka, L. J., Tucker, J. A., Van Bavel, J. J., Wang, C. S., & Druckman, J. N. (2020). Political sectarianism in America. *Science*, *370*(6516), 533–536. https://doi.org/10.1126/science.abe1715

Forrest, S., & Daymude, J. (2022). *Reducing extreme polarization is key to stabilizing democracy*. Brookings. https://www.brookings.edu/blog/techtank/2022/01/26/reducing-extreme-polarization-is-key-to-stabilizing-democracy/

Garrett, K. N., & Bankert, A. (2020). The Moral Roots of Partisan Division: How Moral Conviction Heightens Affective Polarization. *British Journal of Political Science*, *50*(2), 621–640. https://doi.org/10.1017/S000712341700059X

Gelfand, M. J., Nishii, L. H., & Raver, J. L. (2006). On the nature and importance of cultural tightness-looseness. *Journal of Applied Psychology*, *91*(6), 1225–1244. https://doi.org/10.1037/0021-9010.91.6.1225

Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Ferrer, M., Fischlmayr, I. C., … Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, *332*(6033), 1100–1104. https://doi.org/10.1126/science.1197754

Glei, D. A., Goldman, N., & Weinstein, M. (2018). Perception has its own reality: Subjective versus objective measures of economic distress. *Population and Development Review*, *44*(4), 695–722. https://doi.org/10.1111/padr.12183

Goodman, E., Adler, N. E., Kawachi, I., Frazier, A. L., Huang, B., & Colditz, G. A. (2001). Adolescents' perceptions of social status: Development and evaluation of a new indicator. *Pediatrics*, *108*(2), 1–8. https://doi.org/10.1542/peds.108.2.e31

Graham, J., & Haidt, J. (2021). *Moral Foundations Dictionary*. https://moralfoundations.org/other-materials/

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, *101*(2), 366–385. https://doi.org/10.1037/a0021847

Gu, Y., & Wang, Z. (2022). Income Inequality and Global Political Polarization: The Economic Origin of Political Polarization in the World. *Journal of Chinese Political Science*, *27*(2), 375–398. https://doi.org/10.1007/s11366-021-09772-1

Hari, J. (2022). *Stolen Focus: Why You Can't Pay Attention*. Bloomsbury.

Harrington, J. R., & Gelfand, M. J. (2014). Tightness-looseness across the 50 united states. *Proceedings of the National Academy of Sciences of the United States of America*,

111(22), 7990–7995. https://doi.org/10.1073/pnas.1317937111

Henderson, R. K., & Schnall, S. (2021a). Disease and Disapproval: COVID-19 Concern is Related to Greater Moral Condemnation. *Evolutionary Psychology*, *19*(2), 1–10. https://doi.org/10.1177/14747049211021524

Henderson, R. K., & Schnall, S. (2021b). Social threat indirectly increases moral condemnation via thwarting fundamental social needs. *Scientific Reports*, *11*(1), 1–11. https://doi.org/10.1038/s41598-021-00752-2

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

Hornsey, M. J., Pearson, S., Kang, J., Sassenberg, K., Jetten, J., Van Lange, P. A. M., Medina, L. G., Amiot, C. E., Ausmees, L., Baguma, P., Barry, O., Becker, M., Bilewicz, M., Castelain, T., Costantini, G., Dimdins, G., Espinosa, A., Finchilescu, G., Friese, M., … Bastian, B. (2022). Multinational data show that conspiracy beliefs are associated with the perception (and reality) of poor national economic performance. *European Journal of Social Psychology*, *53*, 78–89. https://doi.org/10.1002/ejsp.2888

Jetten, Jolanda, Mols, F., & Postmes, T. (2015). Relative deprivation and relative wealth enhances anti-immigrant sentiments: The V curve re-examined. *PLoS ONE*, *10*(10), 1–24. https://doi.org/10.1371/journal.pone.0139156

Jetten, Jolanda, Peters, K., Gabriel, B., Casara, S., Dare, M., & Kirkland, K. (2021). Consequences of Economic Inequality for the Social and Political Vitality of Society : A Social Identity Analysis. *Political Psychology*, *41*, 241–266. https://doi.org/10.1111/pops.12800

Jetten, Jolanda, Wang, Z., Steffens, N. K., Mols, F., Peters, K., & Verkuyten, M. (2017). A social identity analysis of responses to economic inequality. *Current Opinion in*

Psychology, *18*, 1–5. https://doi.org/10.1016/j.copsyc.2017.05.011

Jordan, J. (2014). Religion and inequality: The lasting impact of religious traditions and institutions on welfare state development. *European Political Science Review*, *8*(1), 25–48. https://doi.org/10.1017/S1755773914000381

Kay, A. C., Gaucher, D., McGregor, I., & Nash, K. (2010). Religious belief as compensatory control. *Personality and Social Psychology Review*, *14*(1), 37–48. https://doi.org/10.1177/1088868309353750

Kay, A. C., Whitson, J. A., Gaucher, D., & Galinsky, A. D. (2009). Compensatory Control: Achieving Order Through the Mind, Our Institutions, and the Heavens. *Current Directions in Psychological Science*, *18*(5), 264–268.

Kirkland, K., Crimston, C. R., Jetten, J., Rudnev, M., Acevedo-triana, C., Amiot, C. E., Ausmees, L., Baguma, P., Barry, O., Becker, M., Bilewicz, M., Boonyasiriwat, W., Castelain, T., Costantini, G., Dimdins, G., Espinosa, A., Finchilescu, G., Fischer, R., Friese, M., … Bastian, B. (2022). Moral expansiveness around the world: The role of societal factors across 36 countries. *Social Psychological and Personality Science*, *14*(3), 305–318. https://doi.org/10.1177/19485506221101767

Kirkland, K., Jetten, J., & Nielsen, M. (2019). But that's not fair! The experience of economic inequality from a child's perspective. In J. Jetten & K. Peters (Eds.), *The Social Psychology of Inequality* (pp. 187–199). Springer Nature.

Kirkland, K., Jetten, J., Wilks, M., & Nielsen, M. (2021a). Children's experience of economic inequality: How earning position influences prosocial behavior. *Cognitive Development*, *58*, 101043. https://doi.org/10.1016/j.cogdev.2021.101043

Kirkland, K., Jetten, J., Wilks, M., & Nielsen, M. (2021b). How economic inequality affects prosocial behavior in children across development. *Journal of Experimental Child Psychology*, *210*, 105202. https://doi.org/10.1016/j.jecp.2021.105202

Kirkland, K., Lange, P. A. M. Van, Doesum, N. J. Van, Acevedo-Triana, C., Amiot, C. E., Ausmees, L., Baguma, P., Barry, O., Becker, M., Bilewicz, M., Boonyasiriwat, W., Castelain, T., Costantini, G., Dimdins, G., Espinosa, A., Finchilescu, G., Fischer, R., Friese, M., Gómez, Á., … Bastian, B. (2022). Social mindfulness predicts concern for nature and immigrants across 36 nations. *Scientific Reports*, *12*, 22102. https://doi.org/10.1038/s41598-022-25538-y

Knell, M., & Stix, H. (2020). Perceptions of inequality. *European Journal of Political Economy*, *65*, 101927. https://doi.org/10.1016/j.ejpoleco.2020.101927

Koudenburg, N., & Kashima, Y. (2022). A Polarized Discourse: Effects of Opinion Differentiation and Structural Differentiation on Communication. *Personality and Social Psychology Bulletin*, *48*(7), 1068–1086. https://doi.org/10.1177/01461672211030816

Krupp, D. B., & Cook, T. R. (2018). Local competition amplifies the corrosive effects of inequality. *Psychological Science*, *29*(5), 824–833. https://doi.org/10.1177/0956797617748419

Labouff, J. P., Humphreys, M., & Shen, M. J. (2017). Religiosity and Group-Binding Moral Concerns. *Archive for the Psychology of Religion*, *39*(3), 263–282. https://doi.org/10.1163/15736121-12341343

McLoughlin, K. L., Brady, W. J., & Crockett, M. J. (2021). The role of moral outrage in the spread of misinformation. *Technology, Mind and Behavior*, 6591. https://tmb.apaopen.org/pub/nwpo88ls?utm_source=researcher_app&utm_medium=referral&utm_campaign=RESR_MRKT_Researcher_inbound

MIT Election Data and Science Lab. (2018). *County Presidential Election Returns 2000-2020* (V10 ed.). Harvard Dataverse. https://doi.org/doi:10.7910/DVN/VOQCHQ

Mooijman, M., Hoover, J., Lin, Y., Ji, H., & Dehghani, M. (2018). Moralization in social networks and the emergence of violence during protests. *Nature Human Behaviour*,

2(6), 389–396. https://doi.org/10.1038/s41562-018-0353-0

Mueller, A. B., & Skitka, L. J. (2018). Liars, Damned Liars, and Zealots: The Effect of Moral Mandates on Transgressive Advocacy Acceptance. *Social Psychological and Personality Science*, *9*(6), 711–718. https://doi.org/10.1177/1948550617720272

Naguib, C. (2017). The Relationship between Inequality and Growth: Evidence from New Data. *Swiss Journal of Economics and Statistics*, *153*(3), 183–225. https://doi.org/10.1007/BF03399507

Norton, M. I., & Ariely, D. (2011). Building a better America-one wealth quintile at a time. *Perspectives on Psychological Science*, *6*(1), 9–12. https://doi.org/10.1177/1745691610393524

Oishi, S., Kesebir, S., & Diener, E. (2011). Income inequality and happiness. *Psychological Science*, *22*(9), 1095–1100. https://doi.org/10.1177/0956797611417262

Oshio, T., & Urakawa, K. (2014). The association between perceived income inequality and subjective well-being: Evidence from a social survey in Japan. *Social Indicators Research*, *116*(3), 755–770. https://doi.org/10.1007/s11205-013-0323-x

Petersen, M. B. (2013). Moralization as protection against exploitation: Do individuals without allies moralize more? *Evolution and Human Behavior*, *34*(2), 78–85. https://doi.org/10.1016/j.evolhumbehav.2012.09.006

Pew Research Centre. (2016). *How religious is your state?* Pew Research Centre. https://www.pewresearch.org/fact-tank/2016/02/29/how-religious-is-your-state/?state=alabama

R Core Team. (2008). R: A Language and Environment for Statistical Computing. Vol. 739. In *R Foundation for Statistical Computing*. https://doi.org/http://dx.doi.org/10.1007/978-3-540-74686-7

Reifen Tagar, M., Morgan, G. S., Halperin, E., & Skitka, L. J. (2014). When ideology

matters: Moral conviction and the association between ideology and policy preferences in the Israeli-Palestinian conflict. *European Journal of Social Psychology*, *44*(2), 117–125. https://doi.org/10.1002/ejsp.1993

Rucker, D. D., Polifroni, M., Tetlock, P. E., & Scott, A. L. (2004). On the assignment of punishment: The impact of general-societal threat and the moderating role of severity. *Personality and Social Psychology Bulletin*, *30*(6), 673–684. https://doi.org/10.1177/0146167203262849

Salvador Casara, B. G., Suitner, C., & Jetten, J. (2022). The impact of economic inequality on conspiracy beliefs. *Journal of Experimental Social Psychology*, *98*, 104245. https://doi.org/10.1016/j.jesp.2021.104245

Sánchez-Rodríguez, Á., Willis, G. B., Jetten, J., & Rodríguez-Bailón, R. (2018). Economic inequality enhances inferences that the normative climate is individualistic and competitive. *European Journal of Social Psychology*, *49*(6), 1114–1127. https://doi.org/10.1002/ejsp.2557

Schmalor, A., & Heine, S. J. (2021). The construct of subjective economic inequality. *Social Psychological and Personality Science*, *13*(1), 1–10. https://doi.org/10.1177/1948550621996867

Schmukle, S. C., Korndörfer, M., & Egloff, B. (2019). No evidence that economic inequality moderates the effect of income on generosity. *Proceedings of the National Academy of Sciences*, *116*(20), 201807942. https://doi.org/10.1073/pnas.1807942116

Singh-Manoux, A., Adler, N. E., & Marmot, M. G. (2003). Subjective social status: Its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science and Medicine*, *56*(6), 1321–1333. https://doi.org/10.1016/S0277-9536(02)00131-4

Skitka, L. J. (2002). Do the means always justify the ends, or do the ends sometimes justify

the means? A value protection model of justice reasoning. *Personality and Social Psychology Bulletin*, *28*(5), 588–597. https://doi.org/10.1177/0146167202288003

Skitka, L. J., Bauman, C. W., & Sargis, E. G. (2005). Moral conviction: Another contributor to attitude strength or something more? *Journal of Personality and Social Psychology*, *88*(6), 895–917. https://doi.org/10.1037/0022-3514.88.6.895

Skitka, L. J., Hanson, B. E., Morgan, G. S., & Wisneski, D. C. (2021). The Psychology of Moral Conviction. *Annual Review of Psychology*, *72*, 347–366. https://doi.org/10.1146/annurev-psych-063020-030612

Skitka, L. J., & Houston, D. A. (2001). When due process is of no consequence: Moral mandates and presumed defendant guilt or innocence. *Social Justice Research*, *14*(3), 305–326. https://doi.org/10.1023/A:1014372008257

Sprong, S., Jetten, J., Wang, Z., Peters, K., Mols, F., Verkuyten, M., Bastian, B., Ariyanto, A., Autin, F., Ayub, N., Badea, C., Besta, T., Butera, F., Costa-Lopes, R., Cui, L., Fantini, C., Finchilescu, G., Gaertner, L., Gollwitzer, M., … Wohl, M. J. A. (2019). "Our country needs a strong leader right now": Economic inequality enhances the wish for a strong leader. *Psychological Science*, *30*(11), 1625–1637. https://doi.org/10.1177/0956797619875472

Stewart, A. J., McCarty, N., & Bryson, J. J. (2020). Polarization under rising inequality and economic decline. *Science Advances*, *6*(50), 21–23. https://doi.org/10.1126/sciadv.abd4201

Tanjitpiyanond, P., Jetten, J., & Peters, K. (2022). How economic inequality shapes social class stereotyping. *Journal of Experimental Social Psychology*, *98*, 104248. https://doi.org/10.1016/j.jesp.2021.104248

Tetlock, P. E. (2002). Social functionalist frameworks for judgment and choice: Intuitive politicians, theologians, and prosecutors. *Psychological Review*, *109*(3), 451–471.

https://doi.org/10.1037/0033-295X.109.3.451

Tetlock, P. E., Visser, P. S., Singh, R., Polifroni, M., Scott, A., Elson, S. B., Mazzocco, P., & Rescober, P. (2007). People as intuitive prosecutors: The impact of social-control goals on attributions of responsibility. *Journal of Experimental Social Psychology*, *43*(2), 195–209. https://doi.org/10.1016/j.jesp.2006.02.009

The World Bank. (2019a). *GDP per capita, PPP (current international $)*. https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?end=2019&name_desc=false&start=1990&view=chart

The World Bank. (2019b). *Gini index (World Bank estimate)*. https://data.worldbank.org/indicator/SI.POV.GINI

United States Census Bureau. (2020). *Gini Index of Income Inequality*. United States Census Bureau. https://data.census.gov/cedsci/table?q=income inequality&g=0100000US&tid=ACSDT5Y2020.B19083

Uslaner, E. M., & Brown, M. (2005). Inequality, trust, and civic engagement. *American Politics Research*, *33*(6), 868–894. https://doi.org/10.1177/1532673X04271903

van Bavel, J. J., Packer, D. J., Haas, I. J., & Cunningham, W. A. (2012). The Importance of Moral Construal: Moral versus Non-Moral Construal Elicits Faster, More Extreme, Universal Evaluations of the Same Actions. *PLoS ONE*, *7*(11). https://doi.org/10.1371/journal.pone.0048693

Warner, B. R., Colaner, C. W., & Park, J. (2021). Political difference and polarization in the family: The role of (non)accommodating communication for navigating identity differences. *Journal of Social and Personal Relationships*, *38*(2), 564–585. https://doi.org/10.1177/0265407520967438

Wilkinson, R. G., & Pickett, K. E. (2009). *The spirit level: Why more equal societies almost always do better*. Allen Lane.

Zaal, M. P., Saab, R., O'Brien, K., Jeffries, C., Barreto, M., & van Laar, C. (2017). You're either with us or against us! Moral conviction determines how the politicized distinguish friend from foe. *Group Processes and Intergroup Relations*, *20*(4), 519–539. https://doi.org/10.1177/1368430215615682