An Experimental Test of Informal Social Control Mechanisms: A Cross-National Investigation

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Abstract

Informal social control, collective efficacy, and guardianship—individuals' willingness to incur personal costs to deter infractions— are key mechanisms in crime prevention. In an online experiment in which participants were randomly assigned to the roles of Thief, Guardian, and Victim, Engel, Lanfear, and Nagin (2025) (ELN) demonstrated that Guardians with sufficient punishment power could deter theft among participants from the UK and the US. The would-be Thief's regard for the welfare of others, as measured by social value orientation (SVO), however, had a more substantial effect on stealing than the threat of punishment. Here, we examine the generalizability of these findings in four countries outside of North America and Europe: Brazil, China, New Zealand, and Singapore – a set of countries that differ in terms of the Rule of Law and country-level SVO. In an online experiment, 4,098 participants were randomly assigned to the same three roles as in ELN. As with ELN, Thieves could steal, and Guardians could impose costly punishments. Results replicate ELN. Country-level variation in the deterrence effect was observed, with the most substantial effect occurring in high-SVO, high-Rule-of-Law New Zealand. These findings underscore the universal importance of active guardianship to effective collective efficacy.

Informal Social Control, Collective Efficacy, and Guardianship

The longstanding literature on informal social control holds that monitoring activities by community members constitutes an essential source of crime control, either by sanctioning offenses after they occur or by preventing them altogether (Sampson, 2006). Nagin et al. (2023) describe the former as reactive guardianship, in which one or more community members intervene to disrupt an ongoing criminal or problematic event, and the latter as proactive guardianship, in which community members' presence deters offending and thereby prevents such events from occurring. Proactive guardianship can take many forms, including organized activities such as block watches or informal surveillance. An essential aspect of this form of community action is the willingness to actively contribute to community safety or order.

A substantial body of literature in criminology examines the factors that influence individuals' willingness to serve as reactive guardians. These factors include the number of would-be reactive Guardians, the clarity of the need for intervention, the prosociality and physical prowess of would-be interveners, and the danger of intervening (Barnum et al., 2024; Nagin et al., 2023). There is also a voluminous literature on the mechanisms by which informal social control may prevent crime from occurring in the first place. These mechanisms include both longer-term processes, such as the socialization of community members and the formation of interpersonal ties, and shorter-term contextual effects that mediate a community's capacity to exert active informal control over crime events, such as proactive guardianship (Matsueda, 2017; Wikstrom & Sampson, 2003). Proactive guardianship is a form of active engagement by community members that underpins one of the leading theories of informal social control: collective efficacy. As Sampson (2006, p. 153, emphasis added) describes: "The term collective efficacy is meant to signify an emphasis on shared beliefs in a neighborhood's capability for action to achieve an intended effect, **coupled with an active sense of engagement on the part of residents**."

In the quarter century since the publication of the original article on collective efficacy (Sampson et al., 1997), there has been an outpouring of research on the association between collective efficacy and crime, initially primarily in the U.S. and the U.K., but now worldwide (for a review, see Wickes & Lanfear, 2025). According to Wickes and Lanfear (2025), study findings vary: some report a strong inverse association between collective efficacy and crime, while others do not. There is also regional variation in findings worldwide. Notwithstanding, they conclude that the evidence of an inverse association between collective efficacy and crime is substantial outside Western countries.

Much of the collective efficacy research, including the original article by Sampson et al. (1997), focuses on the relationship between community-level measures of collective efficacy and crime and disorder. In doing so, it leaves in the background the mechanisms by which micro-level interactions between community members and would-be offenders prevent crime. Specifically, it does not address the circumstances under which private citizens can deter would-be offenders, or the characteristics and motivations of citizens willing to assume the role of Guardians.

To fill this critical gap in research on collective efficacy, ELN conducted an online laboratory experiment in which participants were randomly assigned to one of three roles: Thief, Target, or Guardian. At the outset, participants in all three roles received a monetary endowment. Thieves could steal from the Target's endowment, while Guardians could pay from their endowment to punish Thieves for stealing. The experimental structure was designed to simulate micro-level interactions between potential offenders and community members, aiming to deter potential offenders from carrying out their intentions by threatening intervention from community members. In the experiment, that threat takes the form of a fine if a Thief steals from the Target. Serving as a Guardian also carries potential costs. In the real world, those costs include time and potentially hostile interactions, including physical violence with would-be offenders. In the experiment, the costs are represented by a reduced payout from the Guardian's endowment, equal to the amount committed to punishing the Thief for stealing from the Target. As ELN observes, "In recompense to the external validity loss resulting from this abstraction [on the costs of serving as a proactive guardian], the design makes it possible to investigate what is invisible in research on reactive guardianship: the conditions under which knowing of potential guardian intervention deters would-be perpetrators." (p. 7)

The ELN experimental design included five conditions relevant to the present paper. In one, there is no Guardian, so the Thief can steal from the Target with impunity. In four other conditions, a Guardian is present with varying levels of punishment capacity to penalize the Thief for stealing from the Target. In one of these conditions, the maximum punishment that the Guardian could impose made taking, at worst, a break-even proposition. In the other three conditions, the maximum punishment that the Guardian could impose made taking unprofitable.[1]

ELN measured a range of individual-level characteristics that might be associated with the willingness of Thieves to take from Targets and of Guardians to punish Thieves if they were to take. One of these was social value orientation (SVO). Its measurement (SVO slider measure) is described in detail below, but briefly, participants were presented with six allocations of a monetary award to be shared with an anonymous other. Generally, allocating more to oneself involves allocating less to others. SVO is an increasing function of the willingness to sacrifice one's own allocation to benefit the other.
The principal findings in ELN were as follows:

(1) The presence of a Guardian with sufficient punishment power to make stealing potentially unprofitable deterred taking.[2]
(2) The magnitude of the deterrent effect was inversely related to the Thief's individual-level SVO. The deterrent effects were limited to individuals with low

[1] In a sixth condition, two Guardians were present for the purpose of testing the impact of multiple Guardians on individual Guardians' punishment decision, a purpose that is not a focus of this article.
[2] In the condition in which the Guardian's maximum punishment power made stealing at worst a break even proposition the rate of stealing was nearly identical to the no Guardian condition.

SVO presumably as a matter of principle, while individuals with high SVO were less likely to steal, even in the absence of a threat of punishment.
(3) The main effect of the Thief's SVO on stealing was far larger than the main effect of the threat of punishment.
(4) The amount of punishment exacted by Guardians is increasing with their SVO.

Participants in the ELN experiment were almost entirely from the USA and the UK. Here, we build upon ELN by replicating their key findings in an international setting, including non-Western countries, and investigating the influence of country-level characteristics on the decision-making of would-be Thieves and the punishment decisions of would-be Guardians.

Extending Micro-Level Guardianship across Countries

The ELN results have clear relevance to a core object of criminological research: the determinants of the decision to engage in crime. However, as already noted, participants in the ELN experiment were primarily drawn from the U.S. and, to a lesser extent, the U.K. In the spirit of the Wickes and Lanfear (2025) review, which found that the inverse association between collective efficacy and community-level crime rates extended to non-North American and non-European regions of the world, the present study was motivated to test the generalizability of ELN's findings to other parts of the world. We further aimed to investigate whether the magnitude of the effect of guardian presence was related to country-level characteristics.

Country-Level Moderators of Guardianship and Deterrence

We expect that the degree to which Guardians can act as an effective deterrent to theft depends on the social norms and rules prevalent in one's surroundings. Specifically, at the country level, we focus on

(1) a country's level of general social preference, and
(2) its support for the Rule of Law

Psychological characteristics, such as social value orientation, are usually regarded as individual attributes. Recent research, however, observed that psychological characteristics are also geographically clustered (e.g., Stelter et al., 2022), suggesting that they are not only characteristics of people, but also characteristics of regions (Calanchini et al., 2022). These regional-level differences, in turn, are related to behavioral outcomes (e.g., Goedderz & Calanchini, 2023). Regarding social value orientation, previous research has revealed substantial country-level differences (Clemens et al., 2025). As ELN found that SVO was negatively related to stealing at the individual level, places (i.e., countries) characterized by high social preferences might have lower levels of

stealing, thereby reducing the magnitude of the deterrent effect of Guardian presence. This is consistent with arguments advanced by Zimring and Hawkins (1974), Pogarsky (2002), and Wikström et al. (2012), who suggest that only those with lesser scruples against offending are deterred by the risk of punishment, while others with such scruples refrain from offending due to moral restraint rather than insensitivity to sanctions.

Individuals may refrain from stealing also because they are committed to adhering to the law for reasons independent of the threat of sanctions. Experiments have shown that participants are even willing to follow completely arbitrary rules simply because they are the rules (Kimbrough & Vostroknutov, 2016). However, as one of us has shown experimentally, this propensity is conditional. For most people, it is not enough that a rule exists; it must also be widely observed (Desmet & Engel, 2021). Based on theories of legal cynicism and legitimacy (Kirk & Matsuda, 2011; Sampson & Bartusch, 1998; Tyler & Hou, 2002), we hypothesize that individuals will be more likely to steal if they come from countries perceived by their residents to have ineffective, corrupt, and unresponsive legal authorities, operationalized as the Rule of Law in the present research. Like country-level SVO, the Rule of Law is expected to reduce the magnitude of the deterrent effect of Guardian presence because the stealing rate is already low compared to low rule of law countries. The effect of the Rule of Law on the Guardian's willingness to fine the Thief for stealing is not self-evident. Still, we predict that would-be Guardians in countries with a higher Rule of Law will be more likely to impose a personally costly fine for stealing to maintain the existing level of rule-abiding in the population.

Predictions

All our hypotheses were preregistered at https://drive.google.com/file/d/1bWFTKTCt4xD3G5Rm_rSR1DMvtGWNJTq1/view?usp=sharing. Here, we group them under two headings: one concerns replicating the key finding of ELN in the multinational sample, and the other concerns the country-level measures of SVO and the Rule of Law used in the country selection process.

Replication of ELN

A key aim was to test whether the key findings of the U.S./U.K.-based ELN study replicated in our multinational sample. The predictions were:

(1) The presence of a Guardian will deter theft.
(2) The magnitude of the deterrent effect is inversely related to the Thief's individual-level SVO.
(3) The main effect of the Thief's individual-level SVO on taking is larger than the main effect of the threat of punishment.
(4) The amount of punishment exacted by Guardians is increasing with their individual-level SVO.

Regarding Prediction 1, in all ELN conditions where Guardians had sufficient punishment power to make stealing potentially unprofitable, taking rates were

significantly lower than in the no-Guardian condition. For the replication, we used the ELN condition with the highest (and thus sufficient) punishment power, expecting to replicate the effect.

Regarding Prediction 2, ELN included a condition in which no Guardian was present, so the Thief could steal with impunity. However, even in this condition, 30% of participants did not steal. These individuals, with few exceptions, had markedly higher SVOs than those who did. Further analysis showed an interaction between Thief role-taking decisions and the Thief's individual-level SVO. Among participants with SVOs above the median, taking rates did not differ significantly across conditions. Significant deterrent effects were observed only among participants with SVOs below the median.

Prediction 3 relates to an empirical finding with important policy implications for crime prevention that we sought to verify in our multinational sample.

Prediction 4 is based on the idea that people with a higher SVO are more likely to impose personally costly punishment on those who care less for others, as shown by their punishment decisions if the thief were to take.

Country-Level SVO and the Rule of Law

We further aimed to investigate whether the magnitude of the effect of guardian presence was related to country-level characteristics:

(5) The magnitude of the deterrent effect of a Guardian's presence will be smaller in countries with higher country-level SVO due to their lower base rate of stealing compared to countries with lower county-level SVO.
(6) The deterrent effect of a Guardian's presence will be smaller in countries with higher Rule-of-Law scores due to their lower base rate of stealing compared to countries with lower Rule-of-Law scores.

Methods

Country Selection

We implemented the 2 × 2 country selection shown in Table 1, using country-level SVO and the Rule of Law as the two dimensions. The research by Clemens et al. (2025) examined individual-level SVOs from 6,182 participants from 25 nations. For country selection in the present study, we aggregated them to the country level, yielding 25 country-level SVOs that indicate each country's average social value orientation. We selected two countries with a low country-level SVO (and thus a relatively low average regard for others' welfare) and two countries with a high country-level SVO. We crossed these countries with high- and low-Rule-of-Law countries, as determined by the Rule of

Law Index (World Justice Project, 2024), which indicates a country's human rights, access to justice, corruption, and authoritarianism.

Specifically, based on the findings by Clemens et al. (2025), New Zealand (ranked #2 out of 25 countries) and Brazil (ranked #1) can be considered high-SVO countries, while China (ranked #23) and Singapore (ranked #22) are low-SVO countries. According to the Rule of Law Index (World Justice Project, 2024), New Zealand (ranked #5 out of 143 countries) and Singapore (ranked #16) are classified as high-Rule-of-Law countries, whereas Brazil (ranked #78) and China (ranked #92) are categorized as low-Rule-of-Law countries.

Table 1: Country Selection

		Rule of Law	
		+	–
SVO	+	New Zealand	Brazil
	–	Singapore	China

Materials and Procedure

The questionnaire was created in English and translated into Portuguese and Chinese by Toluna's translation service. Subsequently, the translations were reviewed for quality through back-translation with ChatGPT, and in rare cases where discrepancies were noticeable, they were adjusted accordingly. The survey was conducted in English in New Zealand and Singapore, in Portuguese in Brazil, and in Chinese in China.

Experimental Design

Here, we replicate the two most extreme conditions from the ELN original design —the no-Guardian condition, in which the Thief can steal from the Target with impunity, and the condition in which the Guardian has maximum punishment capacity. After participants selected their country, provided consent, and specified their age and gender, they were randomly assigned to either the "no Guardian present" or the "Guardian present" condition. They were then randomly assigned to their role as Thief or Target in the no-Guardian condition and Thief, Target, or Guardian in the Guardian-present condition. In the experiment, Thief was neutrally referred to as role A, Target as role B, and Guardian as role C. They received instructions for their condition and were given three attempts to answer one comprehension question (in the no-Guardian condition) or two questions (in the Guardian-present condition). After each failed attempt, the instructions were repeated.

The experiment used the experimental currency Taler, which were paid out in the participant's country's currency. All participants received a 12-Taler endowment. Those assigned to the Thief role could steal (we used the more neutral term "take") six Taler from the Target's endowment, while those assigned to the Target role were passive. Those assigned to the Guardian role could punish the Thief for taking by imposing a fine. The amount the Guardian contributes to the fine is deducted from their 12-Taler endowment if the Thief chooses to steal, making intervention costly. The Target's endowment is not restored if the Thief chooses to steal it, regardless of the Guardian's fining decision. While there is no possibility of punishment in the no-Guardian condition, in the Guardian-present condition, each Taler committed by the Guardian is tripled up to a maximum of 18 Taler. All possible payout configurations, as presented to the participants, are shown in Figure 1 for the no-Guardian condition and Figure 2 for the Guardian-present condition. Elaborating on Figure 2, if the would-be Thief does not steal, all participants retain their initial endowment of 12 Taler. If the would-be Thief does steal, the Target retains only 6 Taler of the initial endowment, regardless of the Guardian's punishment decision. If the Guardian chooses no punishment, she retains her entire 12 Taler initial endowment, and the Thief's payout is 18 Taler, the initial endowment of 12 Taler plus 6 Taler of the Target's endowment. At the other extreme, if the Guardian commits 6 Taler of her endowment to punishment, the resulting penalty of 18 Taler eliminates the Thief's entire payout. In this case, the Thief receives no compensation for this component of the experiment, and the Target and Guardian receive only a 6-Taler payout.

Figure 1: Possible Payout Configurations in the no-Guardian condition

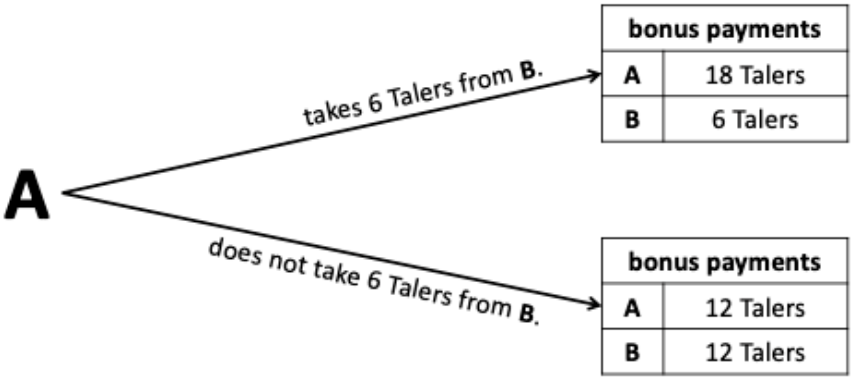
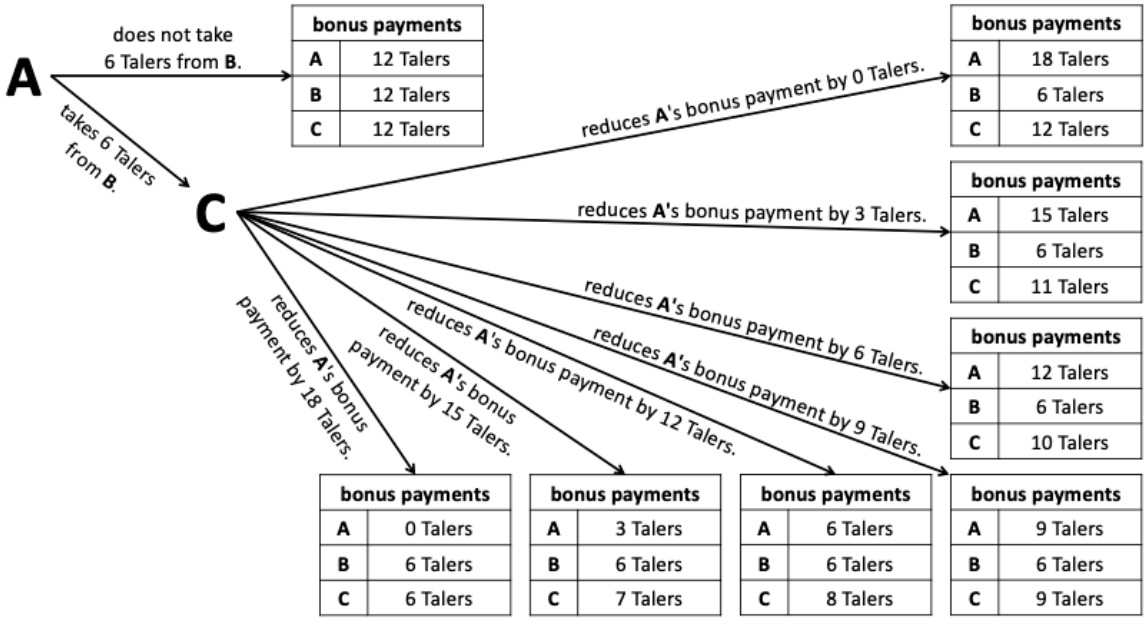


Figure 2: Possible Payout Configurations in the Guardian-present condition



After reading the instructions, participants in the no-Guardian condition had to answer the following comprehension question: "A decides to take 6 Taler from B. Which is B's bonus payment? [0 Taler / 6 Taler / 12 Taler / 18 Taler]". To ensure participants' understanding of the complex instructions in the Guardian-present condition, two comprehension questions were required: "C decides to reduce A's bonus payment by 6 Taler if A decides to take 6 Taler from B. Which is B's bonus payment if A decides to take 6 Taler from B? [0 Taler / 6 Taler / 12 Taler / 18 Taler]; Which is A's bonus payment if A decides not to take 6 Taler from B? [0 Taler / 6 Taler / 12 Taler / 18 Taler]". Across countries, the pass rates across the three attempts are 91.1%, 92.7%, and 91.0%, respectively. Appendix 3 contains a list of pass rates by country and attempt.

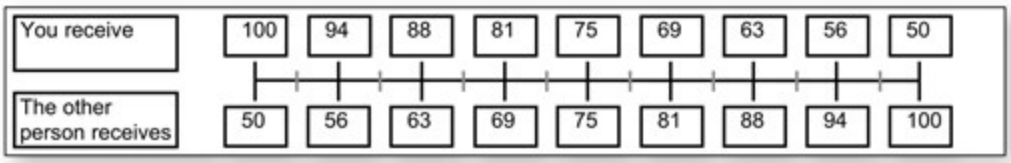
After passing the comprehension questions, participants in the Thief role were asked whether they would take 6 Taler from the Target's endowment of 12 Taler, which served as our main dependent measure of stealing. As a measure of punishment, participants in the Guardian condition were asked how many Taler they wanted to reduce the Thief's endowment in case of stealing.

For exploratory purposes, we asked for expectations. Specifically, participants in the Thief role estimated the percentage of participants in the Thief role who would steal. Thief and Target participants in the Guardian-present condition were asked how many Taler they expected the Guardian to fine the Thief for taking six Taler from the Target's endowment, and what percentage of participants in the Thief role would steal.

SVO Slider Measure (Murphy et al., 2011)

A key finding of ELN was an interaction between the Guardian's presence and a participant's concern for others' welfare (i.e., social value orientation), as measured with the SVO slider measure (Murphy et al., 2011). The SVO slider task consists of six items, each presenting nine possible payoff allocations between the participant and an anonymous other person. Participants indicate their preferred allocation by selecting one option per item (see Figure 3 for a sample item). Based on these choices, we calculated an SVO angle that captures the extent to which individuals value others' outcomes alongside their own.

Figure 3: SVO Allocation Choices



For an exact description of the construction of the metric, see Murphy et al. (2011). For exploratory purposes, other measures were included and are reported in Appendix 4.

Data Collection

Data were collected between June 17 and July 21, 2025, via the Unipark platform (https://www.unipark.com/), with a target sample of 4,000 participants, comprising 1,000 from each participating country. Participants were recruited through the online panel provider Toluna (https://www.toluna.com). Mixed age- and gender-based quotas were set to ensure a representative sample (according to age and gender) for each country. To ensure national representativeness, eight quotas were created for each country (4 age groups [18–29, 30–39, 40–49, 50–65] × 2 genders [male, female]). Because Toluna's panel does not adequately cover those over 65 years, including them would have compromised national representativeness. Therefore, we restricted the age range accordingly. The required number of participants per quota was determined based on the actual distribution in the general population, aiming for a minimum of 1,000 per country.

Each quota was either exactly met or exceeded. Appendix 2 lists the planned and actual quotas achieved by country.

In the first step, a soft launch was conducted to confirm that the survey was functioning correctly and to establish a fixed metric for the average completion time, which was then used to exclude participants who spent less than 50% of that time completing the survey. After the soft launch, 441 complete responses were recorded, with an average completion time of 718 seconds. As a result, participants with completion times of less than 359 seconds were excluded from the dataset. In addition, some participants were still able to participate in the study despite failing the comprehension questions described below on their first or second attempt, respectively, due to a programming error. These responses were excluded from the analyses but were fully considered in the matching and incentivization process. Following the soft launch evaluation and correction of the programming error, the full launch was initiated. During this process, progress was monitored daily, and quotas were continuously adjusted to ensure that at least 4,000 participants were included in the final sample.

Sample

A total of 12,867 individuals began the survey by specifying the country from which they were. Of these, 5,161 participants were excluded because they either refused to consent to participate, were outside the specified age range of 18 to 65, the quota for their age group had already been filled, or failed the comprehension questions after 3 attempts. Additionally, 2,267 participants voluntarily withdrew from the study. As a result, 5,439 participants were included in the preliminary complete dataset. Appendix 1 lists screen-out and dropout rates by country. The pre-registered exclusion criteria were applied to the preliminary complete dataset. 1,240 participants had completion times below the minimum, 21 participants were in a country other than the specified one, and an additional 80 participants were removed due to the programming error mentioned above. The final sample consisted of N = 4,098 participants (see Table 2 for details).

Table 2: Participants

Country	N	Mean age (SD)	% female
Brazil	1,009	39.18 (12.54)	50.8%
China	1,077	41.29 (11.52)	51.1%
New Zealand	1,009	40.63 (13.45)	49.4%
Singapore	1,003	40.29 (12.28)	49.6%
	4,098	**40.36 (12.47)**	**50.2%**

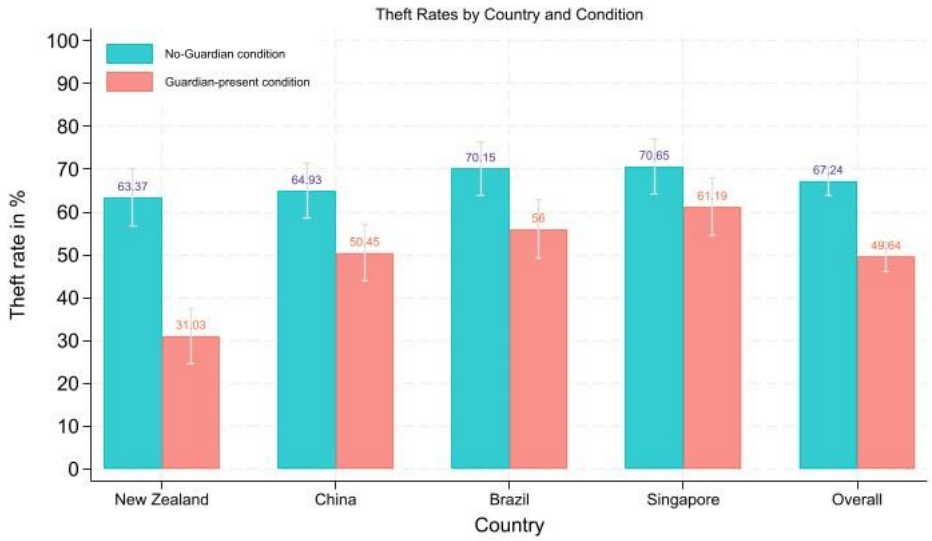
Matching and Incentivization

AS in ELN, incentives were provided for the choices in the experiment and the SVO measure. In all countries, participants knew they were interacting with participants from the same country. In the no-Guardian condition, participants were randomly paired into dyads (i.e., one Thief and one Target). In the Guardian-present condition, participants were randomly assigned to groups of three (i.e., one Thief, one Target, and one Guardian). For the SVO measure, participants were assigned to pairs in an independent random draw. For each dyad, the allocation to be paid out was randomly selected, and participants were randomly assigned to either the active or the passive role. Appendix 5 lists the conversion rates for each local currency calculated based on this, and Appendix 6 lists the average incentives per experiment by country.

Results

Prediction 1 is that the presence of a Guardian will deter theft compared to the no-Guardian condition. Figure 4 compares the stealing rates between the no-Guardian and Guardian-present conditions across the pooled data and by country. In each country, theft declines markedly in the presence of a Guardian. The declines in the pooled data and across all countries are significant at the .05 level and, except for Singapore, at the .01 level or lower. Notably, in the pooled data, 33% of participants in the no-Guardian condition do not steal, which is nearly identical to the 32% rate observed in ELN's study of U.S. and U.K. participants. Notably, the magnitude of the decline in stealing with the presence of a Guardian is markedly higher in New Zealand, with a drop of 32 percentage points, compared with the other three countries, which are similar: 14 percentage points in Brazil, 15 percentage points in China, and 10 percentage points in Singapore.

Figure 4: Stealing Rates by Condition Overall and For Each Country



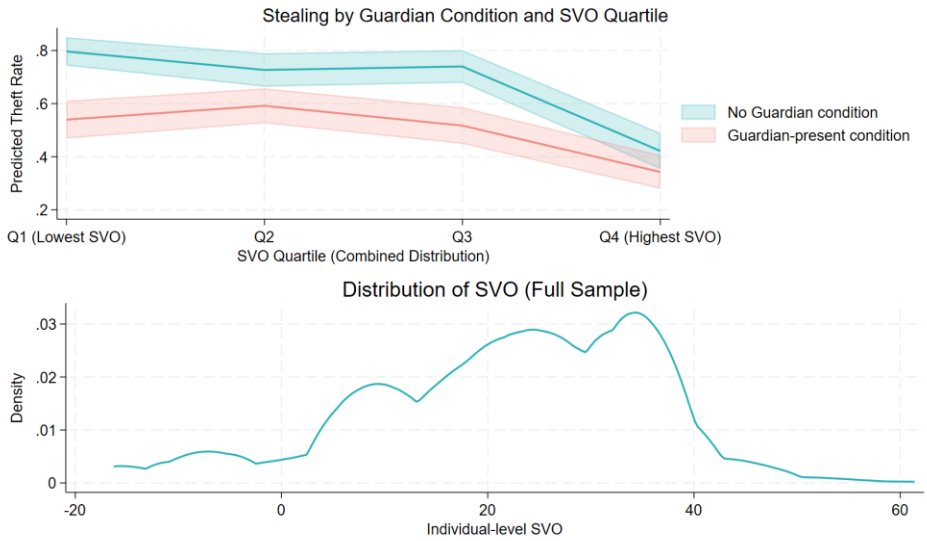
Turning to Prediction 2, which posits an inverse relationship between the magnitude of the deterrent effect and individual-level SVO, Table 2 reports a regression that includes the interaction between individual-level SVO and Guardian presence, along with the main effects of individual-level SVO and Guardian presence. The interaction term is positive and significant[3], which is consistent with our pre-registered hypothesis that the deterrent effect of Guardian presence is smaller for higher SVO individuals (see also Figure 5), due to the restraining effect of concern for others' welfare, which reduces the relevance of a potential penalty for stealing. The main effect of Guardian presence is a 23 percentage-point reduction in the theft rate relative to the no-Guardian condition. The difference in individual-level SVO between the upper and lower quartiles is 20.6 SVO points, which translates into a 24.8% reduction in the main effect of Guardian presence.

[3] One-sided tests for directed hypotheses are reported throughout the manuscript.

Table 2: Linear Probability Model with Robust Standard Errors Predicting Stealing by Guardian Presence, Individual-level SVO, and Their Interaction

	Stealing			
Independent Variable	***ß***	***Robust SE***	***t***	***P***
Individual-level SVO	–.238	.001	–8.20	< .001
Guardian Presence (0 = no; 1 = yes)	–.231	.041	–5.58	< .001
Individual-level SVO × Guardian Presence (0 = no; 1 = yes)	.086	.002	1.78	.038
N	1,641			
R-squared	.073			

Figure 5: Difference in the Stealing Rate between the Guardian and No Guardian Condition by Quartile of the SVO Distribution for the Combined Sample



Turning to Prediction 3, that the main effect of individual-level SVO on stealing is larger than the main effect of the threat of punishment, Table 3 reports a standardized regression analogous to the specification noted in ELN, based on responses from Thief role participants assigned to the Guardian-present condition, in which they were asked about the expected fine the Guardian would impose if they took from the Target. The magnitude of the individual-level SVO coefficient is 72% larger than the expected fine

coefficient in the overall sample. This falls short of the factor-of-three difference reported in ELN but still aligns with the ELN finding that the long-term preventive effect of SVO is larger than the deterrent effect of the threat of intervention by a Guardian. This drop in the magnitude difference between these two effects in ELN and the present study may be due to our providing the Guardian with the maximum punishment, as observed in ELN. Country-level analyses show that New Zealand drives the overall finding (Individual-level SVO: ß = –.139; Expected fine: ß = –.033) and Brazil (Individual-level SVO: ß = –.213; Expected fine: ß = –.113) whereas the reversed pattern can be observed for Singapore (Individual-level SVO: ß = –.189; Expected fine: ß = –.212). For China, both factors seem relatively unrelated to the probability of stealing individual-level SVO: ß = .059, *p* = .397; Expected fine: ß = .079, *p* = .256).

Table 3: Standardized Ordinary Least Squares Regression with Robust Standard Errors, Stealing Regressed on Expected Fine and Thieves' SVO

	Stealing			
Independent Variable	***β***	***Robust SE***	***t***	***p***
Expected Fine	–.088	.011	–2.56	.006
Individual-level SVO	–.152	.001	–4.42	< .001
n	826			
R-squared	.030			

Prediction 4 is that the amount of punishment exacted by Guardians will increase with their SVO. Tables 4 and 5 report two regressions to test this prediction. One is an ordinary least squares (OLS) regression relating the amount committed to punishment to the Guardian's SVO. The second is a zero-inflated Poisson (ZIP) regression with the same specification. The ZIP regression allows for the possibility that some Guardian-role participants are unwilling under any circumstances to commit any part of their endowment to punish the would-be Thief for stealing. The OLS regression reveals a positive association between the amount of punishment committed and the Guardian's SVO; however, this association is not statistically significant at conventional levels. The ZIP specification, however, finds a positive and significant association between the amount committed to punishment and the Guardian's SVO after accounting for the zero-inflation model component.

Table 4: OLS Regression with Robust Standard Errors predicting Amount Committed to Punishment by Individual-Level SVO

	Amount of Punishment			
Independent Variable	***ß***	***Robust SE***	***t***	***p***
Individual-Level SVO	.054	.004	1.47	.071
n	824			
R-squared	0.003			

Table 5: ZIP Regression with Robust Standard Errors, Amount Committed to Punishment Regressed on Individual-Level SVO

	Amount of Punishment			
Variable	***B***	***Robust SE***	***z***	***p***
Individual-level SVO (Intervention)	0.006	.002	2.78	.003
Constant (Intervention)	0.700	.061	11.42	< .001
Individual-level SVO (Inflation)	0.027	.018	1.53	.063
Constant (Inflation)	–2.59	.544	–4.76	< .001
n	824			
$n_{(non\text{-}zero)}$	646			
LR χ^2	7.73			

Note. Coefficients are presented as log-count coefficients for the count (Poisson) part and log-odds coefficients for the inflation (Logit) part.

Regarding country-level differences, we predicted that the deterrent effect of a Guardian's presence would be smaller in countries with higher SVO and higher Rule-of-Law scores. To test these assumptions, we used dummy coding 0 = low (China and Singapore) and 1 = high (New Zealand and Brazil) for country-level SVO. Please note that the categorization is based on our data and aligns with the earlier data by Clemens et al. (2025), which served as the basis for country selection. Contrary to what we had expected, the effect of a present Guardian was stronger for high-SVO countries compared to low-SVO countries, indicated by a negative interaction between experimental

condition and country-level SVO when predicting stealing, ß = –.097, *t* = –3.64, *p* = .200, again driven by New Zealand where the presence of a Guardian had a particularly strong effect: ß = –.324, t = –6.87, *p* < .001. Country-level Rule-of-Law (low = 0 vs. high = 1) did not interact with the experimental condition in predicting stealing, ß = –.057, *t* = –1.37, *p* = .171. Appendix 7 contains a full report of the preregistered analyses.

Discussion

Replication of Guardian-Driven Deterrence Across Non-Western Contexts

We replicated the key findings of ELN, which were based on a largely U.S. sample, in diverse international settings, including Brazil, China, and Singapore, all of which are distinctly non-Western. Like ELN, we find that Guardians are willing to punish infractions even when it is costly to themselves, and that the threat of their punishment deters would-be Thieves if the Guardian's punishment capacity is sufficient to make stealing unprofitable. Both are essential to the mechanics of practical collective efficacy. In doing so, we complement Wickes and Lanfear's (2025) conclusion that collective efficacy is not limited to residents of Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies (Henrich et al., 2010). In fact, the general finding that the presence of a guardian reduces stealing is remarkably consistent across four culturally different countries included in our research.

In the overall sample and as in ELN, we also find that an even more powerful force than deterrence in restraining theft is an individual's social preferences (SVO). While the relative magnitude of SVO associations with stealing compared to the deterrent effect of sanction risk perceptions is not as large as in ELN, it is still about 75% larger in our international sample. Similarly, as with ELN, we observe a pronounced interaction between the magnitude of the deterrent effect of Guardian presence and the individual-level SVO of would-be Thieves. The deterrent effect declines with individual-level SVO, not because of insensitivity to sanction threats; instead, SVO's restraining effect renders sanction threats secondary or irrelevant to the decision not to steal. The pronounced interaction between deterrence and SVO aligns with the arguments of Zimring and Hawkins (1973) and Pogarsky (2002), who suggest that some individuals may refrain from committing a crime for ethical or moral reasons, even in the absence of a threat of sanction. Pogarsky (2002) calls such individuals "acute conformists". Moral considerations also play a central role in Wikstrom's (2006) Situational Action Theory—morals act as a perceptual filter that governs whether crime is considered a viable option. When the moral filter excludes offending, the act is excluded entirely from cognitive consideration, rendering sanction threats irrelevant to the decision to refrain from offending.

Country-Level Variations

As mentioned above, the main finding of a deterrent effect of a guardian's presence was consistently observed across countries. However, the magnitude of the effect also varied. We had two a priori hypotheses for country-level variables that could explain variation in

this magnitude. First, we assumed that the deterrent effect of Guardian presence would be smaller in countries with a high country-level SVO. To test this assumption, we sampled two countries with high aggregate SVO and two with low aggregate SVO based on earlier findings by Clemens et al. (2025). Our findings on aggregated SVO levels align with those of the study, in that New Zealand and Brazil had comparatively high SVO levels compared to China and Singapore. Still, our results did not align with the prediction that the deterrence effect is more pronounced in low SVO countries, as the deterrent effect of Guardian presence was most potent in New Zealand, which has a high country-level SVO and a high Rule-of-Law score.

In retrospect, an explanation for this finding may be as follows: two motives could contribute to both the willingness to step up as a Guardian and the impact of Guardianship on would-be Thieves' desire to perpetrate. The first motive is respect for the well-being of others, which causes would-be Thieves to refrain from stealing and would-be Guardians to feel an obligation to step in, even when it is costly to them. Indirect societal-level effects could compound the direct effect. Would-be Guardians might perceive perpetrators as rare in high-SVO countries, believing most individuals are held back by respect for would-be Targets. This perception might fuel their urge to intervene, as they care about maintaining this favorable social climate despite occasional infractions. This response by Guardians could be anticipated by would-be perpetrators, who perceive a higher risk of Guardian intervention, which deters them from stealing.

An additional plausible motivation is a sense of rule-abiding. As noted earlier, experiments have shown that many participants are willing to abide by regulations simply because they are aware that the rules are in force (Kimbrough & Vostroknutov, 2016). Some basic rules of criminal law, such as prohibitions against theft, robbery, assault, or murder, are nearly universal. If the infraction in question is of this kind, two direct effects can be predicted. Some individuals refrain from harming a victim simply because they know they are not supposed to do so, and some Guardians intervene because they want to defend the socially beneficial rule. The same two indirect effects can reinforce these two direct effects: in a rule-abiding society, Guardians may perceive rule violations as particularly egregious. They may therefore be even more willing to intervene. Would-be perpetrators might anticipate this effect and become even more reticent to violate the rule. Initial findings from our exit questionnaire on the appropriateness of stealing may support this assumption. Specifically, results indicated that the appropriateness of stealing was rated lowest in New Zealand. However, this idea is contradicted by the finding that the appropriateness of punishment was rated lowest in New Zealand (see Appendix 8 for all ratings on appropriateness and commonness of stealing and punishment).

Another cultural variation that we observed was the relative importance of an individual's SVO and expected punishment in predicting stealing. In two of the four countries (i.e., Brazil and New Zealand), an individual's SVO was a more powerful force than deterrence in restraining theft, in line with ELN. In contrast, expected fine played a more prominent role than an individual's SVO in Singapore. Thus, when designing interventions to deter theft, these cultural specificities must be considered to ensure the right screws are turned. Future cross-national research, including more countries and thus

a larger variation in country-level SVO and rule of law, should test cultural variation more systematically. Furthermore, future research, whether multinational or not, should also expand the troika of would-be Thief, would-be Target, and would-be Guardian to include third-party community members who can reward Guardians for their willingness to intervene and punish them for failing to intervene.

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Appendix 1: Screen-out and Dropout Rates By Country

	Brazil	China	New Zealand	Singapore
Started participations (via country selection)	**3,966**	**3,273**	**2,837**	**2,791**
	12,867			
Screen-outs due to missing informed consent	119	71	100	101
Screen-outs due to age under 18 or over 65	32	15	49	104
Screen-outs due to full quotas	1,158	1,218	470	233
Screen-outs due to failing the comprehension questions after the third attempt	577	270	249	395
Voluntary dropouts	831	255	657	524
Participants included in the preliminary complete dataset	**1,249**	**1,444**	**1,312**	**1,434**
	5,439			

Appendix 2: Planned and Actual Quotas for Age and Gender in the Final Sample

Country	Age	Gender	Planned	Actual
Brazil	18-29	Male	145	146
		Female	140	141
	30-39	Male	120	
		Female	120	122
	40-49	Male	105	
		Female	110	114
	50-65	Male	125	
		Female	135	136
	BR total		**1,000**	**1,009**
China	18-29	Male	115	116
		Female	100	101
	30-39	Male	125	127
		Female	115	116
	40-49	Male	105	113
		Female	105	117
	50-65	Male	170	171
		Female	165	216
	CN total		**1,000**	**1,077**

Country	Age	Gender	Planned	Actual
New Zealand	18-29	Male	135	139
		Female	125	126
	30-39	Male	115	
		Female	115	116
	40-49	male	100	
		female	95	
	50-65	male	155	157
		female	160	161
	NZ total		**1,000**	**1,009**
Singapore	18-29	male	135	
		female	120	121
	30-39	male	120	
		female	115	
	40-49	male	105	
		female	115	
	50-65	male	145	146
		female	145	146
	SG total		**1,000**	**1,003**
total			**4,000**	**4,098**

Appendix 3: Pass Rates for the Comprehension Questions by Country and Attempt

No-Guardian condition

A decides to take 6 Taler from B. Which is B's bonus payment?

- *0 Taler*
- *6 Taler*
- *12 Taler*
- *18 Taler*

Attempt	Result	BR	CN	NZ	SG	Pass rate	
1	Passed	347	586	407	562	64.2%	
	Failed	315	150	283	312		
2	Passed	166	82	148	142	18.2%	**91.1%**
	Failed	141	67	129	164		
3	Passed	79	36	71	71	8.7%	
	Failed	62	30	57	92		

Guardian-present condition

C decides to reduce A's bonus payment by 6 Taler if A decides to take 6 Taler from B.

Which is B's bonus payment if A decides to take 6 Taler from B?

- *0 Taler*
- *6 Taler*
- *12 Taler*
- *18 Taler*

Attempt	Result	BR	CN	NZ	SG	Pass rate	
1	Passed	772	789	750	767	62.8%	
	Failed	765	326	348	381		
2	Passed	399	167	199	173	19.2%	**92.7%**
	Failed	512	241	203	291		
3	Passed	221	100	98	106	10.7%	
	Failed	400	182	141	241		

Which is A's bonus payment if A decides not to take 6 Taler from B?

- *0 Taler*
- *6 Taler*
- *12 Taler*
- *18 Taler*

Attempt	Result	BR	CN	NZ	SG	Pass rate	
1	Passed	706	741	760	778	60.9%	
	Failed	832	374	340	370		
2	Passed	362	167	205	190	18.9%	**91.0%**
	Failed	549	241	198	274		
3	Passed	229	98	103	122	11.3%	
	Failed	394	185	136	225		

Appendix 4: Additional measures

To measure participants' risk aversion, we used the experimental approach developed by Holt and Laury (2002), which relies on lottery decisions. Participants chose between two options in ten lotteries, each with two possible payouts awarded with different probabilities. Specifically, Lottery A offers the possibility of receiving two Taler or 1.6 Taler, while Lottery B offers the possibility of receiving 3.85 Taler or 0.1 Taler. For the first of the ten decisions, the probability of obtaining the higher payout within the lottery is 10%. For the second, it is 20%, and so on, increasing by 10% each time until it reaches 100% in the last decision. Lottery A, therefore, represents the more risk-averse choice, while choosing Lottery B involves higher risk. Consequently, a person's degree of risk aversion can be measured by how often they prefer Lottery A over Lottery B.

After completing the SVO and risk aversion measures in randomized order, participants were asked to assess the commonness and appropriateness of stealing (and of intervening) in the experimental design. Specifically, all participants rated the commonness and appropriateness of stealing on 4-point Likert scales (for commonness: very uncommon / uncommon / common / very common; for appropriateness: very socially inappropriate / socially inappropriate / socially appropriate / very socially appropriate). Participants in the Guardian-present condition were additionally asked to rate the commonness and appropriateness of each of the seven possible decisions a would-be Guardian can make (i.e., fining the would-be Thief by zero Taler, three Taler, six Taler, nine Taler, 12 Taler, 15 Taler, and 18 Taler in case of stealing).

Finally, participants were asked about their trust in institutions, their neighborhood's collective efficacy, their socioeconomic status, and the size of their community. Institutional trust was measured with three items recommended by the OECD (2017, "How much do you trust the political system / the legal system / the police in your country?"). We used the "social cohesion and trust" subscale by Sampson et al. (1997) and the MacArthur Scale of Subjective Social Status (Adler et al., 2000) to assess socioeconomic status. Furthermore, we administered two self-designed open-response questions ("How many people would you count as part of your community, meaning the local social group you live in?", "How many people live in your hometown?") to assess community size.

Appendix 5: Conversion Rates for Each Country

Country	Experiment	1 Taler =
Brazil	Experimental design	39.3 centavos
	SVO measure	5.3 centavos
	Risk aversion measure	193.5 centavos
China	Experimental design	49.1 fen
	SVO measure	6.6 fen
	Risk aversion measure	242 fen
New Zealand	Experimental design	11.7 cents
	SVO measure	1.6 cents
	Risk aversion measure	57.8 cents
Singapore	Experimental design	8.9 cents
	SVO measure	1.2 cents
	Risk aversion measure	44.1 cents

Appendix 6: Planned and Actual Incentives By Experiment for Each Country

Country	Experiment	Local currency		$	
		Planned	Actual	Planned	Actual
Brazil	Experimental design	3.63	4.35	0.67	0.80
	SVO measure		3.93		0.68
	Risk aversion measure		3.68		0.68
	Total	**10.89**	**11.96**	**2.01**	**2.16**
China	Experimental design	4.68	5.46	0.67	0.78
	SVO measure		4.78		0.68
	Risk aversion measure		4.57		0.65
	Total	**14.04**	**14.81**	**2.01**	**2.11**
New Zealand	Experimental design	1.16	1.34	0.67	0.77
	SVO measure		1.20		0.69
	Risk aversion measure		1.09		0.63
	Total	**3.48**	**3.63**	**2.01**	**2.09**
Singapore	ELN experimental design	0.86	0.98	0.67	0.76
	SVO measure		0.88		0.68
	Risk aversion measure		0.83		0.65
	Total	**2.58**	**2.69**	**2.01**	**2.09**

Appendix 7: Full Report of the Preregistered Analyses

In the following, we report the hypotheses and analyses from our pre-registration. The notation of hypotheses and wording differ slightly from those in the main article, with H5 in the main article corresponding to H2a below, and H6 in the main article corresponding to H3 below.

H1: In the presence of bystanders, stealing is less frequent.

	Stealing			
Independent Variable	***ß***	***Robust SE***	***T***	***P***
Bystander present (0 = no; 1 = yes)	–0.18	0.02	–7.35	< .001
N	1641			
R-squared	.0319			

Note. The dependent variable is taking (0 = no, 1 = yes). Robust standard errors are reported. The estimations are based on a linear probability model.

H2a: In countries high in SVO, the presence of a bystander has a smaller effect.

	Stealing			
Independent Variable	***ß***	***Robust SE***	***t***	***P***
Bystander present (0 = no; 1 = yes)	–.123	.033	–3.64	< .001
Country-Level SVO (0 = low; 1 = high)	–.010	.033	–0.29	.769
Bystander present × Country-Level SVO	–.0974	0.05	2.34	.020
N	1641			
R-squared	.040			

Note. Estimates are based on a linear probability model.

H2b: The higher the SVO score of an individual, the lesser the effect of a bystander being present.

These results are reported in Figure 2 in the main manuscript.

H3: In countries with a high Rule-of-Law score, the presence of a bystander has a smaller effect.

	Stealing			
Independent Variable	***ß***	***Robust SE***	***t***	***P***
Bystander present (0 = no; 1 = yes)	–.146	.033	–4.29	< .001
Rule of Law (0 = low; 1 = high)	–.005	.033	–.15	.885
Bystander present × Rule of law	–.066	.048	–1.37	.171

N	1641
R-squared	.035

Note. Estimates are based on a linear probability model.

H4a: In countries high in SVO and low in the Rule of Law, the presence of a bystander has an even smaller effect than in countries high only in one dimension.

H4b: In countries low in SVO and low in the Rule of Law, the presence of a bystander has an even stronger effect than in countries that are only low in one dimension.

	Stealing			
Independent Variable	***ß***	***Robust SE***	***t***	***P***
Bystander present (0 = no; 1 = yes)	–.147	.047	–3.08	.002
Country-Level SVO (0 = low; 1 = high)	.053	.046	1.13	.258
Rule of Law (0 = low; 1 = high)	.058	.046	1.24	.058
Bystander present × Country-Level SVO	.003	.067	0.05	.961
Bystander present × Rule of Law	.044	.067	0.75	.451
Country-Level SVO × Rule of Law	–.109	.066	–1.90	.057
Bystander present × Country-Level SVO × Rule of Law	–.155	.095	–2.45	.014
N	1641			
R-Squared	.060			

Note. The estimates are based on a linear probability model.

H5a: The higher the SVO of a bystander, the more she is likely to intervene in case of theft.

	Intervening			
Independent Variable	***ß***	***Robust SE***	***t***	***P***
Individual-Level SVO	–.017	.001	–0.47	.635
N	824			
R-squared	.000			

Note. The dependent variable is intervening (0 = no, 1 = yes).

H5b: The higher the SVO of a bystander, the more strongly she intervenes.

The results are reported in Table 5 of the main manuscript.

H6a: In countries with a high Rule-of-Law score, a bystander is more likely to intervene in case of theft.

	Intervening			
Independent Variable	***ß***	***Robust SE***	***t***	***P***
Rule of Law (0 = low; 1 = high)	–.089	.029	–2.57	.010
N	824			
R-squared	.008			

Note. The dependent variable is intervening (0 = no, 1 = yes). The estimates are based on a linear probability model.

H6b: In countries with a high Rule-of-Law score, a bystander intervenes more strongly.

	Amount of Punishment			
Independent Variable	***B***	***Robust SE***	***z***	***p***
Rule of Law (Intervention)	0.011	.057	0.19	.851
Constant (Intervention)	0.840	.039	21.63	< .001
Rule of Law (Inflation)	0.754	.327	2.30	.021
Constant (Inflation)	–2.310	.275	–8.40	< .001
n	824			
$n_{(non\text{-}zero)}$	646			
LR χ^2	0.04			

Note. ZIP Regression with Robust Standard Errors, Amount Committed to Punishment Regressed on Country-Level Rule of Law (0 = low; 1 = high). Coefficients are presented as log-count coefficients for the count (Poisson) part and log-odds coefficients for the inflation (Logit) part.

Appendix 8: Country-Comparative Analyses for Commonness and Appropriateness of Stealing and (All Amounts of) Punishment

Commonness of Stealing

A one-way ANOVA revealed a significant effect of country on the commonness of stealing, $F(3, 4094) = 22.28$, $p < .001$. Tukey HSD post hoc tests indicated New Zealand scored lower than China, Brazil, and Singapore (all *p*s < .001). No significant differences were found between China and Brazil ($p = .97$), China and Singapore ($p = .07$), or Brazil and Singapore ($p = .22$).

Appropriateness of Stealing

A one-way ANOVA revealed a significant effect of country on the appropriateness of stealing, $F(3, 4094) = 222.20$, $p < .001$. Tukey HSD post hoc tests indicated that scores differed significantly among all countries, with the highest scores in Brazil, followed by China and Singapore, and the lowest in New Zealand (all *p*s < .001).

Commonness of a Punishment Amount of 0 Taler

A one-way ANOVA revealed a significant effect of country on the commonness of a punishment amount of 0 Taler, $F(3, 2468) = 32.41$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore (all *p*s <

.001), and Singapore scored higher than New Zealand ($p < .001$) and Brazil ($p = .002$). No significant difference was found between Brazil and New Zealand ($p = .43$).

Appropriateness of a Punishment Amount of 0 Taler

A one-way ANOVA revealed a significant effect of country on the appropriateness of a punishment amount of 0 Taler, $F(3, 2468) = 27.32$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand ($p = .002$) and lower than Brazil ($p < .001$), and Brazil scored higher than Singapore ($p < .001$). No significant differences were found between Singapore and New Zealand ($p = .06$) or between Singapore and China ($p = .73$).

Commonness of a Punishment Amount of 3 Taler

A one-way ANOVA revealed a significant effect of country on the commonness of a punishment amount of 3 Taler, $F(3, 2468) = 5.08$, $p = .002$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand ($p < .001$). No other pairwise comparisons were significant: Brazil vs. New Zealand ($p = .35$), Singapore vs. New Zealand ($p = .21$), Brazil vs. China ($p = .12$), Singapore vs. China ($p = .23$), and Singapore vs. Brazil ($p = .992$).

Appropriateness of a Punishment Amount of 3 Taler

A one-way ANOVA revealed a significant effect of country on the appropriateness of a punishment amount of 3 Taler, $F(3, 2468) = 15.63$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand ($p < .001$), Brazil ($p < .001$), and Singapore ($p = .048$), and Singapore scored higher than New Zealand ($p = .03$) and Brazil ($p = .004$). No significant difference was found between Brazil and New Zealand ($p = .94$).

Commonness of a Punishment Amount of 6 Taler

A one-way ANOVA revealed a significant effect of country on the commonness of a punishment amount of 6 Taler, $F(3, 2468) = 2.86$, $p = .036$. Tukey HSD post hoc tests indicated that no pairwise comparisons were significant: China vs. New Zealand ($p = .15$), Brazil vs. New Zealand ($p = .29$), Singapore vs. New Zealand ($p = .996$), Brazil vs. China ($p = .992$), Singapore vs. China ($p = .09$), and Singapore vs. Brazil ($p = .19$).

Appropriateness of a Punishment Amount of 6 Taler

A one-way ANOVA revealed a significant effect of country on the appropriateness of a punishment amount of 6 Taler, $F(3, 2468) = 10.67$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand ($p < .001$), Brazil ($p < .001$), and Singapore ($p = .001$). No significant differences were found between Brazil and New Zealand ($p = .93$), Singapore and New Zealand ($p = .86$), or Singapore and Brazil ($p = .51$).

Commonness of a Punishment Amount of 9 Taler

A one-way ANOVA revealed a significant effect of country on the commonness of a punishment amount of 9 Taler, $F(3, 2468) = 18.21$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore (all ps $< .001$), and Singapore scored higher than New Zealand ($p = .005$). No significant differences were found between Brazil and New Zealand ($p = .11$) or Singapore and Brazil ($p = .72$).

Appropriateness of a Punishment Amount of 9 Taler

A one-way ANOVA revealed a significant effect of country on the appropriateness of a punishment amount of 9 Taler, $F(3, 2468) = 38.96$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore, and Singapore scored higher than New Zealand and Brazil (all ps $< .001$). No significant difference was found between Brazil and New Zealand ($p = .999$).

Commonness of a Punishment Amount of 12 Taler

A one-way ANOVA revealed a significant effect of country on the commonness of a punishment amount of 12 Taler, $F(3, 2468) = 37.35$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore (all ps < .001), and New Zealand scored lower than Brazil ($p = .002$) and Singapore ($p < .001$). No significant difference was found between Singapore and Brazil ($p = .91$).

Appropriateness of a Punishment Amount of 12 Taler

A one-way ANOVA revealed a significant effect of country on the appropriateness of a punishment amount of 12 Taler, $F(3, 2468) = 45.10$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore (all ps < .001), and Singapore scored higher than New Zealand ($p < .001$) and Brazil ($p = .004$). No significant difference was found between Brazil and New Zealand ($p = .40$).

Commonness of a Punishment Amount of 15 Taler

A one-way ANOVA revealed a significant effect of country on the commonness of a punishment amount of 15 Taler, $F(3, 2468) = 44.68$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore (all ps < .001); that Brazil scored higher than New Zealand (p = .011); and that Singapore scored higher than New Zealand ($p < .001$). No significant difference was found between Singapore and Brazil ($p = .19$).

Appropriateness of a Punishment Amount of 15 Taler

A one-way ANOVA revealed a significant effect of country on the appropriateness of a punishment amount of 15 Taler, $F(3, 2468) = 53.30$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore, and Singapore scored higher than New Zealand and Brazil (all ps < .001). No significant difference was found between Brazil and New Zealand ($p = .82$).

Commonness of a Punishment Amount of 18 Taler

A one-way ANOVA revealed a significant effect of country on the commonness of a punishment amount of 18 Taler, $F(3, 2468) = 35.62$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore (all ps < .001), and New Zealand scored lower than Brazil ($p < .001$) and Singapore ($p = .003$). No significant difference was found between Singapore and Brazil ($p = .92$).

Appropriateness of a Punishment Amount of 18 Taler

A one-way ANOVA revealed a significant effect of country on the appropriateness of a punishment amount of 18 Taler, $F(3, 2468) = 30.59$, $p < .001$. Tukey HSD post hoc tests indicated that China scored higher than New Zealand, Brazil, and Singapore (all ps <

.001), and New Zealand scored lower than Brazil ($p = .002$) and Singapore ($p < .001$). No significant difference was found between Singapore and Brazil ($p = .44$).