

Beyond ingroup favoritism: Investigating cross-national social preferences across 25 nations

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Abstract

Global challenges such as climate change require cooperation across nations—not only among governments but also among individuals. In an incentivized cross-national study with 6,182 participants from 25 nations, we assessed individuals' prosociality as a core predictor of cooperation toward people from 25 different nations, yielding 625 distinct national dyads. Integrating theoretical approaches, this study examines how both individual perceptions and contextual factors—unique to each national dyad—shape intergroup prosociality. Our findings reveal significant variation in cross-national prosociality beyond ingroup favoritism. Prosociality increased with greater cultural and national stereotype similarity. Individuals from nations with reliable institutions exhibited greater prosociality, and those from wealthier nations were particularly prosocial toward individuals from less wealthy nations. In contrast, prosociality decreased with increasing perceived and actual militarized conflict between nations. These results highlight the importance of incorporating social perceptions and contextual factors that reflect bilateral relationships between nations in theories of global prosociality.

Keywords: cross-national interactions, similarity, institutions, conflict, cooperation

Significance Statement

Global crises such as climate change require cooperation across national borders—not only between governments but also among individuals. Cross-national studies investigating prosociality between individuals from various nations beyond the classical ingroup versus outgroup distinction are scarce. Our data from a large-scale cross-national survey integrating central competing and complementary theory revealed significant variation in prosociality beyond ingroup favoritism. This systematic variation was related to various social and contextual factors, such as similarity in nation-specific stereotypes and previous or ongoing national conflict and cooperation between the respective nations.

Introduction

Humans face an array of global challenges—climate change, pandemics, and interstate wars—that require cooperation across national borders (1, 2). While such challenges are typically addressed through state-level cooperation, individuals also play a role in responding to these issues, for example, by supporting international aid efforts or engaging in charitable giving across national borders. However, individual cross-national prosociality is often shaped by parochial tendencies: people tend to be more prosocial toward members of their own nation than toward those from other nations (3, 4). In an increasingly globalized world, this national parochialism may significantly hinder the resolution of global issues that require prosociality beyond national borders (1, 3). Social preferences—an individual's tendency to be altruistic, prosocial,

proself, or competitive when interacting with another person—are core determinants of cooperation (5, 6). While research has consistently found national ingroup favoritism in prosociality (3, 7), less is known about how prosociality varies across interactions between individuals from different nations beyond the established ingroup versus outgroup distinction. Especially in times of shifting alliances and increasing bilateral tensions, investigating these cross-national interactions is crucial, as it allows us to examine factors unique to bilateral relationships between nations that drive human cooperation. Despite its importance, large-scale studies systematically exploring cross-national prosociality beyond the ingroup–outgroup distinction remain scarce.

The need for cross-national studies is further supported by evidence that the classic ingroup–outgroup distinction does not fully

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account for the psychological complexity in variations of intergroup prosociality. Research on prosociality toward different social groups established that social preferences toward members of various groups (e.g. lawyers, housewives, and homeless people) vary systematically depending on the other group's perceived warmth and competence (8). Findings from a previous cross-national study complement this research by demonstrating substantial variation in an individual's social preferences depending on the individuals and their interaction partner's nationality (9). Specifically, individuals showed more prosocial preferences toward individuals from more similar nations regarding culture and nation-specific stereotypes. This study provided the first evidence for the concept of cross-national social preferences, that is, social preferences that depend on the combination of the nationality of both the individual and their interaction partner.

Previous research on cross-national social preferences has been conducted in a smaller set of nations stemming mostly from the Western, educated, industrialized, rich, and democratic (WEIRD) context (10), thereby reducing the generalizability of findings and the ability to disentangle the effects of relevant factors (e.g. similarity) from the influence of potentially confounding factors (e.g. militarized conflict) associated with the selected set of nations. Additionally, prior cross-national research has primarily relied on objective nation-level indicators as drivers of cooperation without considering how individuals subjectively perceive these factors. However, when investigating human behavior, subjective perceptions may be even more predictive than structural indicators alone, as individuals respond not to objective realities in isolation but to how they interpret and experience them. To address this gap, we provide a comprehensive investigation of cross-national social preferences across 25 nations, representing diverse cultural, economic, and institutional contexts, focusing on including nations outside the WEIRD context (10). We integrate both structural nation-level indicators and individuals' subjective perceptions as key drivers of cross-national prosociality, allowing us to examine not only the broader contextual influences but also the psychological mechanisms that ultimately shape cross-national interactions. Together, these nations account for over half of the world's population and two-thirds of global economic power. National samples were representative according to age and gender for the adult population of the respective nations. To assess cross-national social preferences, individuals from 25 nations made incentivized money allocation decisions between themselves and individuals from 25 nations, including their own. We thereby applied a fully crossed 25 (sender nation) $\times$ 25 (receiver nation) design, resulting in 625 cross-national social preferences, one for each national dyad. This methodology allows us to provide a comprehensive map of cross-national social preferences depicting how much individuals from one nation, on average, value the monetary outcomes and, by implication, the well-being of individuals from other nations across the world. This interactive map can be found here: <https://dlc-studies.uni-koeln.de/research/cross-national-social-preferences/>.

This study demonstrates that social preferences vary based on the individuals' and their interaction partners' nationalities. We provide a first joint test of individual characteristics and broader contextual factors, such as social, economic, and cultural factors unique to the bilateral relationships between nations, as determinants of this variation in social preferences. By integrating competing and complementary theoretical perspectives on the emergence and sustainment of human cooperation, we investigate the interplay of social perceptions, cultural, economic factors, and militarized conflict in determining intergroup behavior

(11–13). Specifically, we test competing theoretical predictions concerning the effects of (i) similarity in terms of culture and nation-specific stereotypes on social preferences. Furthermore, we test the complementary effects of (ii) the quality of institutions in one's nation and (iii) inequality in wealth between nations on social preferences. Finally, we investigate (iv) the relationship between national conflict and cooperation, on the one hand, and social preferences, on the other.

Several psychological and evolutionary theories suggest similarity as one mechanism for facilitating (or impeding) prosociality. According to self-categorization theory (14), it can be assumed that individuals have higher, that is more prosocial, social preferences toward interaction partners from nations that are more similar to themselves in terms of culture and nation-specific stereotypes since these are more likely to be considered members of the ingroup. Similarly, evolutionary approaches such as kin selection or concepts of inclusive fitness (15, 16) predict increasing prosociality with similarity. In contrast, social identity theory (17) suggests that individuals may show lower social preferences toward those who are similar, because such similarity can threaten the ingroup's distinctiveness. To maintain a positive and distinct ingroup identity, individuals may react by emphasizing differences and distancing themselves from the similar outgroup, a process known as reactive distinctiveness (18). Empirical findings on the link between similarity and prosociality remain mixed, with some studies reporting increasing prosociality with increasing similarity (9) and others reporting decreasing prosociality with increasing similarity (4, 19).

Beyond similarity, institutional and economic factors are also crucial for facilitating human prosociality. The material security hypothesis posits that individuals from high-quality institutional contexts (i.e. wealthy, safe nations with reliable institutions) can make relatively risky investments in relationships with strangers compared with those with less reliable institutions (20). Consequently, individuals from nations with more reliable institutions should have higher social preferences toward individuals from other nations than individuals from nations lacking this institutional quality. However, empirical evidence for this hypothesis is mixed. While support has been found in small-scale societies (21), recent multinational studies do not consistently find a reliable association between institutional quality and ingroup favoritism in cooperation (3, 22).

The relevance of economic factors can be derived from theoretical models on social preferences. Some models propose that social preferences are partially driven by an individual's inequality aversion determined by the (in)equality between the individual's and their interaction partner's monetary outcomes (23). In a cross-national setting, individuals may rely on the interaction partner's nationality and potential associations about a nation's wealth to draw inferences about the individual's general level of wealth. Indeed, individuals' prosociality varied according to wealth differences between their own and their interaction partner's nation in a recent multinational study, including non-WEIRD nations (4). In addition, prosociality is often motivated by perceived need, and there is broad evidence that people are generally more willing to help others whom they perceive to be worse off or in need of support (24). In accordance with this, individuals from wealthier nations should give more to individuals from less wealthy nations to decrease inequality in wealth.

Theories of intergroup conflict, such as realistic group conflict theory (25) or integrated threat theory (26), propose that intergroup threat and conflict are negatively related to positive intergroup attitudes and cooperative behavior. Empirical research

supports this notion to some extent: individuals from nations involved in more conflict show stronger ingroup favoritism, and people are more competitive toward individuals from nations with a general reputation for conflict (e.g. a history of frequent involvement in wars; 27). However, to the best of our knowledge, existing studies have not considered the dyadic conflict trajectory between specific nation pairs. In other words, it remains largely unexplored whether a trajectory of conflict (or cooperation) between an individual's nation and their interaction partner's nation shapes cross-national prosocial behavior. Based on theoretical accounts of intergroup conflict, social preferences toward interaction partners from nations with a past or ongoing national conflict should be lower than those with no past or ongoing conflicts. Conversely, individuals may also rely on indicators of international cooperation as cues for the absence of conflict. For instance, alignment between nations in votes of the United Nations (UN) General Assembly and international trade flow are often considered as proxies of international cooperation (28, 29). Accordingly, an individual's social preferences toward interaction partners from nations with international cooperation with their nation should be higher.

While some multinational studies have examined factors such as similarity (9), institutional quality (22), or economic inequality (4), few have systematically considered a wide range of determinants of intergroup prosociality—and none have examined conflict between the individuals and their interaction partner's nation, which we found to be a key predictor of cross-national prosociality. Importantly, these studies primarily relied on nation-level indicators, neglecting subjective perceptions of these factors, which are, according to our data, critical drivers of prosociality. Our study fills this gap by being the first to jointly investigate multiple individual and contextual factors—including bilateral conflict and cooperation, economic inequality, institutional quality, and cultural similarity—as simultaneous predictors of cross-national social preferences. Finally, we demonstrate how cross-national social preferences are related to real-world cooperation between nations. To address these research questions, we conducted two preregistered online studies. Study 1 was conducted as a nonincentivized study in the United States ($n_{\text{sample}} = 336$, $n_{\text{decisions}} = 8,400$), and study 2 was a fully incentivized study conducted in 25 nations ($n_{\text{sample}} = 6,182$, $n_{\text{decisions}} = 154,550$). For descriptive statistics of sample characteristics, see Table S2. To test our preregistered

hypotheses, we combined data assessed within our study (individual-level data) with data extracted from national data banks (nation-level data). The following determinants were assessed within the study: similarity in nation-specific stereotypes (30), perceived present and past conflict between nations (31). The other determinants were assessed using nation-level indicators: cultural similarity (32, 33), the rule of law as a measure of institutional quality (<https://data.worldbank.org/indicator>), differences in wealth between nations (<https://data.worldbank.org/indicator>), militarized present and past conflict between nations (34), cooperation between nations as indicated by voting concordances in the UN (<https://digitallibrary.un.org/?ln=en>), and trade flow (<https://data.worldbank.org/indicator>). For a detailed description of the key variables, see Section S1.4, Tables S1 and S6.

Results

We report results from our incentivized multinational study 2 in the main text. Findings from study 1 were mainly in line with these findings and are reported in Section S2.4.

To assess cross-national social preferences, we used a modified version of the standard social value orientation (SVO) slider task (35): the nation-specific SVO slider, in which participants allocated Talers (experimental currency) between themselves and recipients from 25 different nations, with the recipient's nationality explicitly stated (9; for an example item, see Fig. 1). The SVO slider task consists of six items, and each item presents nine possible payoff allocations between the participant and the other person. Participants indicate their preferred allocation by selecting one option per item. Based on these choices, we calculated an SVO angle that captures the extent to which individuals value others' outcomes alongside their own.

The formula used to compute the SVO angle is described in Section S1.4.1.1. The resulting angles range from -16° to 61° , with higher values indicating higher social preferences, that is, a more prosocial orientation and valuation of the outcomes of other persons (35). Most individuals are classified as prosocial (22° to 57°) or prosself (-12° to 22°), while altruists (above 57°) and competitors (below -12°) are rare (36, 37). The SVO angle provides a measure for the differential weighing of the individual's own and their interaction partner's (monetary) outcomes (35, 38). We also report how much individuals overweigh their own outcomes compared

You will now divide Talers between yourself and another person from the following country:



China

Please click on the distribution of your choice.

You: South Africa

The other person: China

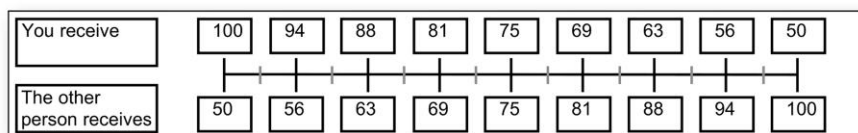


Fig. 1. Example item of the nation-specific SVO slider showing an individual from South Africa allocating Talers to an individual from China. Item adapted from Murphy and colleagues (35).

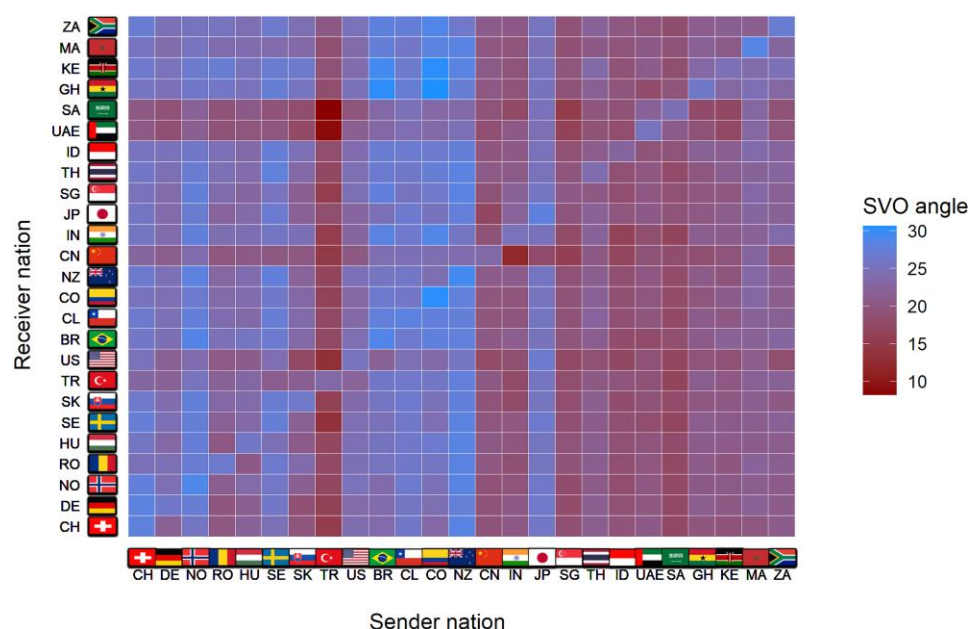


Fig. 2. Heatmap depicting cross-national social preferences for 25 × 25 national dyads. Each cell displays the average cross-national social preference, that is the social value orientation (SVO) angle of individuals from the respective sender nation toward the individuals from the respective receiver nation. Nation abbreviations: CH, Switzerland; DE, Germany; NO, Norway; RO, Romania; HU, Hungary; SE, Sweden; SK, Slovakia; TR, Türkiye; US, United States; BR, Brazil; CL, Chile; CO, Colombia; NZ, New Zealand; CN, China; IN, India; JP, Japan; SG, Singapore; TH, Thailand; ID, Indonesia; UAE, United Arab Emirates; SA, Saudi Arabia; GH, Ghana; KE, Kenya; MA, Morocco; ZA, South Africa.

with the other person's outcomes, which is directly related to the SVO angle (see Section S1.4.1.2 for details).

For robustness checks, we also included the standard SVO slider task, which is structurally identical to the nation-specific SVO slider task but does not specify the partner's nationality (35). Importantly, this standard SVO task was administered prior to any mention of a cross-national setting.

Description of cross-national social preferences

At the individual level, 89.34% of participants differentiated between ingroup and outgroup members when indicating their cross-national social preferences; that is, their SVO angle was different for individuals from their own versus the average of all other nations. When only considering cross-national social preferences toward national outgroups, 89.02% of participants displayed variation in their cross-national social preferences (average standard deviation across individuals = 7.95°). The substantial variation observed within persons indicates that participants distinguished between national outgroups in their decisions, thereby going beyond the established ingroup–outgroup differentiation. Additionally, while the majority of participants exhibited a prosocial orientation when indicating their general social preferences (62.33% prosocial vs. 36.12% proself individuals, average general SVO across all individuals $M_{SVO\ gen} = 24.77^\circ$), there was a shift to a more proself orientation when assessing their cross-national social preferences toward national outgroups (53.67% prosocial vs. 41.29% proself social preferences, average cross-national SVO toward national outgroups $M_{SVO\ cross} = 22.20^\circ$). Section S2.2 provides a detailed comparison between general and cross-national social preferences, including a table depicting the descriptive statistics of general social preferences (Table S4).

At the national level, cross-national social preferences varied substantially between national dyads (Fig. 2). The average prosociality differed substantially between sender nations (columns

in Fig. 2). Individuals from New Zealand indicated the highest cross-national social preferences ($M = 27.21^\circ$), and individuals from Türkiye ($M = 16.38^\circ$) the lowest, on average. There were also general patterns of prosociality concerning particular receiver nations that were shared across nations (rows in Fig. 2). For instance, in almost all nations, individuals indicated relatively high social preferences toward individuals from Ghana ($M = 23.84^\circ$) or Kenya ($M = 24.09^\circ$) and relatively low social preferences toward individuals from the United States ($M = 20.63^\circ$) or China ($M = 20.13^\circ$). Our data also indicate substantial dyadic-specific effects. People from Türkiye, for example, showed particularly low social preferences toward individuals from Saudi Arabia as reflected by an SVO angle of 8.16°, which indicates an overweighing of their own (personal) outcome by more than 597% compared with the outcome of people from this nation. In contrast, people from Colombia were particularly prosocial toward people from Ghana, showing an SVO angle of 30.59° and only overweighing their own outcome by 69% compared with those from Ghana. Cross-national social preferences were, on average, also higher for individuals from one's own nation compared with the other nations (diagonal in Fig. 2), replicating the standard finding of ingroup favoritism. Table S3 contains descriptive statistics of cross-national social preferences for all 625 national dyads. Overall, results indicated substantial differences in cross-national social preferences, which included significant sender nation ($F(24, 153,625) = 200.21$, $P < 0.001$) and receiver nation effects ($F(24, 153,625) = 26.78$, $P < 0.001$) as well as significant interactions ($F(576, 153,625) = 2.07$, $P < 0.001$) between them. Variance estimates indicated that 72.4% of the total variance in systematic effects of aggregated cross-national social preferences was attributed to differences between sender nations, 9.7% to differences between receiver nations, and 17.9% to differences between national dyads (see S2.5.2.1, Table S12). Descriptive statistics for all 25 × 25 cross-national SVO angles are reported in Section S2.1.

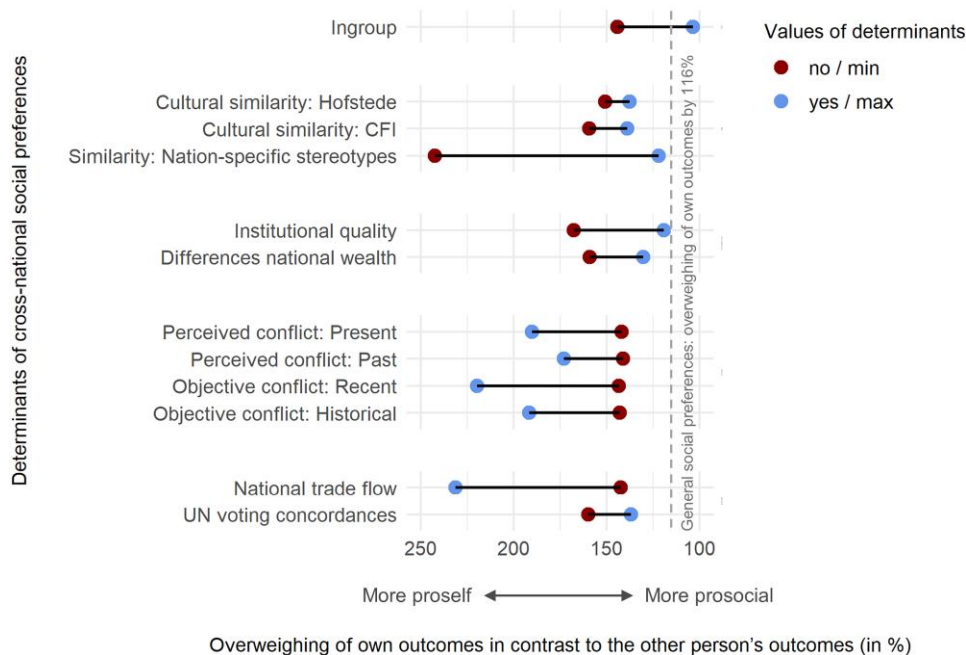


Fig. 3. Predicted overweighting of participants' own outcomes relative to their interaction partner's outcomes, estimated at the empirical minimum and maximum values for continuous determinants and at the "no" and "yes" levels for binary determinants based on univariate mixed-effects regression models. Red dots represent the empirical minimum for continuous determinants and the "no" level for binary determinants, whereas blue dots represent the empirical maximum for continuous determinants and the "yes" level for binary determinants. Lower values on the x-axis indicate a more prosocial orientation (less overweighting of own outcomes), while higher values indicate a more proself orientation (greater overweighting of own outcomes). For example, for the determinant ingroup (first row), the figure shows that individuals overweigh their own outcomes by 104% when interacting with ingroup members (blue dot), compared with 144% for outgroup members (red dot), indicating a more prosocial orientation toward ingroup members and a more proself orientation toward outgroup members. Except for the first determinant ingroup, all comparisons are based on national outgroup interactions only. The dashed line shows that across all nations, individuals, on average, overweigh their own outcomes by 116% compared with the outcomes of another unknown person.

Determinants of cross-national social preferences

Linear mixed-effects models with random intercepts for participants (level 2) and (sender) nations (level 3) were used to investigate determinants of cross-national social preferences. For the main analysis, univariate tests were conducted for each determinant. Including additional variables in the models (e.g. general social preferences, age, or gender) did not alter the main conclusions (see Section S2.5.1, Table S5 for intercorrelations and Tables S8–S11 for robustness checks). All hypothesis tests were preregistered as one-sided tests (see preregistration). However, in line with conventions and reviewer suggestions, we report two-sided *P*-values throughout the paper. All conclusions remained the same, and the direction of all effects was consistent with our preregistered directional hypotheses. We estimated how much participants overweighed their own outcomes relative to those of the other person using predicted means from univariate mixed-effects models. Overweighing refers to the extent to which participants place greater weight on their own payoff relative to the recipient's payoff in their allocation decisions, as quantified by the relative weighting of own versus other outcomes derived from the SVO angle (see Section S1.4.1.2 for details). For each determinant (e.g. cultural similarity and perceived conflict), we fitted a univariate linear mixed-effects model predicting participants' cross-national social preferences, including a random intercept for participants and nation to account for the nested data structure. Based on the predicted values from these models, that is, the estimated contribution of each determinant in explaining variation in cross-national social preferences, we computed the corresponding degree of overweighting of own outcomes using

the transformation described in the [Supplementary Material](#). These contrasts, that is, the differences in predicted overweighting between the minimum and maximum observed values of each predictor, are visualized in Fig. 3. This allows us to illustrate how strongly individuals overweigh their own outcomes and by implication how prosocial individuals act toward individuals from other nations across the extremes of each determinant. For example, we depict an individual's average overweighting of own outcomes when interacting with individuals from the culturally most similar versus the culturally least similar nation.

Ingroup favoritism

As expected, individuals exhibited national ingroup favoritism (mixed-effects regression: $b = 3.87$, $P < 0.001$). Specifically, across all nations, individuals indicated a prosocial orientation toward individuals from their own nation ($SVO_{\text{ingroup}} = 26.15^\circ$) compared with a proself orientation toward individuals from other nations ($SVO_{\text{outgroup}} = 22.28^\circ$). Accordingly, individuals overweighed their own outcomes compared with the outcomes of the other person by 104% when interacting with ingroup members compared with 144% when interacting with outgroup members. As our main interest was to investigate determinants of cross-national social preferences toward different national outgroups, we excluded responses for the national ingroup in the subsequent analyses.

Cultural similarity

Individuals displayed higher cross-national social preferences toward those that are culturally more similar, as indicated by both

cultural similarity in terms of the Hofstede cultural dimensions (32) ($b = 0.01$, $P < 0.001$) and the cultural fixation index (CFI, 33; $b = 4.04$, $P < 0.001$). When predicting social preferences with minimum and maximum values of cultural similarity in Hofstede's dimensions contained in our sample (and CFI, respectively), cross-national social preferences increased by 1.08° (CFI: 1.63° ; $SVO_{\text{Hofstede min}} = 21.73^\circ$, $SVO_{\text{Hofstede max}} = 22.81^\circ$; $SVO_{\text{CFI min}} = 21.09^\circ$, $SVO_{\text{CFI max}} = 22.72^\circ$). Accordingly, when interacting with individuals from the least similar culture, as indicated by the Hofstede cultural dimensions (and CFI, respectively), people overweighed their own outcomes by 151% (CFI: 159%). In contrast, this overweighing was lower, at 138% (CFI: 139%), when interacting with individuals from the most similar culture in our dataset.

Similarity in nation-specific stereotypes

We assessed nation-specific stereotypes on the three dimensions agency, beliefs, and communion. In line with previous research (9), each dimension was assessed with a single item anchored by opposing descriptors (e.g. for agency: powerless/low status vs. powerful/high status, beliefs: traditional/conservative/ vs. modern/liberal, communion: cold/untrustworthy vs. warm/trustworthy). Individuals indicated higher cross-national social preferences toward those they perceived to be more similar in terms of nation-specific stereotypes on the dimensions of agency, communion, and (liberal vs. conservative) beliefs ($b = 0.05$, $P < 0.001$; ABC stereotypes). This effect was mainly driven by similarity in the dimension communion ($b = 0.07$, $P < 0.001$) and less so by similarity concerning agency ($b = 0.02$, $P < 0.001$) and beliefs ($b = 0.03$, $P < 0.001$), according to separate univariate analyses. The effect of nation-specific stereotype similarity was considerably larger than that of cultural similarity (Section S2.5.2.3). When predicting social preferences with minimum and maximum values cross-national social preferences increased by 7.96° ($SVO_{\text{min}} = 16.28^\circ$, $SVO_{\text{max}} = 24.24^\circ$). Accordingly, individuals overweighed their own outcomes by 242% when interacting with individuals from the least stereotypically similar nations compared with 122% when interacting with individuals from the most stereotypically similar nations.

Institutional quality

Individuals from nations with more reliable institutions, as indicated by higher values in the rule of law, showed higher cross-national social preferences ($b = 1.70$, $P = 0.012$). When predicting social preferences with minimum and maximum values of the institutional quality of the sender's nation as indicated by the rule of law, cross-national social preferences increased by 4.04° ($SVO_{\text{min}} = 20.48^\circ$, $SVO_{\text{max}} = 24.52^\circ$). Accordingly, individuals from nations with the lowest institutional quality in our study overweighed their own outcomes less (168%) than those from nations with the highest institutional quality (119%). However, when controlling for the individual's general SVO, the effect was reduced but remained significant ($b = 0.84$, $P = 0.038$). In the mixed-effect model with all predictors, the effect became nonsignificant, indicating a lower robustness of this effect or an overlap with other effects (Section S2.5.2.2).

Differences in wealth between nations

Cross-national social preferences increased with increasing differences in national wealth as indicated by differences in GDP per capita ($b = 0.01$, $P < 0.001$), showing that individuals from wealthier nations had higher cross-national social preferences toward individuals from less wealthy nations. To further

disentangle this effect, we included the individual's national GDP per capita, their interaction partner's national GDP per capita, and their interaction as separate predictors. While the individual's national wealth showed a small and nonsignificant positive effect ($b = 0.04$, $P = 0.067$), the interaction partner's national wealth showed a significant negative effect ($b = -0.02$, $P < 0.001$), indicating greater prosociality toward individuals from less wealthy nations. Additionally, there was a small significant interaction between the individual's and their interaction partner's national GDP per capita ($b = 0.0003$, $P < 0.001$). Overall, this indicates that cross-national prosociality seems to be mainly driven by perceptions of wealth and need of the other nation. There is only a nonsignificant trend that richer countries tend to give more. Together, these effects could reflect a desire to decrease inequality between nations. The positive interaction effect, however, indicates that on top of these main effects, rich countries tend to give more to other richer countries, and poorer countries give more to other poor countries, potentially reflecting different psychological effects (e.g. similarity-based compassion). When predicting social preferences with minimum and maximum values of differences in national wealth as indicated by differences in GDP per capita, cross-national social preferences increased by 2.37° ($SVO_{\text{min}} = 21.10^\circ$, $SVO_{\text{max}} = 23.47^\circ$). Accordingly, individuals from the wealthiest nation overweighed their own outcomes less when interacting with individuals from the least wealthy nations (130%) compared with individuals from the least wealthy nations interacting with individuals from the wealthiest nation (159%).

Present and past conflict between nations

The perceived present or past national conflict between an individual's own nation and their interaction partner's nation was related to significantly lower social preferences toward these individuals ($b_{\text{pres. conf.}} = -3.43$, $P < 0.001$, $b_{\text{past conf.}} = -2.39$, $P < 0.001$). Specifically, a perceived present (or past) conflict between the two nations was related to a 3.43 (past conflict: 2.39) decrease in the SVO angle ($SVO_{\text{no pres. conf.}} = 22.46^\circ$, $SVO_{\text{pres. conf.}} = 19.03^\circ$, $SVO_{\text{no past conf.}} = 22.51^\circ$, $SVO_{\text{past conf.}} = 20.19^\circ$). Accordingly, individuals overweighed their own outcomes by 190% (173%) when interacting with someone from a nation with which they perceived present (or past) national conflict, compared with 142% (141%) when there was no perceived present (or past) conflict between their nation and their interaction partner's nation.

When considering militarized recent (1964–2014) or historical conflict (1913–1963) between nations weighed according to the severity of the conflict as provided by the Correlates of War project (34), findings were in line with results regarding the perceived conflict.^a Specifically, individuals had significantly lower social preferences toward individuals from nations with whom their own nation has had more recent or more historical militarized conflicts ($b_{\text{militarized rec. conf.}} = -0.08$, $P < 0.001$; $b_{\text{militarized hist. conf.}} = -0.06$, $P < 0.001$). When predicting social preferences with minimum and maximum values of recent (historical) weighed national conflict, cross-national social preferences decreased by 4.96° (3.45° ; $SVO_{\text{no militarized rec. conf.}} = 22.33^\circ$, $SVO_{\text{militarized rec. conf.}} = 17.37^\circ$; $SVO_{\text{no militarized hist. conf.}} = 22.38^\circ$, $SVO_{\text{militarized hist. conf.}} = 18.93^\circ$). Accordingly, individuals from nations with the highest levels of recent (historical) weighed conflicts overweighed their own outcomes by 220% (192%) when interacting with individuals from those conflicting nations, compared with 143% (143%) when interacting with individuals from nations with no recent (historical) conflicts. Hence, a robust negative relation existed between

cross-national social preferences and nation-level real-world conflict behavior in subjectively perceived and objective militarized cross-national conflicts.

Cooperation between nations

Second, we analyzed the relationship between social preferences and real-world cooperation. Unexpectedly, we did not find a positive link between international cooperation as indicated by trade flow and cross-national social preferences. Instead, individuals displayed significantly lower social preferences toward those from nations with whom their nation has an increased trade flow ($b = -0.000007$, $P < 0.001$). The effect, however, disappeared when controlling for the other determinants included in our study (details below). In line with our expectations, we found a positive link between social preferences and international cooperation, as indicated by voting concordances between nations in the UN General Assembly in 2021 ($b = 2.59$, $P < 0.001$). Comparing maximum concordances between a nation dyad in UN voting with the least UN voting concordances was related to a 1.85° increase in SVO angle. Accordingly, individuals overweighed their own outcomes by 137% when interacting with individuals from nations with the highest voting concordances in the UN compared with when interacting with individuals from nations with the lowest voting concordances (160%).

Taken together, our findings on national conflict and cooperation provide the first evidence that cross-national social preferences are not only relevant in anonymous one-to-one interactions in the lab. Systematic relations to real-world interactions between nations are observed, mainly in line with theory (except for the relation to trade flow).

Joint investigation of individual and contextual determinants

To test whether the factors contribute independently to variation in cross-national social preferences, we conducted a multivariate analysis including all determinants (Table S13). Most predictors remained robust, though some effects shifted due to conceptual and empirical overlap (see Table S7 for intercorrelations). Of the cultural models, only cultural similarity according to Hofstede's model contributed independently, while the CFI effect disappeared. Similarly, the inclusion of objective and subjective conflict measures rendered the effect of objective conflict nonsignificant. The unexpected trade flow effect disappeared entirely, suggesting confounds, and the effect of institutional quality became marginally nonsignificant ($b = 1.28$, $P = 0.053$).

In the previous analyses, social preferences were examined on an individual level, with some predictors being assessed on the individual level while others were assessed on the national level. As this introduces a potential imbalance in salience and measurement precision, we acknowledge that predictors assessed within the study (e.g. perceived conflict) may show stronger associations than externally sourced national-level indicators simply due to being a more precise measure of the respective construct for each participant. To better compare relative effect sizes and assess predictions without individual-level information, we aggregated data to the national dyad level ($n = 600$, excluding ingroup interactions).

Similarity in nation-specific stereotypes was a significant predictor of cross-national social preferences, with effects remaining robust in a joint regression with all predictors ($\beta = 0.21$, $P < 0.001$ in univariate and multivariate analysis). Institutional quality of the sender's nation ($\beta_{\text{univariate}} = 0.42$, $P < 0.001$, $\beta_{\text{multivariate}} = 0.33$, $P < 0.001$), differences in national wealth ($\beta_{\text{univariate}} = 0.30$, $P < 0.001$, $\beta_{\text{multivariate}} = 0.12$, $P = 0.012$), and perceived present

conflict ($\beta_{\text{univariate}} = -0.28$, $P < 0.001$, $\beta_{\text{multivariate}} = 0.18$, $P = 0.003$) were also significant predictors of cross-national social preferences, though in a joint regression, these effects were somewhat smaller.

In a joint regression, the factors considered accounted for 31% (adjusted R^2) of the variance in social preferences, with similarity in nation-specific stereotypes, institutional quality of the sender's nation, and perceived present conflict being the strongest predictors (Table S14). However, it should be noted that effects for institutional quality became nonsignificant in a joint analysis when investigating cross-national social preferences on an individual level. Taken together, when abstracting from the level of individuals, the factors considered in this study can explain a substantial share of variance in cross-national social preferences.

Discussion

In the current study involving samples from 25 nations across the world, we demonstrate that intergroup prosociality is not merely a function of the individual and their national background but instead emerges from factors reflecting the unique dyadic relation between interacting nations. By adopting a dyadic perspective, we uncovered systematic variation in cross-national prosociality beyond the conventional ingroup-outgroup distinction, revealing key determinants that shape prosociality between individuals from different nations. Consistent with prior research, individuals displayed national ingroup favoritism in cross-national social preferences (7, 9). However, beyond ingroup favoritism, intergroup prosociality was systematically associated with (perceived) similarity, economic and institutional factors, and (perceived) historical or present intergroup conflicts. Specifically, individuals displayed higher prosociality toward those from nations that were more similar to them regarding culture and nation-specific stereotypes. This aligns with evolutionary accounts on human cooperation and self-categorization theory (14, 15) and is contrary to predictions by social identity theory (17). Notably, the effects of cultural similarity were smaller and less robust than those of similarity in nation-specific stereotypes. One possible reason for this difference is that stereotype similarity was assessed individually within the current study, whereas cultural similarity was based on external data aggregated on a national level. The resulting more differentiated and potentially also more valid measurement of the constructs for our sample may explain the stronger effects of the former. However, additional analyses rule out that the more differentiated measurement alone is driving this difference. We observed a stronger effect of stereotype compared with cultural similarity on prosociality, even when using aggregated nation values for stereotype similarity. Moreover, as our sample is representative of national populations, it is unlikely that the externally sourced average values (e.g. from national surveys) substantially differ from the true averages in our participant samples. The task order further reduces concerns that explicitly measuring stereotypes increased their salience and thus artificially boosted their predictive power, as nation-specific stereotypes were assessed after measuring cross-national social preferences. Finally, our finding aligns with previous research that found the same pattern measuring stereotype and cultural similarity on an individual level (9). This suggests that stereotypes, which directly pertain to intergroup relations and status hierarchies (39, 40), may exert a more immediate influence on social preferences than broader cultural values, which primarily reflect societal norms and everyday life rather than intergroup dynamics.

Beyond similarity, economic and institutional factors also shaped cross-national social preferences. Supporting the material security hypothesis, individuals from nations with reliable, stable institutions had higher cross-national social preferences toward individuals from other nations than those from nations with less reliable institutions (20). However, the effects of institutional quality were less robust than other factors and were substantially smaller when controlling for an individual's general prosocial disposition. This suggests that while institutional quality fosters generalized trust and cooperation within societies (41), its influence on prosociality in intergroup interactions may be more indirect. Individuals from wealthier nations were more prosocial toward individuals from less wealthy nations, supporting the notion of inequality aversion as a core motivation for social preferences (38).

Critically, historical and present conflict and cooperation between nations was associated with changes in intergroup prosociality. Individuals expressed lower prosociality toward those from nations engaged in past or present conflicts with their own, aligning with theories on intergroup threat and competition (25, 26). Conversely, international cooperation—measured through voting concordances in the UN general assembly—was associated with higher prosociality. However, unexpectedly, individuals displayed lower instead of higher cross-national social preferences toward individuals from nations with a higher trade flow between their nation and the interaction partner's nation. The effect disappeared entirely when controlling for the other determinants. This indicates that the relationship between cross-national social preferences and trade flow seems complex and potentially driven by further variables such as conflict, which was highly positively correlated to trade flow, according to post hoc analysis (Table S7). Indeed, research on trade and national conflict indicates a complex link between trade flow and international conflict (42), and there are numerous examples of escalating conflicts between nations that are major trade partners, such as China and the United States (43). Therefore, our choice of using trade flow as an indicator of international cooperation might not have been optimal.

Among all examined factors, similarity in nation-specific stereotypes, perceived present conflict between the respective nations, and institutional quality of the sender nation emerged as the strongest predictors of cross-national prosociality. Notably, while institutional quality exhibited one of the largest effects on cross-national social preferences, the effects of this determinant became substantially smaller when controlling for the general prosociality of an individual, reinforcing the idea that reliable institutions primarily shape individuals' general prosociality rather than intergroup-specific interactions (41). In contrast, similarity in nation-specific stereotypes and perceived present conflict exhibited medium-sized and robust effects on intergroup prosociality, irrespective of other potential factors. Shared characteristics between groups and perceived threats have been considered as core mechanisms in shaping the development of human cooperation (44, 45). Our study provides further evidence for similarity and conflict as powerful mechanisms for facilitating or impeding human cooperation. Importantly, both factors capture relational dynamics between nations rather than static national characteristics, underscoring the need to move beyond studies focusing solely on national differences in average cooperation levels (13, 46) and instead consider the interactive nature of cross-national prosociality.

Our findings also highlight the broader implications of cross-national prosociality for real-world international relations. Prosociality within the laboratory was systematically linked to

positive and negative interactions between nations, including UN voting concordance and historical or ongoing conflicts between nations. While our study primarily considered how international relations shape individual prosociality, the reverse influence is equally plausible: cross-national prosociality may not only reflect historical cooperation or conflict but could also influence the likelihood of future international tensions or cooperative efforts.

A few caveats are worth noting. Although we sought to increase the generalizability of our findings by recruiting participants from a diverse set of nations (10), fully representative samples by age and gender were achieved in only 22 of the 25 nations (Section S1.7). Furthermore, while our quasi-experimental design allowed for a systematic investigation of cross-national social preferences, it does not permit definitive causal inferences. Our within-subject design, in which participants interacted with individuals from 25 nations, may also have made cross-national differences more salient than in a between-subject design. Experimental manipulations employing a between-subject design may help clarify whether the magnitude of the observed effects reduces under less salient conditions. Such an approach could also provide further insight into the causal mechanisms underlying the observed effects and their unique contributions. Additionally, while our study focuses on individual-level decisions in monetary allocation tasks, it is important to note that these do not directly mirror the coordinated, policy-level cooperation typically required to address global challenges. Nevertheless, we argue that our findings remain relevant for understanding the broader foundations of cross-national prosocial behavior. First, we find that cross-national social preferences at the individual level are significantly related to cross-national cooperation by state representatives in UN votes. Second, extensive prior research has demonstrated that individual social preferences such as altruism and fairness are robust predictors of cooperative behavior (7, 23, 38). Third, social preferences have also been shown to influence public support for redistributive policies, central to addressing global challenges such as climate change (47, 48).

In conclusion, our comprehensive mapping of cross-national prosociality across 625 distinct national dyads challenges the notion that cross-national intergroup prosociality solely reflects an individual's parochial tendencies. Instead, these findings emphasize the role of factors unique to bilateral relationships between nations as drivers of prosociality, with particular importance of individual perceptions of the other nations, which were taken into account in contrast to previous studies. These results provide the first joint evidence for the relevance of individual perceptions and broader contextual factors in predicting cross-national prosociality, including similarity concerning nation-specific stereotypes, the difference in wealth between nations, (perceived) present and past national conflict, and, to a somewhat lesser degree, similarity in culture and institutional factors.

While our study focused on national identity as a single dimension of social categorization, recent research demonstrates that individuals often hold multiple, and at times diverging, group memberships, such as shared ethnic, religious, or ideological identities, which differentially shape intergroup behavior (49, 50). Investigating how multiple social categories intersect and shape cross-national prosociality represents an important avenue for future research. Finally, aligning these preferences with real-world patterns of international cooperation and conflict indicates that social preferences between individuals may have broader implications for geopolitical relations. Future research could examine how these dynamics shift in response to economic crises,

geopolitical tensions, or global challenges, offering deeper insights into the conditions that foster or hinder international cooperation.

Materials and methods

The research and procedure (including the informed consent; see Section S3) were approved by the University of Cologne Ethics Committee, application number: ADHF0175. Informed consent was obtained from all participants prior to taking part in the study.

Sample

We conducted two preregistered online studies and recruited participants using the online panel provider Toluna (<https://tolunacorporate.com/de/>), including its third-party panel providers. Study 1 was conducted as a nonincentivized study in the United States ($n_{\text{sample}} = 336$, $n_{\text{decisions}} = 8,400$), and study 2 was a fully incentivized study conducted in 25 nations ($n_{\text{sample}} = 6,182$, $n_{\text{decisions}} = 154,550$). The 25 nations encompass Brazil, Chile, China, Colombia, Germany, Ghana, Hungary, India, Indonesia, Japan, Kenya, Morocco, New Zealand, Norway, Romania, Saudi Arabia, Singapore, Slovakia, South Africa, Sweden, Switzerland, Thailand, Türkiye, the United Arab Emirates, and the United States. Nations were selected to ensure sufficient variation in the key nation-level indicators examined in this study, particularly national wealth, institutional quality, and dyadic conflict. For descriptive statistics of selected nation-level indicators, see Table S1. We prioritized the inclusion of nations that are typically underrepresented in behavioral research and aimed for broad global coverage—spanning diverse cultural regions and including a large share of the world's population. Finally, we limited our selection to nations with sufficiently large participant pools available through Toluna.

We determined our required sample according to an a priori power analysis resulting in a sample of 240 participants per nation to achieve 0.90 statistical power to detect a small effect of $f = 0.062$ (see Section S1.7 for details). Except for Norway and Morocco, we achieved this sample size in every nation.

Procedure and experimental design

The design was essentially the same across both studies (Section S1.2). Cross-national social preferences were measured using the nation-specific SVO slider (9), a monetary allocation task adapted from the standard SVO slider (35). Participants made six allocation decisions, distributing Talers (i.e. the experimental currency) between themselves and individuals from each of 25 receiver nations. The receiver nation was manipulated as a within-subjects factor using a strategy method (51), with the receiver nations being presented in a randomized order. One of the allocation decisions was randomly selected and paid. To ensure comparability across nations, incentives in the nation-specific SVO slider were calibrated to each (sender) nation's purchasing power using the Big Mac Index retrieved from <https://www.economist.com/big-mac-index>.

Both participants and the interaction partners were informed of each other's nationality and that this information was symmetrical. Apart from that, all interactions took place entirely anonymously. Determinants of cross-national social preferences were assessed on the individual level as well as the national level. The similarity in nation-specific stereotypes (30) and the perceived conflict (31) for each nation were assessed within our study. The similarity in nation-specific stereotypes was calculated based on individuals' assessments concerning how agentic (e.g. powerful, high status,

dominant, and wealthy), communal (e.g. trustworthy, sincere, warm, and benevolent), and conservative-progressive concerning beliefs (e.g. modern, science-oriented, alternative, and liberal) they perceive individuals from their own and the respective other nation to be. The two different measures for cultural similarity (32, 33), the rule of law as a measure of institutional quality (<https://data.worldbank.org/indicator>), GDP per capita as a measure of national wealth (<https://data.worldbank.org/indicator>), and data on (severity-weighted) recent (and historical) dyadic militarized interstate conflict (34) were taken from available sources as nation or nation-dyad level indicators. Similarly, voting concordances in the UN and trade flow between nations as measures for national cooperation were extracted from existing databases (<https://digitallibrary.un.org/?ln=en>; <https://data.worldbank.org/indicator>; for a detailed description of the key variables, see Section S1.4).

Notes

^a We also aimed to develop a first version of a unified national conflict indicator that considers both national conflict as well as national cooperation. This index was included in one of our preregistered analyses. Unexpectedly, it was not possible to calculate the index due to too low intercorrelations of the subindicators that should form the scale (Cronbach's $\alpha = 0.25$). Results are reported in the supplement and at OSF for completeness.

^b The preregistrations concern two different subprojects of the overall project. We report them together to provide a comprehensive analysis of cross-national social preferences.

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Supplementary Material

Supplementary material is available at *PNAS Nexus* online.

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Author Contributions

Vanessa Clemens (Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Visualization, Writing—original draft, Writing—review & editing), Marina C. Orifici (Investigation, Project administration, Writing—review & editing), Laura Froehlich (Conceptualization, Supervision, Writing—review & editing), Andreas Glöckner (Conceptualization, Funding acquisition, Supervision, Writing—review & editing), and Angela R. Dorrough (Conceptualization, Funding acquisition, Supervision, Writing—review & editing)

Data Availability

The preregistration, materials, data, and analysis code are available at OSF: https://osf.io/s43na/?view_only=ecc07a520bf64f9397adb25d70c7deb5 and https://osf.io/d2fex/?view_only=daca41c653574a8aa1fb40d6b6a7f46c.^b

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