



# Social norms and dishonesty across societies

Diego Aycinena<sup>a,b</sup>, Lucas Rentschler<sup>b,c,d</sup>, Benjamin Beranek<sup>e</sup>, and Jonathan F. Schulz<sup>f</sup>

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Social norms have long been recognized as an important factor in curtailing antisocial behavior, and stricter prosocial norms are commonly associated with increased prosocial behavior. In this study, we provide evidence that very strict prosocial norms can have a perverse negative relationship with prosocial behavior. In laboratory experiments conducted in 10 countries across 5 continents, we measured the level of honest behavior and elicited injunctive norms of honesty. We find that individuals who hold very strict norms (i.e., those who perceive a small lie to be as socially unacceptable as a large lie) are more likely to lie to the maximal extent possible. This finding is consistent with a simple behavioral rationale. If the perceived norm does not differentiate between the severity of a lie, lying to the full extent is optimal for a norm violator since it maximizes the financial gain, while the perceived costs of the norm violation are unchanged. We show that the relation between very strict prosocial norms and high levels of rule violations generalizes to civic norms related to common moral dilemmas, such as tax evasion, cheating on government benefits, and fare dodging on public transportation. Those with very strict attitudes toward civic norms are more likely to lie to the maximal extent possible. A similar relation holds across countries. Countries with a larger fraction of people with very strict attitudes toward civic norms have a higher society-level prevalence of rule violations.

social norms | honesty | societal variation

Social life is profoundly shaped by social norms. Norms structure societies by creating a shared understanding of socially acceptable behavior and are essential to fostering fair-minded behavior, honesty, and large-scale cooperation (1–8).

Across the world, the strength of such norms vary widely, ranging from tight societies with a low tolerance for deviant behavior to loose societies with a high tolerance (9). Yet, there is not a straightforward positive relationship between the strength of norms and the functioning of society as measured by life expectancy, gross domestic product (GDP) per capita, or political stability (10).

In this paper, we provide evidence that very strict prosocial norms are robustly associated with higher levels of antisocial behavior. In the highly controlled environment of the laboratory, we elicited behavioral measures for both injunctive norms of honesty and honesty itself among a sample of 1,098 students from 10 societies. The sampled societies are among the most culturally diverse, according to quantifiable measures of cultural distance (11), thus avoiding the sole reliance on western, educated, industrial, rich, and democratic samples (12). We show that those participants who perceive norms against dishonesty to be very strict—i.e., those who perceive any lie independent of its severity to be very socially unacceptable—are more likely to lie to the maximal possible extent. In contrast, those who perceive norms against dishonesty such that the social acceptability (SA) of dishonesty is decreasing in the severity of the lie are, on average, less likely to lie maximally.

This result goes against the conventional wisdom that stricter prosocial norms increase prosocial behavior. We therefore carefully checked whether this finding extrapolates to additional settings. We show that it is not tied to the specific laboratory procedure used to elicit injunctive norms. It holds for personal normative beliefs, which, in contrast to injunctive norms, do not rest on higher-order beliefs about socially appropriate behavior. It also holds employing the widely used civic-norms questions from the World Values Survey (WVS) (5, 13, 14) in a substantially enlarged and more diverse sample. The WVS civic-norms questions capture respondents' attitudes toward norms of honesty in ordinary situations, such as the justifiableness of tax evasion, claiming government benefits to which one is not entitled, or dodging public transportation fares. In a sample of 3,326 participants across 26 countries, we find that individuals who hold very strict attitudes toward civic norms are more likely to lie to the fullest extent.

Furthermore, we show that a similar relation exists across countries. This cross-country evidence rests on the representative samples of the WVS and the European

## Significance

Much of the research in the experimental and behavioral sciences finds that stronger prosocial norms lead to higher levels of prosocial behavior. Here, we show that very strict prosocial norms are negatively correlated with prosocial behavior. Using laboratory experiments on honesty, we demonstrate that individuals who hold very strict norms of honesty are more likely to lie to the maximal extent. Further, countries with a larger fraction of people with very strict civic norms have proportionally more societal-level rule violations. We show that our findings are consistent with a simple behavioral rationale. If perceived norms are so strict that they do not differentiate between small and large violations, then, conditional on a violation occurring, a large violation is individually optimal.

Author affiliations: <sup>a</sup>Department of Economics, Universidad del Rosario, Bogotá DC 111711, Colombia; <sup>b</sup>Economic Science Institute, Chapman University, Orange, CA 92866; <sup>c</sup>Department of Economics and Finance, Utah State University, Logan, UT 84322; <sup>d</sup>Center for Growth and Opportunity, Utah State University, Logan, UT 84322; <sup>e</sup>Department of Economics, Missouri State University, Springfield, MO 65897; and <sup>f</sup>Department of Economics, George Mason University, Fairfax, VA 22030

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<sup>1</sup>To whom correspondence may be addressed. Email: jonathan.schulz77@gmail.com.

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Value Survey (EVS). Based on the roughly 430,000 individual responses, we calculate the fraction of people who hold very strict attitudes toward civic norms for about 100 countries. We find that the higher the fraction of people with very strict civic attitudes in a given country, the higher the society-wide prevalence of rule violations (PRV), as measured by the level of corruption, electoral fraud, and the size of the shadow economy.

This robust relationship between very strict norms and antisocial behavior may seem surprising, since a vast body of research shows that social norms are powerful motivators of prosocial behavior (15–21). Our findings are largely consistent with this literature; we generally find that stricter norms are associated with prosocial behavior. Yet, it is those with very strict injunctive norms that display higher levels of dishonesty. This seemingly puzzling result is consistent with a simple behavioral rationale: People trade off their material benefits with the perceived psychological or social costs of violating the norm (see *SI Appendix, section S3.1* for a theoretical framework that formalizes this point). If a norm violator perceives a small transgression to be as socially unacceptable as a big one, then a big transgression that delivers higher material benefit (with no perceived increase in social or psychological costs) is the obvious choice. This contrasts with people who hold norms that take the extent or consequences of their dishonesty into account—i.e., who believe that a large violation is less socially acceptable than a small one. If the latter type decides to violate a norm, they are less likely to do so maximally. Consequently, in line with the theoretical model proposed by ref. 22, individuals who hold very strict norms will either fully conform to the social norm or completely ignore it, while individuals who take the consequences into account will tend to fall between these two extremes.

Several studies have documented individual heterogeneity in norm compliance, focusing on a dichotomous separation between complying or violating norms (21, 23), and other studies have shown that norm enforcement increases in the size of norm violations (5, 24). This study highlights the importance of not only focusing on the dichotomous separation between complying with or violating norms (the extensive margin), but to also consider heterogeneity in norm perceptions with regard to the extent (or consequences) of norm violations (the intensive margin). We find that it is those that perceive injunctive norms to be very strict or, borrowing terminology from moral philosophy, those with Kantian or Deontist norm perceptions that are more likely to commit large norm violations.

## Results

In laboratory experiments conducted among 1,098 undergraduate students from 10 culturally highly diverse countries, we elicited descriptive norms, injunctive norms, and lying behavior, among other things (see *Materials and Methods* and *SI Appendix, section S1* on the cross-societal methodology and subject-pool details). We used the Fischbacher & Föllmi-Heusi die-rolling task (25) to obtain a widely used behavioral measure of honesty (26). In this task, participants are asked to privately roll a 6-sided die and report the number rolled. They are paid according to the reported number, irrespective of the number they actually rolled. Reporting a 1 earned the participant 1 monetary unit (MU), reporting a 2 earned 2 MUs, and so on, with the exception that reporting a 6 earned the participant nothing. This creates a financial incentive to dishonestly report high-paying numbers: A payoff-maximizing participant would report the highest-paying number, 5. While by design, the reported numbers, and hence individual dishonesty, are not verifiable, aggregate outcomes reveal

the overall level of dishonest behavior within the group. Further, it has been shown that this task predicts rule violations and dishonesty in various domains outside the laboratory (27–32).

Consistent with previous findings (25, 26, 32–35), we find limited dishonesty in this task. Pooling all data, the mean reported payout is 3.38 MUs (or 67.8% of the maximal payout), which is statistically different from both the full-honesty benchmark of 2.5 MUs ( $t = 18.7, P < 0.0001$ ) and the full-dishonesty benchmark of 5 MUs ( $t = -34.4, P < 0.0001$ ). In line with the cross-societal study of Gächter and Schulz (32), we reject the hypothesis that the subsamples collected in each country are drawn from the same population (Kruskal–Wallis:  $\chi^2(9) = 21.77, P = 0.0097$  with ties) and verify that intrinsic honesty is negatively related to country-level PRV (*SI Appendix, Fig. S2*).

We followed Krupka and Weber (15) to elicit individual perceptions of the injunctive norms among the laboratory participants in a given experimental session. For each of the five possible die rolls that lead to nonmaximal payouts (i.e., where an advantageous lie is possible), we elicited participants' perceived social acceptability (SA) of reporting the truth and for reporting each possible payoff-increasing lie. That is, participants first considered a die roll of the 0-earning 6 and rated the SA of reporting the truth (i.e., the 0-earning die roll of 6) and of dishonestly reporting each of the payoff-increasing numbers (i.e., 1, 2, 3, 4, and 5). We then repeated this procedure for all cases in which advantageous lies are possible (die rolls of 1, 2, 3, and 4). Altogether, we elicited the SA of each of the 20 instances in which a participant could either tell the truth or tell a payoff-increasing lie (for details on design and instructions, see *Materials and Methods* and *SI Appendix, section 9.E*; there, we also detail why order effects are unlikely to bias our findings).

Participants were financially incentivized to choose the social appropriateness rating they believed that most other participants in their session would choose. Participants rated the social appropriateness on a 4-point scale ranging from “very socially inappropriate” (coded as  $-1$ ) to “very socially appropriate” (coded as  $+1$ ) following Krupka–Weber (see *Materials and Methods* for details). This incentive scheme thus relies on the shared perception of norms in eliciting higher-order normative beliefs. At the aggregate level, this coordination method captures a core property of an injunctive social norm: the collective perceptions regarding the degree of appropriateness of different behaviors. At the individual level, this task reveals participants' perceptions of injunctive norms of honesty (i.e., the perception on what is the shared belief on the social appropriateness of an action). Importantly, the elicitation reveals the perceived injunctive norm regarding not only the dichotomous choice between honesty or lies (the extensive margin), but also over the severity (measured by the financial consequences) of dishonesty (the intensive margin).

To operationalize the idea that norm perceptions differ across individuals and that those differences systematically translate into different lying behavior, we classified participants according to their perception of the prevailing injunctive norm into Deontists and Consequentialists. This type classification followed a simple algorithm that relied only on the choices of each individual in the Krupka–Weber task. Participants are coded as Deontists if their perceptions of the injunctive norms are such that lies are socially unacceptable and do not vary across the extent of a lie (i.e., the amount of money that is gained by a lie). Those participants who differentiate between the extent of the lie (i.e., the SA decreases in money gained by the lie) are coded as Consequentialists (see *Materials and Methods* for details). These terms reflect the intuitive relation of the perception of norms to theories in moral philosophy. Broadly, Deontists perceive norms in which a lie is

evaluated as right or wrong, independent of the extent of the lie. Consequentialists perceive norms that take into account the severity of a lie.

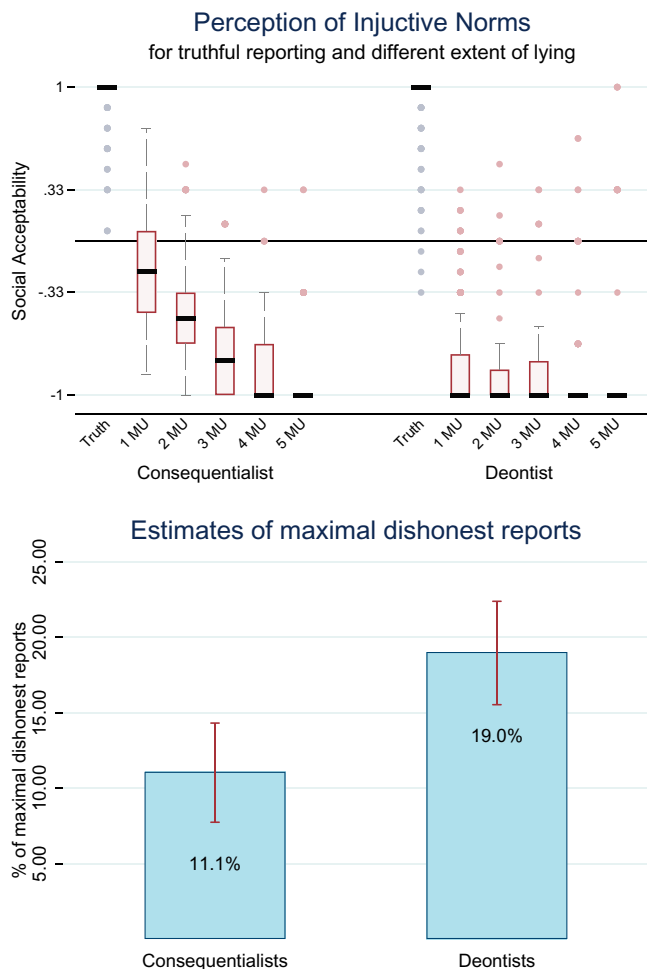
Importantly, our classification does not identify an individual's moral philosophy. Rather, we borrow the terms Deontist and Consequentialist for expositional convenience and use them solely to summarize the normative perceptions held by participants. To further illustrate this distinction, we detail a theoretical model in *SI Appendix, section S3.1* that demonstrates that, for both types, honest and dishonest behavior can be rationalized by using a simple utility framework. Crucially, our framework predicts that a Deontist would either lie maximally or not at all, while intermediate levels of dishonesty are likely for Consequentialists.

We classified 993 (90.4%) out of 1,098 participants as either Consequentialist ( $N = 563$ , 51.3%) or Deontist ( $N = 430$ , 39.2%). An additional 76 (6.9%) participants could be classified as normative egoists—i.e., their perceived injunctive norms suggest that it is more acceptable to lie than to tell the truth (since they represent a small fraction of participants, we relegate discussion of their behavior to *SI Appendix*). The remaining 2.6% do not fall into any of these categories.

Overall, Deontists rate lies as less socially acceptable compared to Consequentialists. Deontists' mean SA (MSA) of lying (i.e., the SA averaged over all 15 situations that entail a lie) is roughly  $-0.83$ , while it is roughly  $-0.55$  for Consequentialists ( $t = 17.65$ ,  $P < 0.001$ ). Fig. 1, *Upper* visualizes how injunctive norms regarding the extent of a lie are perceived by Consequentialists (left-hand side) and Deontists (right-hand side). Each box plot represents the SA of lying to a different extent; the first box plot reveals the acceptability of an honest report, the second of lying to gain 1 MU, the third of lying to gain 2 MUs, and so on until the last box plot, which shows the acceptability of lying to gain 5 MUs. The different perceptions of the two normative types is easily observed. Deontists perceive norms against dishonesty as very strict. They consider the smallest of lies as socially unacceptable, while Consequentialists barely perceive them as unacceptable. This gap in norm perceptions between the two types gradually closes and vanishes for the most severe lies.

Having classified individuals into types according to their perceptions of injunctive norms, we examine the behavior of the Consequentialist and Deontist types in the die-rolling task. Fig. 1, *Lower* shows the estimated percentage of maximally dishonest behavior of Consequentialists and Deontists. Deontists (i.e., those holding very strict norm perceptions) are more likely to lie maximally. We estimate that 19.02% (95% CI: 15.53–22.38%) of Deontists lie to the maximal extent, while only 11.08% (95% CI: 7.74–14.31%) of Consequentialists do so. These estimates are based on the Lying Calculator method (36), which takes into account the whole distribution of reported numbers (e.g., also that some participants truthfully report a 5). A similar picture emerges when we simply focus on the percent of people who reported the payoff-maximizing number 5. We find that 32.6% of Deontists report the maximal payout, compared to 25.9% of Consequentialists (Pearson  $\chi^2(1) = 5.22$ ,  $P = 0.022$ ).

In a regression analysis reported in *SI Appendix, Table S2*, we verify that this result holds within countries by including country fixed effects and controlling for socioeconomic demographics (age, sex, and relative income), as well as the perceived descriptive norms (i.e., a participant's beliefs about the other participants' dishonest behavior in his experimental session). In line with prior research, perceived descriptive norms (i.e., beliefs about others' behavior) are a strong predictor of behavior (16, 37, 38). At the same time, the coefficients for Deontists barely change when we control for perceived descriptive norms, suggesting that



**Fig. 1.** Normative type and maximal dishonesty. (*Upper*) Box plots of perceived injunctive norms over honest (blue) and dishonest (red) reports broken down by the extent of the lie (in MUs), for each of the two types. Each box plot summarizes the distribution of perceived degree of SA, ranging from  $-1$  (very socially inappropriate) to  $+1$  (very socially appropriate). (*Lower*) Estimated mean (and 95% CI) percentage of maximal lies for Consequentialist ( $N = 563$ ) and Deontist ( $N = 430$ ) types. Deontists are  $\sim 8$  percentage points more likely to lie to the maximal extent than Consequentialists.

descriptive and injunctive norms affect behavior independently. This is evidence against the notion that very strict injunctive norms reflect a demand induced by descriptive norms—i.e., by a high perceived level of rule violations and dishonesty.

We establish that Deontists are more likely to lie to the maximal extent possible, but do they lie less frequently overall? In *SI Appendix*, we provide evidence that the frequency of lies does not vary between the two types. Deontists are just as likely as Consequentialists to report one of the three high-paying numbers (3, 4, or 5; panel B of *SI Appendix, Table S3*). Consequently, the overall level of dishonesty tends to be higher among Deontists than Consequentialists (panel A, *SI Appendix, Table S3*). This reflects the fact that while the frequency of lying is similar across types, the lies of Deontists are more severe. Furthermore, Deontists tend to be less likely to report the 0-earning number 6 (panel C, *SI Appendix, Table S3*). This is consistent with the simple behavioral rationale; for Deontists, SA does not depend on the severity of the violation, and, therefore, marginal deterrence is absent. Since the financial gains from maximal dishonesty are largest in the situation in which the number 6 is rolled, this is the situation in which Deontists are most likely to lie and, since there is no marginal deterrence, to lie maximally.

One might worry that the behaviorally relevant aspect of norms is not so much perceived injunctive norms—i.e., higher-order beliefs about what constitutes the shared norm (elicited via Krupka–Weber)—but personal normative beliefs—i.e., people’s individual (first-order) beliefs regarding appropriate and inappropriate actions. Personal normative beliefs have been emphasized as a relevant aspect for behavior, and the literature on “pluralistic ignorance” provides examples where the privately held beliefs diverge from the perceived group norms (39–41). To address this concern, we elicited personal normative beliefs for the same 20 situations that entail either telling the truth or telling an advantageous lie. These beliefs were elicited for 621 participants in six countries (China, Colombia, India, Kenya, Pakistan, and the United States; for details, see *SI Appendix, section S4*). In *SI Appendix, section S4*, we show that in our setting, both perceived injunctive norms and personal normative beliefs are highly significantly related. For example, 84% of Deontists (classified according to their perceived injunctive norms) are also classified as Deontists when using their personal normative beliefs in place of their perceived injunctive norms. Classifying normative types based on personal normative beliefs also reveals that roughly 21% of Deontists lie maximally, while only roughly 10% of Consequentialists do so (*SI Appendix, Fig. S9*). Our main result thus extends from higher-order (perceived injunctive norms) to first-order (personal normative) beliefs.

### Strict Attitudes toward Civic Norms and Rule Violations

In the highly controlled environment of the laboratory, we show that people’s perceptions of injunctive norms vary and that Deontists are significantly more likely to lie maximally. Here, we show that these findings extend to attitudes toward civic norms of honesty that people encounter in their everyday lives. Namely, people who hold very strict attitudes toward civic norms are more likely to lie maximally in the die-rolling task. This holds in an enlarged sample of 3,326 participants from 26 culturally diverse countries. Additionally, countries with a higher fraction of people that hold very strict attitudes toward civic norms have a higher societal level of rule violations.

Based on the widely used civic-norms questions from the WVS (5, 13, 14), we created a binary Strict Civic Attitudes (SCA)

indicator that captures whether people hold very strict attitudes toward civic norms. The three underlying civic-norms questions ask respondents to rate how justifiable it is to cheat on public transportation, government benefits, and taxes on a 10-point scale. The SCA indicator takes the value of 1 if a person answered all three questions at the extreme—i.e., she considers norm violations in all three domains as “never justifiable”—and 0 otherwise. This contrasts with the conventional civic-norm indicator that typically averages over the answers to all three questions (5, 14).

Conceptually, there are differences between the SCA indicator and our classification of participants into Consequentialists and Deontists based on their responses in the Krupka–Weber elicitation of perceived injunctive norms. First, the civic-norms questions do not provide direct information on how an individual’s attitudes regarding norm violations depend on the severity of the violation. For example, the tax-evasion question does not capture the justifiableness of evading a large versus a small amount of taxes. Yet, attitudes regarding the severity of the norm violations are captured when jointly considering the answers to all three questions. For example, the financial consequences of cheating on public transportation will arguably be rather minor relative to tax evasion. A Deontist will therefore be more likely to answer all civic-norm questions at the extreme, while a Consequentialist may perceive cheating on public transportation as more justifiable. Second, while the civic-norm questions capture people’s personal attitude toward the justifiableness of an antisocial action, the Krupka–Weber design elicits perceptions of shared injunctive norms, which depend on higher-order beliefs regarding the other participants’ norm perceptions. Yet, personal normative beliefs (what respondents themselves think) and perceived injunctive norms are highly related in our setting (*SI Appendix, section S4*), mitigating concerns that the SCA is a bad proxy for normative types.

Ultimately, we are able to assess the relationship between normative types and the SCA empirically by relating the normative types to how they answered the civic-norms question in the postexperimental questionnaire; Deontists are almost twice as likely to hold SCA compared to Consequentialists ( $\chi^2(3, N = 988) = 44.9259, P < 0.001$ ; see also *SI Appendix, Fig. S8*). This finding thus experimentally validates the SCA as a proxy for people holding Deontist norm perception.

**Table 1. Strict Civic Attitudes (SCA) and Cheating**

Variables	Reporting maximal payouts (individual-level data)					PRV (country level)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SCA	0.037** [0.007, 0.067]	0.108*** [0.068, 0.150]	0.088*** [0.048, 0.130]	0.073*** [0.028, 0.116]	0.071*** [0.023, 0.113]	1.105 [−0.960, 3.171]	8.399*** [2.699, 14.098]
Average civic attitudes		−0.030*** [−0.041, −0.017]	−0.027*** [−0.040, −0.013]	−0.025*** [−0.037, −0.011]	−0.026*** [−0.038, −0.010]		−2.292*** [−3.768, −0.815]
Country fixed effects	No	No	Yes	Yes	Yes	—	—
Descriptive norms	No	No	No	Yes	Yes	—	—
Additional controls	No	No	No	No	Yes	—	—
N	3,326	3,326	3,326	2,435	2,424	94	94
Clusters	26	26	26	21	21		

Columns 1–5 report individual-level regressions. The dependent variable is a dummy variable that captures whether a participant reported the maximal payout in the laboratory cheating task. SCA is a dummy that takes a value of one if respondents answered all three civic-norms questions at the extreme, indicating that it is never justifiable to violate civic norms. Columns 2–5 add Average Civic Attitudes, which is the conventional indicator based on the average justifiableness of civic-norm violations across all three civic-norm questions. Columns 3–5 add country fixed effects. Columns 4 and 5 add perceived descriptive norm (an individual’s expectation on the distribution of reported numbers). Column 5 includes socioeconomic controls (age, gender, and relative income). The 95% CIs (reported in square brackets) and significance levels are based on wild cluster bootstrap. Columns 6 and 7 report country-level regressions. The dependent variable is PRV, which captures a country’s level of electoral fraud, corruption, and the size of the shadow economy. SCA denotes the fraction of people in a country that hold strict attitudes toward civic norms, while Average Civic Attitudes is the conventional civic-norm indicator that averages over all responses to the three civic-norms questions in a given country. The 95% CIs (reported in square brackets) and significance levels are based on robust SEs. \*\* $P < 0.05$ ; \*\*\* $P < 0.01$ .

Columns 1–5 of Table 1 report estimates of individual-level linear probability models, in which we regress maximal dishonesty (whether participants reported the payoff-maximizing number 5) on the SCA (columns 1–5). Our behavioral sample consists of 3,326 participants from 26 countries. We achieve the increase in sample size by adding the full dataset of Gächter and Schulz (32) plus additional data obtained in sessions in India, Kenya, and the United States. The SCA is calculated based on participants' responses to the postexperimental questionnaire. Control variables are the conventional civic-norms indicator, which we denote Average Civic Attitudes (columns 2–5), country fixed effects (columns 3–5), individuals' perceived descriptive norms (for the 20 countries in which we elicited them; columns 4 and 5), and socioeconomic demographics (age, gender, and relative income; column 5).

The findings in this enlarged behavioral sample paint a consistent picture. Participants with very strict attitudes toward civic norms (SCA = 1) are roughly 4% more likely to report the payoff-maximizing number compared to all other participants (column 1). This comparison ignores that among those other participants, attitudes toward civic norms vary and that—apart from those with very strict attitudes—we generally expect a positive relation between the strength of civic attitudes and honesty. Our preferred specifications, therefore, are the ones that control for Average Civic Attitudes (columns 2–5). The regression results reveal that the coefficients for Average Civic Attitudes are negative and highly significant. At the same time, the coefficient for SCA substantially increases. This reflects a discontinuity in the relation between attitudes toward civic norms and dishonesty. Those with very strict attitudes toward civic norms are about 11 percentage points more likely to report the payoff-maximizing number 5 compared to those that report only somewhat weaker attitudes toward civic norms. *SI Appendix, Fig. S11* visually confirms this discontinuity. There is a positive relation between the strength of civic attitudes and honesty, except for those participants who hold very strict attitudes toward civic norms. They are more likely to cheat to the maximal extent possible.

The regression results hold when we solely focus on variation within countries (column 3) and when controlling for perceived descriptive norms and demographics (columns 4 and 5). In *SI Appendix*, we show that the results carry over to claimed payoffs (which captures the overall costs due to dishonesty) and the 0-earning number 6. People with very strict attitudes toward norms of honesty claim significantly higher payments overall and are less likely to report the number 6 (*SI Appendix, Table S4*).

A similar relation between strict attitudes toward civic norms and rule violations holds across countries. Columns 6 and 7 of Table 1 report cross-country regressions. There, we regress countries' PRV on the fraction of people with SCA. The PRV is a composite index that captures the degree of electoral fraud, corruption, and the size of the shadow economy (32). The fraction of people who hold very strict attitudes toward civic norms is based on the representative samples of the WVS and EVS. In column 6, the coefficient of the fraction of SCA is positive, even though it is not significant. Again, however, the specification in column 6 disguises the nonlinear relation between the strength of norms and PRV. Our preferred specification is reported in column 7. In this specification, we also control for Average Civic Attitudes—the conventional civic-norms measure that averages over all three answers. Controlling for Average Civic Attitudes substantially increases the coefficients for SCA—i.e., a 10-percentage-point higher fraction of people with SCA is associated with a 0.8-SD higher PRV, while at the same time, higher Average Civic Attitudes are highly significantly negatively associated

with countries' PRV. This relation is robust to the inclusion of further geographic covariates (*SI Appendix, Table S7*). The relation similarly exists, though, as expected with negative signs, when we use honesty [as measured by the Lost-Wallet experiment of Cohn et al. (33)] or the log of GDP per capita as the dependent variable (*SI Appendix, Table S7*).

We also checked the relation between societal-level PRV and the fraction of Deontists for the 10 societies in which we conducted our laboratory experiments to elicit the perceived injunctive norms via the Krupka–Weber design. Consistent with the SCA cross-country results, we find a weakly significant positive and quantitatively large relation between the fraction of Deontist and PRV, even though the 10-country sample is small (*SI Appendix, Fig. S5*).

The cross-country findings suggest that the behavioral relation—very strict norms are associated with a higher PRV—has real-world relevance outside the laboratory. Yet, while our results are robust to the inclusion of covariates, it is clear that our data do not establish a causal link between SCA and a country's PRV. Rather, our aim is to provide robust correlative evidence that there is a puzzling nonmonotonic relationship between stricter prosocial civic norms and individual-level honesty, which similarly exists for indices of societal-level well-being, such as GDP per capita, control of corruption, and PRV; and that this relationship is consistent with a simple behavioral rationale. Clearly, many factors at both the country and individual level shape norms and behavior related to impersonal rule following. Such factors likely include the quality of institutions, culture, and geography, as well as individual experiences related to natural disasters or other adverse events (3, 42–51) that can endure over time through the vertical transmission of norms and values. In our data, we find that the strength of family ties (52) and religiousness at the individual level are robust predictors of SCA (*SI Appendix, Table S5*). Across countries, kinship intensity, which captures the strength and cohesion of extended kin groups (45), is a robust predictor of the fraction of people holding very strict attitudes toward civic norms (*SI Appendix, Table S6*).

## Conclusion

In this study, we show that very strict prosocial norms can be negatively related to prosocial behavior. In a sample of 3,326 experimental participants from 26 countries, we show that those who hold very strict attitudes toward civic norms are more likely to lie to the maximal extent possible. For all others who do not hold such strict attitudes, consistent with much of the literature, we find a positive relationship between the strength of social norms and prosocial behavior.

A similar relationship holds across countries. Namely, countries with a higher fraction of people who hold strict attitudes toward civic norms are characterized by a higher societal-level PRV. At the same time, consistent with the literature, average civic attitudes in a country are negatively correlated with the level of rule violations. This provides some evidence that not only weak prosocial norms are detrimental for the flourishing of societies, but also very strict prosocial norms.

We provide laboratory evidence that this finding can be reconciled with a simple behavioral rationale. For individuals who perceive norms such that they do not vary with the severity of the norm violation, there is no reason to refrain from violating the norm to the fullest extent, conditional on violating the norm at all. Violating the norm to the fullest extent yields the highest material benefits possible, while there is no increase in the perceived social and psychological costs associated with the norm violations. In an

experimental setting, we elicited injunctive norms via the Krupka–Weber design that allow us to capture the SA of the extent of norm violations. We classified individuals as Deontists—those who view any lie as socially unacceptable and do not differentiate across the extent of the violation—and as Consequentialists—those who take the extent of the violation into account. In line with the aforementioned simple behavioral rationale, Deontists were more likely to lie to the maximal extent possible.

This finding is related to the literature in economics on the optimal enforcement of laws (53). This literature argues for the importance of marginal deterrence—i.e., if the law does not differentiate between the severity of a violation, it does not provide optimal deterrence. Here, we show that this reasoning can also be applied to social norms, even in the absence of formal enforcement or sanctions, as individuals internalize the cost of norm violations.

Social norms have been increasingly identified as a key factor governing the interactions between people and the flourishing of societies by promoting prosocial, fair-minded behavior and large-scale cooperation. Our findings have important implications to better understand the role of norms for behavior and societal-level outcomes. We provide evidence that there is not a simple monotonic positive relation between the strength of prosocial norms and prosocial behavior. Just like weak prosocial norms, norms that are very strict may have detrimental effects on prosocial behavior.

## Materials and Methods

We conducted 67 laboratory experimental sessions across 11 subject pools in 10 countries (China, Colombia, Guatemala, India, Kenya, Pakistan, Sweden, Turkey, the United Kingdom, and the United States), in which we elicited perceived injunctive norms. A total of 1,186 subjects participated in our experimental sessions. Data were collected by using z-Tree (54) in computer laboratories with dividers to ensure privacy. To be consistent across our analyses, we discarded 88 students from the analysis because they were not national citizens in the country where the session took place. Our main analyses thus rest on 1,098 college students who participated in three experimental tasks.

First, students took part in the widely used die-rolling task in ref. 25. In this task, subjects roll a die in private and self-report the outcome and corresponding monetary payment. The payoff-maximizing incentive is to report the outcome that corresponds with the maximal payout, regardless of the true outcome—that is, to lie. We adjusted earnings across laboratories to roughly account for purchasing power (SI Appendix).

Second, we elicited perceived descriptive norms. Subjects earned money based on how accurately they guessed the behavior of others in their session—that is, how accurately they guessed the distribution of self-reported die rolls of all subjects in their session. The incentivization followed ref. 25. Subjects received 5 MUs if they guessed the distribution correctly and were penalized linearly for deviations from the true distribution. Given the results of ref. 55, it is possible that individuals distort their beliefs in this task, or it is possible that the causal effect goes in the other direction (i.e., false consensus effect); thus, in our analyses, we only use this as a control variable.

Third, we elicited perceived injunctive norms via the Krupka–Weber design (15). This task relies on a coordination game to elicit the perceived (shared) expectations (56, 57) of normative appropriateness. In this task, subjects have the incentive to match the modal response regarding SA or appropriateness of actions in different situations. For our task, we examined all (20) possible situations that involved either truthful reporting or advantageous false reporting for any of the five instances where the true outcome of the die roll was not the payoff-maximizing one. We were only interested in advantageous lies since, arguably, this is empirically more common. Although ref. 58 finds that Franciscan nuns do make reports that suggest disadvantageous lying, this seems to be the exception. The authors of ref. 27 use a Bluetooth-enabled die that allows them to unobtrusively observe the true outcome of the roll. According to ref. 36, disadvantageous lying occurred “only in 9 cases out of 2,880 (0.3%)” in ref. 27.

As it is common practice in this literature, we followed the original Krupka–Weber design (15) and paid out 1 randomly selected situation (out of all 20). Paying only one situation mitigates concerns about wealth and portfolio effects, and both theoretical and empirical literature suggest that this design choice is unlikely to give rise to issues of incentive compatibility (59, 60). Furthermore, 20 situations is a rather modest number of elicitations—e.g., compared to the original Krupka–Weber design, which used 54 norm-related questions, mitigating issues of incentive-compatibility further.

Even though we elicit injunctive norms after we elicited lying behavior in a within-subject design, it is unlikely that order effects pose a problem for our findings. D’Adda et al. (61) specifically tested for order effects in tasks involving the Krupka–Weber design and find no evidence for it. Similarly, ref. 55 finds no belief distortion with regard to normative expectations (perceived injunctive norms) regarding dishonesty. Furthermore, even if social- or self-image concerns were to influence norm elicitation, this would likely work against our main finding: A person cheating to the maximal extent possible and driven by image concerns would be more likely to state that she perceives the injunctive norms against dishonesty as weak. In this way, she could affirm the image that she does not break a norm.

Fourth, in addition to an unrelated task not reported in this paper, we elicited personal normative beliefs in a subset of six countries among 621 participants. The procedures were analogous to the Krupka–Weber design, except that this time, participants were not incentivized to state what they believe most other participants would answer. Rather, they received a lump-sum payment and were asked to simply state how socially acceptable they (themselves) find each of the 20 possible situations (SI Appendix, Section S4).

**Classification Algorithm.** To classify individuals into Deontists and Consequentialists, we focus on variation in perceived injunctive norms across the extent of a lie. For each individual, we have elicited the SA of 20 different possible actions via the Krupka–Weber task. Following their design, we code each action as  $-1$  (very socially inappropriate),  $-1/3$  (somewhat socially inappropriate),  $+1/3$  (somewhat socially appropriate), and  $+1$  (very socially appropriate). This allows us to estimate the following specification for each individual:

$$SA_{j,s} = \alpha + \beta \cdot Extent_j + \gamma \cdot Situation_s + \delta \cdot Truth_s + \epsilon,$$

where  $SA_{j,s}$  denotes the SA of one of the five situations  $s$  (rolling [0-earning] 6, 1, 2, 3, or 4) and  $j$  denotes the extent of a lie in reporting an outcome (i.e., whether a person advantageously overreports the die roll by 1, 2, etc.). In the regression, we control for the extent of the lie being considered ( $Extent_j$ ), the situation ( $Situation_s$ ), and whether the situation involves truth telling ( $Truth_s$ ).

We rely on the regression estimates of the coefficient  $\beta$  to classify individuals based on the extent of a lie. We impose additional restrictions based on the mean social acceptability (MSA) to ensure that our types correspond to our conceptual framework. Specifically, each individual is classified into types, according to the following criteria:

- Consequentialist type if  $\beta < 0$  (significant at least at the 10% level) and the MSA of reporting a lie is lower than the MSA of reporting the truth.
- Deontist type if  $\beta = 0$  or is not significantly different from 0 at the 10% level and the MSA of reporting the truth is greater than 0, while the MSA of reporting a lie is negative.
- Normative Egoist type if  $\beta > 0$  (significant at least at the 10% level) or  $\beta = 0$  and the MSA of reporting a lie is greater than the MSA of reporting the truth.

According to our algorithm, we are able to classify 1,069 out of the 1,098 (>97.3%) participants into one of these three types. Out of the individuals we are able to classify, most have either Consequentialist (52.7%) or Deontist (40.2%) normative expectations. The resulting classification shows no difference in SA across these two types in reporting the truth in the worst possible die roll (a 0-paying outcome). It is considered as highly socially appropriate for both Consequentialist (MSA = 0.972, median and modal SA = 1) and Deontist (MSA = 0.954, median and modal SA = 1) types. In contrast, it is considered inappropriate for Normative Egoist types (MSA =  $-0.254$ , median and modal SA =  $-1$ ) and somewhat appropriate for “other” types (MSA = 0.593, median and modal SA = 1). We also consider the other end of the spectrum, which is

lying to the maximal extent (i.e., reporting a payoff-maximizing die roll of 5 MUs when the true outcome earned 0 MUs). Here, both Consequentialists (MSA =  $-0.982$ ) and Deontists (MSA =  $-0.823$ ) perceive the action to be very socially inappropriate; the median and modal evaluation for both types is SA =  $-1$ . The main difference between Consequentialist and Deontist types is evident in the degree of perceived social inappropriateness of “small” versus “big” lies. For Consequentialists, the smallest lie (misreporting by 1 MU) is, on average, barely socially inappropriate (MSA =  $-0.17$ , with median SA =  $-0.20$  and mode of SA =  $-0.33$ ), while for Deontists, they are as inappropriate as the maximal lie (MSA =  $-0.823$ , median and modal evaluations of SA =  $-1$ ). As the magnitude of the misreported payout increases, the degree of social inappropriateness increases for Consequentialists, while it remains practically the same for Deontists.

**Ethics Approval.** This study was approved by the Research Ethics Committees at the Nottingham School of Economics; the Centre for Experimental Social Sciences in Nuffield, Oxford; and the Universidad del Rosario. All subjects provided informed consent. We have complied with all relevant ethical regulations.

**Data Availability.** The anonymized data and code files to replicate the results of the paper have been deposited at OSF (<https://osf.io/65bqrl/>) (62).

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