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Discussion Paper No. 2016-06

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June 2016

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CeDEx Discussion Paper Series
ISSN 1749 - 3293

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Deliberation favors social efficiency by helping people disregard their relative shares: Evidence from US and India

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Keywords: efficiency, equality, dual process models, intuition, deliberation

Abstract

Groups make decisions on both the production and the distribution of resources. These decisions typically involve a tension between increasing the total level of group resources (i.e. social efficiency) and distributing these resources among group members (i.e. individuals' relative shares). This is the case because the redistribution process may destroy part of the resources, thus resulting in socially inefficient allocations. Here we apply a dual-process approach to understand the cognitive underpinnings of this fundamental tension. We conducted a set of experiments to examine the extent to which different allocation decisions respond to intuition or deliberation. In a newly developed approach, we assess intuition and deliberation at both the trait level (using the Cognitive Reflection Test, henceforth CRT) and the state level (through the experimental manipulation of response times). To test for robustness, experiments were conducted in two countries: the US and India. Despite aggregate differences across countries, in both locations and at both levels of analysis, we show that: (i) time pressure and low CRT scores are associated with individuals' concerns for their relative shares; (ii) time delay and high CRT scores are associated with individuals' concerns for social efficiency. These findings demonstrate that deliberation favors social efficiency by overriding individuals' intuitive tendency to focus on relative shares.

Introduction

Groups of individuals, from small-scale societies to large modern organizations, are typically involved in both the production and the distribution of resources (1, 2). Because the distribution process may result in the destruction of part of the resources, there often exists a fundamental conflict between the concern for total group resources (i.e. "social efficiency") and the concern for group members' relative shares of the group resources.

The conflict between equality and efficiency has indeed traditionally been at the center of the debate in distributive justice and social choice theory (1-4). Less attention has been paid, however, to "antisocial" concerns such as spitefulness which, like concerns for equality (egalitarianism), also relate to individuals' relative payoffs. Egalitarianism refers to a motivation for reducing payoff differences among individuals whereas spitefulness refers to an individual's willingness to maximize the difference between her own payoff and that of others (5-7). Thus, both egalitarian and spiteful motives may lead an individual to actively change the group members' relative shares even if the resulting distribution wastes resources and is thus socially inefficient. Efficiency, egalitarian and spiteful motives may not only conflict with each other but also with self-interest. Yet, people are frequently willing to forego personal gain in order to increase group resources, equalize payoffs or maximize their relative share.

When faced with allocation decisions in which conflicts between social motives may arise, different individuals often act according to different social preferences (5, 8-15). However, little is known about where these individual differences in social preferences come from; and little is known either on whether such preferences can be exogenously manipulated. Our study aims at answering these questions following a dual-process approach.

Dual-process theories assume that human decisions result from the interaction between two cognitive systems, one that is fast, intuitive, and relatively effortless, and one that is slow, deliberative, and relatively effortful (i.e. the so-called systems 1 and 2 (16-19)). The use of a dual-process lens raises the following general question: given a decision conflict, which option is favored by the intuitive system? Which one is favored by the deliberative system? Classifying social decisions as intuitive or deliberative is fundamental for our understanding of human nature. From a practical viewpoint, this will also allow us to design institutions that encourage certain social behaviors and discourage others (20, 21).

Regarding our research question, there is evidence that equality concerns are associated to intuitive emotional processing (4, 22, 23) and that deliberation promotes utilitarian choices that favor "social efficiency" (e.g. save five lives at the expense of one) in moral dilemmas (24-28). In addition, recent trait-level research conducted in the US and Spain shows that individuals with a more intuitive cognitive style are more likely to choose options that either equalize payoffs between themselves and others (i.e. egalitarian choices) or maximize their own payoff relative to their counterparts (i.e. spiteful choices); by contrast, a more deliberative cognitive style is related to choices that increase the counterparts' payoffs at a *very low* cost for the decision maker thus promoting social efficiency (12, 29). Relatedly, in contest experiments, more intuitive

individuals have been found be more willing to "spitefully" overbid in order to outcompete their counterparts (30).

Based upon this evidence, we hypothesized that when faced with social allocation decisions, people's first impulse is to care about the relative share each individual gets (in either an egalitarian or spiteful manner) whereas deliberation helps override this tendency and preserve social efficiency. Our hypothesis is thus that decisions which rely on intuition are more likely to be driven by the consideration of people's relative payoffs and less likely to be driven by social efficiency concerns. By contrast, deliberative choices are more likely to disregard relative payoffs in favor of social efficiency. In this paper, we test this hypothesis by adopting a novel approach that captures the effect of intuition and deliberation on individuals' social choices at both the trait and the state level. Moreover, to check for robustness, we gathered data from two different countries: the US and India.

Specifically, we design an online experiment in which participants from the US and India are asked to make a series of six simple, cognitively undemanding decisions about real monetary allocations between themselves and another anonymous participant (12, 31). Looking at individuals' consistency across decisions, we can classify their choices into three categories of social preferences (5): (social) efficiency, egalitarian and spiteful. For each category, we use two alternative definitions: one "model-based" definition, based on a generalized version of the Fehr & Schmidt (9) model of social preferences; and one "choice-based" definition, based on the number of choices which are consistent with a particular preference. In addition to these social motives, we also consider self-interest as an essential motivation when dealing with material resources. For self-interest, both definitions result in the same allocation decisions (see Materials and Methods for further details).

For the assessment of the role of intuitive vs. deliberative systems in decision making we adopt two strategies. On the one hand, we conducted a *trait-level* analysis by comparing the distribution of social motives between subjects who score low on an updated version of the extended Cognitive Reflection Test (CRT) (32, 33) and those who score high. The CRT consists of a set of questions that all have an intuitive, yet incorrect, answer that should be first ignored to be able to obtain the correct answer. Thus, CRT scores provide a measure of people's ability to suppress automatic/intuitive responses in favor of reflective/deliberative ones. Since answering correctly the CRT requires basic numerical ability apart from reflection, we added a Numeracy Test in order to account for this possible confound (34, 35). On the other hand, we conducted a *state-level* analysis by manipulating participants' cognitive mode using time constraints. Specifically, previous research has argued that time pressure makes people more likely to rely on intuitions (17, 36, 37). By comparing subjects forced to decide in less than 5 seconds (i.e. *time pressure* condition) with those forced to stop and think through their decision for at least 15 seconds (i.e. *time delay* condition) we could (a) further support the results of the trait-level correlational analysis, and (b) establish a causal link between cognitive reflection and social motives (see Materials and Methods).

As mentioned, our experiments were conducted using populations from the US and India. Previous research suggests that good institutions can foster social norms that spill over to citizens' everyday behavior (38, 39). Since the US and India score very differently in corruption

indexes (40, 41), one may expect that residents in these two countries have developed different preferences. Indeed, behavioral studies show that residents in India are less cooperative (42) and more spiteful (43) than residents in the US. Thus, these two locations represent interesting robustness checks.

Results

CRT and Social Motives

For the trait-level analysis we assess subjects' cognitive style, intuitive vs. deliberative, using the CRT and study their decisions when there is no time restriction for decision making, i.e. the *neutral* condition (US, n=116; India, n=76). In panel A of Figures 1 to 4, we display the proportion of subjects whose choices can be classified according to the aforementioned four social motive categories – social efficiency, egalitarianism, spitefulness and self-interest, respectively –, broken down into below- and above-median CRT scores. We find that the relationship between CRT scores and social motives is substantial and remarkably similar across countries with the exception of the choice-based egalitarian measure. Our regression analysis indeed shows that, for either definition, CRT score (ranging from 0 to 7) is a significant (or marginally significant) predictor of all the categories (Probit regressions controlling for age and gender (32, 44); see Panel A in Tables S1 to S4 in the Supplementary Information (SI)) and the interaction between country and CRT is only marginally significant for the choice-based egalitarian variable ($p=0.06$; all the remaining p's>0.15; see panel A in Tables S5 to S8). Specifically, higher CRT scores predict a significantly lower likelihood of being classified as egalitarian and spiteful (all p's<0.02), but a higher likelihood of belonging to the social efficiency (both p's<0.01) and self-interest categories ($p=0.07$). Regarding the only variable where the effect of CRT marginally differs across countries, i.e. choice-based egalitarianism, a joint-significance Wald test on the interaction coefficients reveals that the relationship is significant for the US ($p<0.01$) but not for India ($p=0.56$).

We observe some significant differences between countries. In particular, residents in India are less likely to be classified as "socially efficient" than residents in the US ($p=0.07$ and $p=0.03$ for the model-based and choice-based definitions, respectively). In the case of egalitarianism, the model-based definition yields a marginally significant difference ($p=0.06$) but the choice-based one does not ($p=0.93$). Moreover, the coefficients of the country variable are of opposite sign in the two regressions. Therefore, we treat the difference on egalitarianism with caution. Regarding spitefulness, in line with Fehr et al. (43), we find that residents in India are significantly more spiteful than residents in the US according to the choice-based definition ($p<0.01$), although not significantly so according to the model-based definition ($p=0.33$; note that the likelihood of finding a significant difference might have been reduced due to the fact that the model-based definition only classifies 9% of subjects as spiteful).

Importantly, when including both numeracy skills and CRT scores as predictors, numeracy is significant in only one out of seven cases, i.e. choice-based social efficiency ($p=0.03$; all remaining p's>0.11; see Table S9), indicating that numeracy is unlikely to act as a mediator

in the relationship between CRT and social motives. In contrast, CRT remains significant in all (p's<0.04) but one regression. The only exception is the model-based spitefulness category, in which CRT turns non-significant ($p=0.33$). Yet, using the choice-based definition of spitefulness, the significant effect of CRT is robust to controlling for numeracy. Thus the effect of CRT on social motives seems to be related to trait reflectiveness and not to numeracy skills.

Therefore, we conclude that, across countries, high cognitive reflection is characteristic of those individuals motivated by social efficiency and, to a lesser extent, by self-interest, but uncharacteristic of individuals whose choices reflect either egalitarian or spiteful motives. These results are thus consistent with previous findings (12, 29). In sum, the trait-level analysis largely supports our hypothesis that deliberation favors social efficiency by overriding the individuals' intuitive tendency to care for the relative share each person gets.

Response Times Manipulation and Social Motives

Panel B in Figures 1 to 4 displays the social motive classification for each experimental condition (time pressure and time delay; US: n=97 and n=87; India: n=63 and n=69, respectively) for both the US and the India samples. The results of the regression analysis are shown in Panel B of Tables S1 to S4. We observe that the direction of the effect of the time condition is the same across countries except for the case of self-interest. The effect of time delay (vs. time pressure) is significantly positive for both social efficiency variables (both p's<0.01; see Panel B in Table S1). In the case of egalitarianism and spitefulness, the effect of time delay is negative and significant for the model-based egalitarian and choice-based spiteful definitions (both p's<0.01). This effect is also negative for the choice-based egalitarian and model-based spiteful definitions but not significant (both p's>0.31). The time manipulation does not exert a significant effect on self-interest ($p=0.83$). As shown in Tables S5 to S8 (panel B), the interaction between condition and country is never significant (all p's>0.19).

Since subjects' level of experience in similar experiments has been shown to moderate the effect of response time manipulations on behavior in social dilemmas (42, 45, 46), we isolated the role of subjects' experience. When we restrict the sample to inexperienced subjects (n=100), the effect of time delay on self-interest becomes similar across countries (see Panel C in Figures 1 to 4). In the inexperienced sample, time delay exerts a marginally significant positive effect on self-interest ($p=0.06$, Panel C in Table S4), whereas the rest of the results remain qualitatively unaffected (panel C in Tables S1 to S3) except for choice-based social efficiency, which loses its significance ($p=0.17$). The interaction terms between condition and country keep being non-significant (p's>0.36; see Tables S5 to S8, panel C) except for choice-based social efficiency ($p=0.06$). A Wald test reveals that the effect of time delay on choice-based social efficiency is significantly positive for the US sample ($p=0.03$) but non-significant for the India sample ($p=0.68$).

Thus, at the state level of analysis, the results are also consistent with our hypothesis that deliberation increases concerns for social efficiency by overriding individuals' intuitive tendency to focus on their relative shares.

Regarding differences between countries, residents in India are more likely than residents in the US to be classified as spiteful (p's<0.01 in both the whole and the inexperienced sample) and less likely to favor social efficiency (except for the model-based definition in the inexperienced sample, $p=0.22$, the country variable is significant in all cases, p's<0.05). This is also in line with the results previously described.

Discussion

Across two different countries and at both the trait and the state levels of analysis, we found strong evidence that: (i) intuition promotes individuals' concern for relative payoffs (egalitarian and spiteful choices) and (ii) deliberation promotes individuals' concern for social efficiency. Our results suggest that, as hypothesized, deliberation favors social efficiency by overriding the intuitive tendency of individuals to be driven by distributive concerns.

These findings are particularly interesting since the relationship between group resources and the way they are to be shared has been a continuing source of debate within distributive justice and social choice theory (1-4). Our data suggest that people's reliance on either intuitive or deliberative decision making affects the extent to which distributive or efficiency concerns dominate. These results are consistent with previous research showing that deliberation favors utilitarian judgments in moral dilemmas (24-28), that equality concerns are rooted in intuitive emotional processing (4, 22, 23), and that fairness is intuitive (47, 48). Our evidence qualifies previous findings by showing that it is not only egalitarianism *per se* but, more generally, the concern for individuals' relative payoffs that responds to intuition.

In addition, we find some indication that deliberation (high CRT scores and time delay – among inexperienced subjects only) may lead to more self-interested decision making. This result is in line with previous research suggesting that deliberation makes people pursue strategies that maximize their material payoffs (45, 49-52). However, this result does not hold in the state-level analysis using the whole sample (both inexperienced and experienced subjects), which may have been due to the fact that experience blurs the effect of cognitive manipulations (42, 45, 46, 53, 54). Understanding whether deliberation promotes self-interested choices and the extent to which previous experience moderates these effects are important questions for future research. Note also here that both social efficiency and self-interest have to do with absolute payoffs (for the group and the self, respectively). Thus, an interpretation of our findings might be that people make relative comparisons intuitively but need deliberation to focus on absolute values. Future research should explore this possibility in greater detail, within and beyond the social domain.

Related experiments on one-shot social dilemmas suggest that the decision to cooperate is intuitive whereas further deliberation leads individuals to free-ride on the efforts of others (45, 49, 55). However, although cooperation is socially efficient in social dilemmas, the decision to cooperate could also stem from egalitarian and reciprocal concerns depending on the players' expectations about others' behavior. In addition, free-riding is socially inefficient but can result from self-interested, egalitarian, spiteful or reciprocal motives (5,

8, 12, 13). Thus, if social efficiency concerns (and probably self-interest) require deliberation while egalitarian and spiteful motives, as well as reciprocity (54), respond to intuition, the net effect of promoting intuition vs. deliberation on social dilemma behavior is not straightforward. This could partially explain why a number of studies have failed to find consistent effects or have even yielded conflicting results (46, 56-60).

Regarding differences between countries, we have shown that Indians are in general more likely than Americans to be classified as spiteful and less likely to be classified as socially efficient. These results are consistent with previous research suggesting that India residents are more spiteful (43) and less cooperative (42) than US residents. In addition, this observation adds support to the robustness of our main findings since the observed effects (both at the trait and state level) are remarkably similar across countries, regardless of being two societies with seemingly different social preferences at the aggregate level.

Moreover, the differences observed between our experimental treatments indicate that individuals' social motives can be, at least partially, exogenously manipulated. This may have important implications for the design of mechanisms and institutions aimed at promoting certain social or behavioral outcomes. Future state-level investigations should also go beyond time constraints. The use of time constraints, instead of other cognitive manipulations (such as cognitive load, ego-depletion, or conceptual priming), was motivated by the observation that many social and economic interactions require people to make decisions as quickly as possible. Traders and last-minute bidders, for example, have to make decisions within seconds after new information is acquired (61-63). Also, social interactions often require quick decision making, for example, because deliberating may be met with distrust by observers (64-67). Many social and economic interactions also occur when people are hungry or thirsty, or when they have experienced fatigue, suggesting that cognitive load or ego depletion are particularly relevant manipulations. Since these factors have been shown to impair deliberative processing and affect behavior in a number of situations (68-71), it would be fruitful to extend our analysis to these other cognitive manipulations.

Finally, in this study and for the sake of focusing on the conflict between total and relative payoffs, we have analyzed social efficiency, egalitarian and spiteful motives. Indeed, previous research emphasizes the relevance of this categorization (5, 8, 10). However, other social motives have been considered in the literature, such as hyper-altruism (i.e. weighting the other's payoff more than one's own (72-74)) and extreme altruism (risking one's own life to save someone else's (75)). Further research may use a different set of decision problems to classify these other motives.

Materials and methods

Design and procedure

We conducted the experiments with participants from the US and India using monetary incentives. The stakes for the experiment conducted with Indian participants were one third of the stakes in the experiment with US participants (expressed in Indian Rupees and US dollars, respectively). This was done to equate the purchasing power of participants' payments in both countries according to the latest data from the World Bank

(http://data.worldbank.org/indicator/PA.NUS.PPPC.RF). Since the two studies differed only with regards to the monetary incentives, we report here only the details about the experimental procedure used with the US subjects.

Subjects were recruited using Amazon Mechanical Turk (76-80) and earned $0.90 for participating in a 15-minute (mean=23, median=16) study. In addition, they received an extra payment depending on their performance during the experiment. See the Supplementary Information (SI) for full experimental instructions.

After entering their MTurk ID, participants were randomly assigned to one of three conditions: *neutral*, *time pressure* or *time delay*. In each condition, participants were asked to make six binary decisions about how to allocate a number of points (10 points = $0.90) between themselves and another anonymous participant they were matched with. These decision problems were used to infer individuals' social motives, as in Study 2 of Corgnet et al. (12). In the *time pressure* condition, participants were asked to make each choice within 5 seconds. In the *time delay* condition, they were asked to wait for at least 15 seconds before making each choice. The time limits (<5s vs. >15s) were chosen following previous research (58). Subjects' average response time was 2.14 and 22.57 seconds in the time pressure and time delay conditions, respectively (this difference is significant, $p<0.01$, t-test). Only subjects who respected the time constraints are considered for the analyses. If we include those subjects who did not respect them (56), the results are qualitatively similar (see Tables S10 to S13). In the *neutral* condition, participants were left free to make their choices at any time (average response time = 5.40 seconds, which differs significantly from the other two conditions, both p's<0.01, t-test). See the next subsection for the exact decision problems.

After the decisions were made, we asked four comprehension questions. Subjects failing any comprehension question were automatically excluded from the experiment and received no payment.

Subjects who passed the comprehension questions then completed a Numeracy Test (81, 82) and an extended 7-item Cognitive Reflection Test (32, 33). We included the Numeracy Test to assess whether any relation between CRT scores and choices could be due to computational skills rather than to one's capacity to reflect/deliberate (33-35). Controlling for numeracy in our analysis is essential because solving CRT questions not only requires blocking incorrect intuitive answers but it also entails basic computation skills to find the correct answer to the problem. Indeed, scores in both tests are highly correlated (Spearman $\rho=0.60$, $p<0.01$, $n=192$). We modified the original CRT questions in (32) and (33) so that Mturkers could not access the answers online while completing the study, which may be a serious issue (83). We thus changed the context and the numerical solutions of the original CRT questions without changing the spirit of the test. The CRT was included at the end of the experiment to avoid priming reflective processing (27) thus distorting the relationship between social behavior and reflection. Correct answers were incentivized with a $0.06 reward. As is standard, no time restriction was imposed in any of the tests. Both tests can be found in the SI.

Finally, subjects filled a questionnaire with the usual socio-demographic questions. To analyze the role of experience (42, 45, 46, 49, 53, 54), we asked subjects "To what extent have you previously participated in other studies like this one (i.e., exchanging money with a stranger)?". Responses were collected using a 5-point likert-scale from 1 = "Never" to 5 = "Several times".

Social motives elicitation

In each decision problem, participants were asked to choose between the egalitarian Option A and the non-egalitarian Option B: Option A always allocates 10 points to the decision maker (DM) and 10 points to the other participant, whereas the distribution of points associated with Option B depends on the decision problem

Decision 1. Option B allocates 10 points to the DM and 6 points to the other participant.
Decision 2. Option B allocates 16 points to the DM and 4 points to the other participant.
Decision 3. Option B allocates 10 points to the DM and 18 points to the other participant.
Decision 4. Option B allocates 11 points to the DM and 19 points to the other participant.
Decision 5. Option B allocates 12 points to the DM and 4 points to the other participant.
Decision 6. Option B allocates 8 points to the DM and 16 points to the other participant.

Participants were informed that their final payoff would be determined by only one decision selected at random. In this way, we encouraged participants to treat each decision independently.

This task is particularly suited to analyze the cognitive underpinnings of social behavior because it is short and cognitively undemanding (12). In addition, it allows us to assess possible asymmetries in social preferences related to either advantageous or disadvantageous payoff comparisons (9). Thus, the task provides a good balance between the amount of information gathered and the complexity of the decisions. We classify individuals' choices as follows:

i. Socially *efficient*, if they maximize the total joint payoff;
ii. *Egalitarian*, if they minimize payoff inequality;
iii. *Spiteful*, if they maximize the decision maker's relative standing by minimizing the other's payoff;
iv. *Self-interested*, if they maximize the decision maker's own payoff.

Importantly, we do not force a trade-off between any two types of motives across decisions but it is instead an individual's complete set of choices that allows us to infer her motives. In some decisions in our task, for instance, there is a conflict between egalitarian and socially efficient options, whereas in others equality and social efficiency are aligned but in conflict with self-interest and/or spitefulness.

In our analyses, we exclude those subjects (13%) whose choices were inconsistent (i.e. the subject chose to increase/reduce the counterpart's payoff in one decision but s/he did not take the same action in another decision where doing so was less costly). For each of the

three social motives we consider two alternative definitions. The "model-based" definition captures those subjects whose choices are perfectly consistent with the parameters of a generalized Fehr-Schmidt (9) model characterizing a particular motive (12) (see SI). Following the tradition of research on social value orientation (10), we also consider a "choice-based" definition in which at least 2/3 of the choices (i.e. 4 out of 6) are consistent with that specific motive. The Spearman correlations between the two definitions are 0.41, 0.60 and 0.44 (all p's<0.01, n=508) for efficiency, egalitarian and spiteful motives, respectively. The classification of subjects according to the model-based definitions leads to mutually exclusive categories; however, this is not the case for the choice-based definitions. Note that both definitions are equivalent for self-interest.

Acknowledgments

The authors acknowledge financial support from the International Foundation for Research in Experimental Economics, the Argyros School of Business and Economics at Chapman University, the University of Nottingham Business School, the Spanish Ministry of Education [Grant 2012/00103/001], Ministry of Economy and Competence [2016/00122/001], Spanish Plan Nacional I+D MCI [ECO2013-44879-R], 2014-17, and Proyectos de Excelencia de la Junta Andalucía [P12.SEJ.1436], 2014-18.

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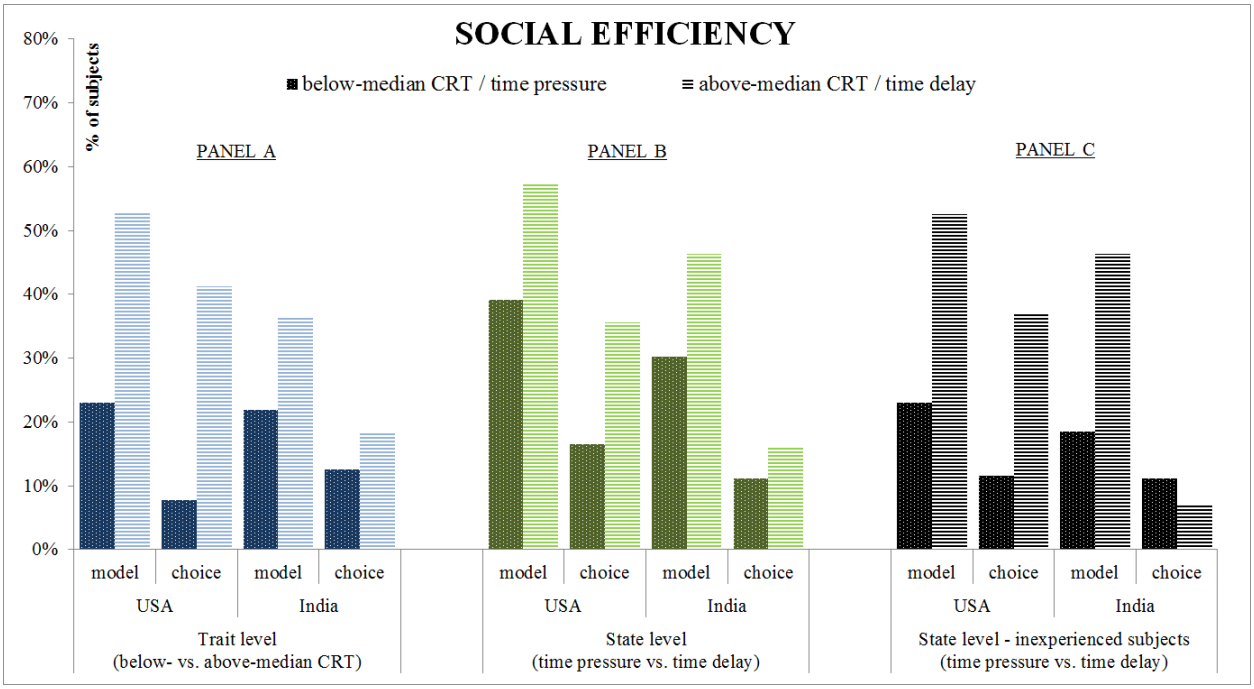

Figure 1. Proportion of subjects classified as Socially Efficient, broken down into below- and above-median CRT scores (panel A; below/above-median CRT: n=65/51 in US, n=32/44 in India), time pressure and time delay for all subjects (panel B; time pressure/delay: n= 97/87 in US, n= 63/69 in India) and for inexperienced subjects only (panel C; time pressure/delay: n= 26/19 in US, n= 27/28 in India).

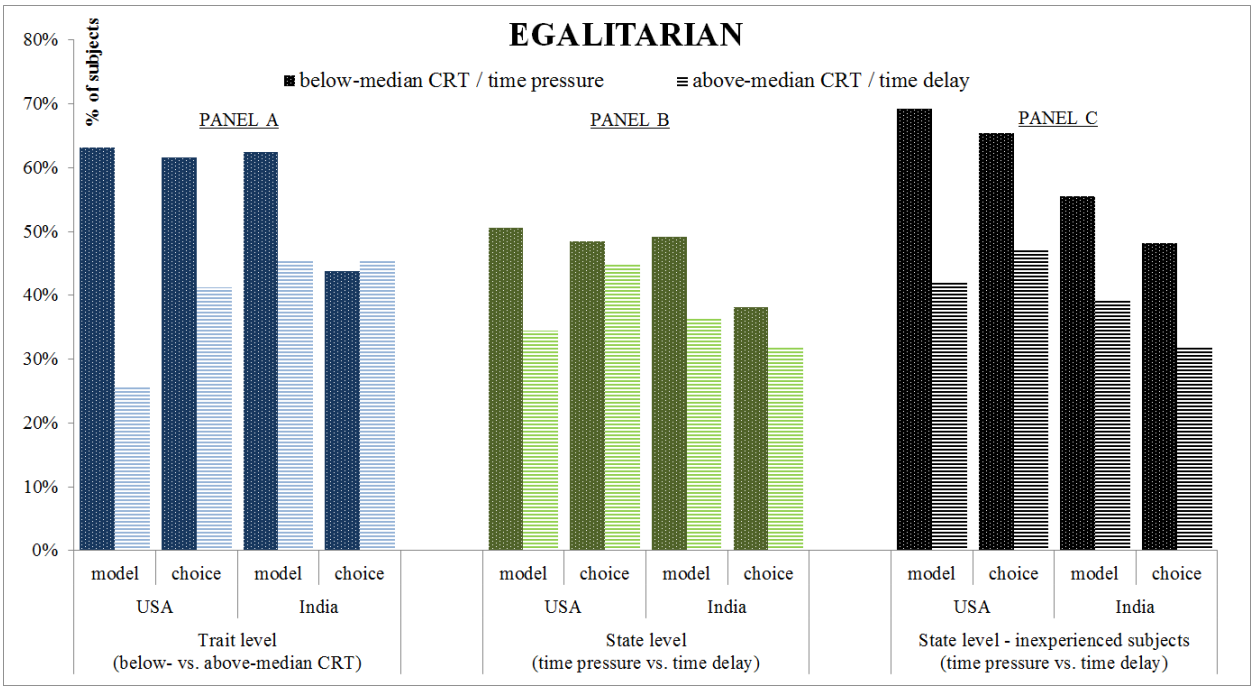

Figure 2. Proportion of subjects classified as Egalitarian, broken down into below- and above-median CRT scores (panel A), time pressure and time delay for all subjects (panel B) and for inexperienced subjects only (panel C). See caption of Figure 1 for the number of observations in each subgroup.

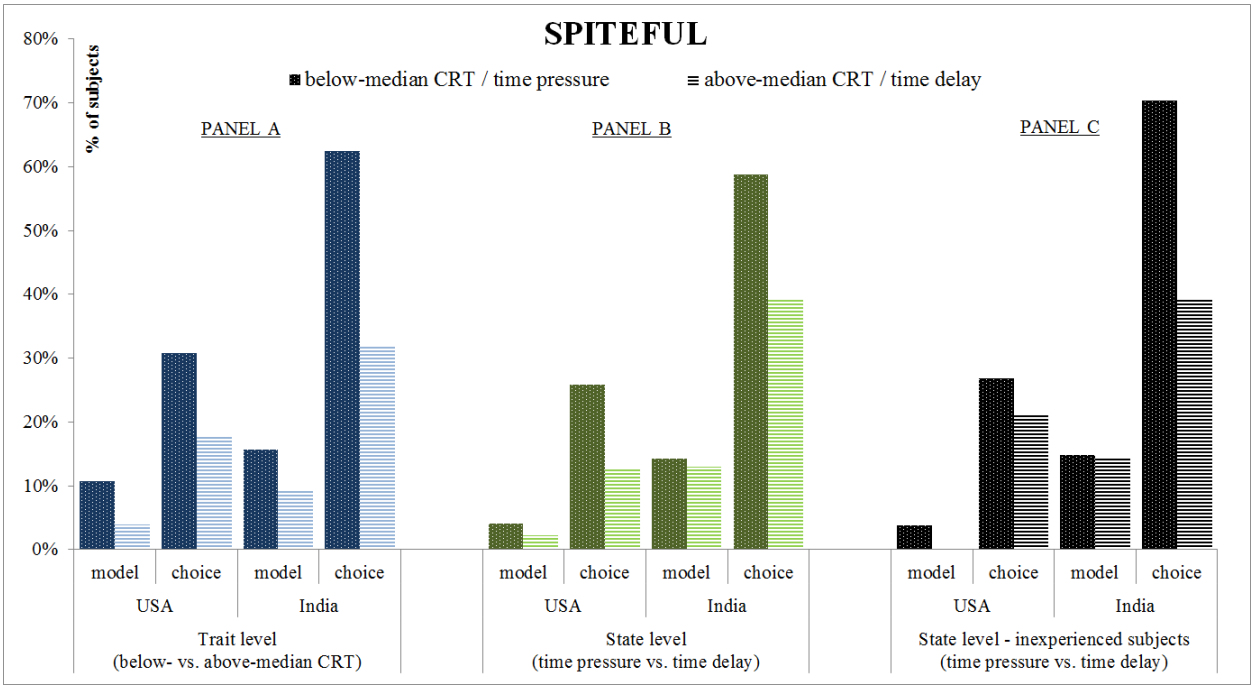

Figure 3. Proportion of subjects classified as Spiteful, broken down into below- and above-median CRT scores (panel A), time pressure and time delay for all subjects (panel B) and for inexperienced subjects only (panel C). See caption of Figure 1 for the number of observations in each subgroup.

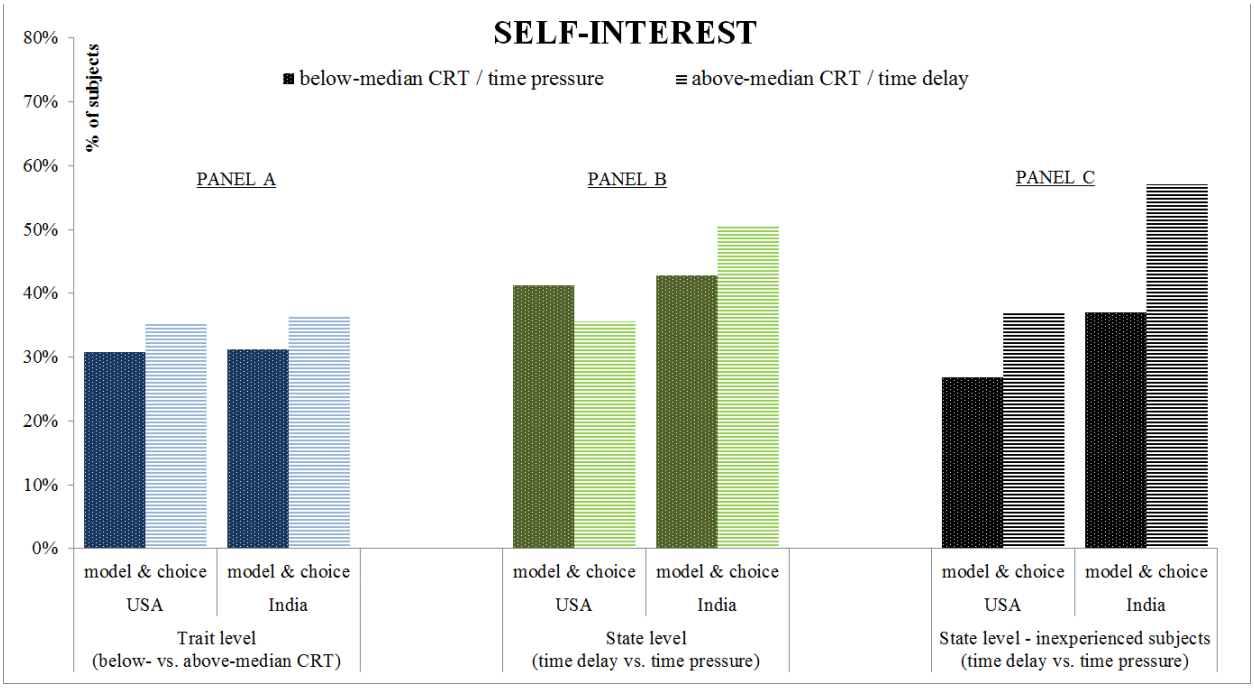

Figure 4. Proportion of subjects classified as Self-Interested, broken down into below- and above-median CRT scores (panel A), time pressure and time delay for all subjects (panel B) and for inexperienced subjects only (panel C). See caption of Figure 1 for the number of observations in each subgroup.

Supplementary Information

The "model-based" definition of social preferences

For the "model-based" definition of social preferences, we obtain meaningful ranges of values for the "envy" and "compassion" parameters of a generalized version of the Fehr and Schmidt (1999) inequality aversion model. Specifically, to characterize the motives underlying choices, we use a Fehr and Schmidt (1999) utility function which, for two players, denoted *i* and *j*, is characterized as follows:

$$U_i(x_i, x_j) = x_i - \alpha_i \, max\{x_j - x_i, 0\} - \beta_i max\{x_i - x_j, 0\},$$

where the parameters α_i and β_i refer to subject *i*'s *aversion* to disadvantageous (i.e. "envy") and advantageous (i.e. "compassion") inequality, respectively. We do not impose the parameter restrictions used in the original version of Fehr & Schmidt (1999)—that is, $\alpha_i \geq \beta_i \geq 0$—so that we can generalize the categorization of participants beyond strict inequality aversion (egalitarianism). In particular, we classify individuals' choices as follows:

(i) Socially *efficient*, if they maximize the total joint payoff ($\alpha_i \leq 0$ and $\beta_i \geq 0$, with at least one inequality being strict, and $\alpha_i > -0.5$ or $\beta_i < 0.5$);

(ii) *Egalitarian*, if they minimize payoff inequality ($\alpha_i \geq 0$ and $\beta_i \geq 0$, with at least one inequality being strict);

(iii) *Spiteful*, if they maximize the decision maker's relative standing by minimizing the other's payoff ($\alpha_i \geq 0$ and $\beta_i \leq 0$, with at least one inequality being strict);

(iv) *Self-interested*, if they maximize the decision maker's own payoff ($\alpha_i = 0$ and $\beta_i = 0$).

Supplementary analysis

Main effects regressions

Table S1. Social efficiency

	A. Trait level			B. State level All subjects		C. State level Inexperienced subjects	
	Model-based	Choice-based		Model-based	Choice-based	Model-based	Choice-based
CRT score	0.207***	0.244***	Time delay	0.477***	0.498***	0.938***	0.455
	(0.048)	(0.060)		(0.145)	(0.167)	(0.284)	(0.333)
India	-0.400*	-0.523**	India	-0.326**	-0.502***	-0.336	-0.722**
	(0.218)	(0.245)		(0.152)	(0.179)	(0.274)	(0.335)
female	-0.096	-0.162	female	-0.323**	-0.477***	-0.345	-0.469
	(0.222)	(0.245)		(0.154)	(0.179)	(0.293)	(0.329)
age	-0.012	-0.009	age	-0.002	0.011	-0.027	-0.009
	(0.009)	(0.011)		(0.007)	(0.007)	(0.017)	(0.018)
Constant	-0.583	-1.260***	Constant	-0.067	-1.135***	0.275	-0.501
	(0.408)	(0.483)		(0.276)	(0.300)	(0.578)	(0.635)
χ^2	22.565***	21.937***	χ^2	17.251***	22.334***	12.895**	6.959
pseudo-R^2	0.090	0.128	pseudo-R^2	0.040	0.073	0.107	0.080
ll	-111.782	-83.309	ll	-208.180	-148.864	-57.219	-38.886
N	192	192	N	316	316	100	100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as socially efficient. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. * p<0.1, ** p<0.05, *** p<0.01

Table S2. Egalitarianism

	A. Trait level			B. State level All subjects		C. State level Inexperienced subjects	
	Model-based	Choice-based		Model-based	Choice-based	Model-based	Choice-based
CRT score	-0.222***	-0.127***	Time delay	-0.394***	-0.146	-0.639**	-0.547**
	(0.049)	(0.046)		(0.145)	(0.145)	(0.267)	(0.268)
India	0.398*	-0.019	India	0.046	-0.243	-0.096	-0.283
	(0.213)	(0.201)		(0.149)	(0.150)	(0.263)	(0.264)
female	0.054	0.100	female	0.262*	0.303**	0.455	0.574**
	(0.212)	(0.209)		(0.152)	(0.152)	(0.285)	(0.286)
age	0.015	0.018*	age	-0.000	0.004	0.014	0.012
	(0.010)	(0.009)		(0.007)	(0.007)	(0.016)	(0.015)
Constant	0.056	-0.219	Constant	-0.096	-0.280	-0.208	-0.237
	(0.397)	(0.388)		(0.270)	(0.269)	(0.537)	(0.537)
χ^2	23.352***	13.395***	χ^2	9.902**	9.455*	8.378*	9.477*
pseudo-R^2	0.101	0.051	pseudo-R^2	0.023	0.023	0.068	0.082
ll	-119.648	-126.330	ll	-210.661	-209.856	-64.504	-63.534
N	192	192	N	316	316	100	100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as egalitarian. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. * p<0.1, ** p<0.05, *** p<0.01

Table S3. Spitefulness

	A. Trait level			B. State level All subjects		C. State level Inexperienced subjects	
	Model-based	Choice-based		Model-based	Choice-based	Model-based	Choice-based
CRT score	-0.161**	-0.182***	Time delay	-0.135	-0.489***	-0.208	-0.613**
	(0.067)	(0.047)		(0.218)	(0.156)	(0.395)	(0.278)
India	0.261	0.597***	India	0.829***	0.876***	1.270***	0.956***
	(0.267)	(0.207)		(0.233)	(0.158)	(0.454)	(0.290)
female	-0.210	-0.327	female	0.523**	0.229	-0.001	-0.136
	(0.263)	(0.215)		(0.232)	(0.163)	(0.456)	(0.284)
age	-0.012	-0.004	age	-0.009	-0.008	0.041*	0.023
	(0.016)	(0.011)		(0.012)	(0.008)	(0.024)	(0.018)
Constant	-0.474	0.173	Constant	-1.754***	-0.471	-3.528***	-1.208*
	(0.592)	(0.445)		(0.464)	(0.296)	(0.856)	(0.640)
χ^2	8.085*	22.769***	χ^2	16.205***	38.841***	10.874**	15.689***
pseudo-R^2	0.066	0.091	pseudo-R^2	0.104	0.108	0.136	0.119
ll	-55.787	-110.471	ll	-76.126	-175.935	-26.131	-59.626
N	192	192	N	316	316	100	100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as spiteful. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. * p<0.1, ** p<0.05, *** p<0.01

Table S4. Self-interest

	A. Trait level		B. State level All subjects		C. State level Inexperienced subjects
	Model- & Choice-based		Model- & Choice-based		Model- & Choice-based
CRT score	0.081*	Time delay	0.031		0.504*
	(0.046)		(0.144)		(0.269)
India	-0.123	India	0.138		0.268
	(0.208)		(0.149)		(0.265)
female	-0.153	female	-0.269*		-0.597**
	(0.215)		(0.154)		(0.290)
age	-0.021**	age	-0.010		-0.006
	(0.009)		(0.007)		(0.016)
Constant	0.072	Constant	0.146		-0.266
	(0.403)		(0.275)		(0.553)
χ^2	9.635**	χ^2	7.384		8.130*
pseudo-R^2	0.035	pseudo-R^2	0.018		0.074
ll	-117.978	ll	-211.251		-62.292
N	192	N	316		100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as self-interested. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. * p<0.1, ** p<0.05, *** p<0.01

Interaction (X country) effects regressions

Table S5. Social efficiency

	A. Trait level			B. State level All subjects		C. State level Inexperienced subjects	
	Model-based	Choice-based		Model-based	Choice-based	Model-based	Choice-based
CRT score	0.252***	0.285***	Time delay	0.505***	0.650***	1.005**	1.012**
	(0.066)	(0.075)		(0.190)	(0.207)	(0.430)	(0.453)
India	0.018	-0.045	India	-0.292	-0.254	-0.275	-0.122
	(0.411)	(0.539)		(0.212)	(0.260)	(0.391)	(0.456)
CRT x India	-0.107	-0.108	delay x India	-0.066	-0.433	-0.122	-1.211*
	(0.093)	(0.115)		(0.294)	(0.351)	(0.560)	(0.665)
female	-0.085	-0.133	female	-0.324**	-0.491***	-0.344	-0.495
	(0.223)	(0.244)		(0.154)	(0.183)	(0.293)	(0.360)
age	-0.013	-0.009	age	-0.002	0.011	-0.028	-0.013
	(0.010)	(0.011)		(0.007)	(0.008)	(0.017)	(0.018)
Constant	-0.718*	-1.412***	Constant	-0.077	-1.213***	0.261	-0.641
	(0.431)	(0.511)		(0.281)	(0.309)	(0.578)	(0.680)
χ^2	23.613***	23.635***	χ^2	17.299***	25.117***	12.920**	11.217**
pseudo-R^2	0.095	0.132	pseudo-R^2	0.040	0.078	0.108	0.120
ll	-111.194	-82.893	ll	-208.154	-148.105	-57.195	-37.187
N	192	192	N	316	316	100	100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as socially efficient. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. * p<0.1, ** p<0.05, *** p<0.01

Table S6. Egalitarianism

	A. Trait level			B. State level All subjects		C. State level Inexperienced subjects	
	Model-based	Choice-based		Model-based	Choice-based	Model-based	Choice-based
CRT score	-0.297***	-0.205***	Time delay	-0.440**	-0.131	-0.873**	-0.619
	(0.071)	(0.064)		(0.190)	(0.188)	(0.406)	(0.401)
India	-0.150	-0.609*	India	-0.007	-0.225	-0.273	-0.337
	(0.396)	(0.370)		(0.205)	(0.207)	(0.365)	(0.362)
CRT x India	0.157	0.167*	delay x India	0.109	-0.037	0.403	0.126
	(0.096)	(0.089)		(0.292)	(0.293)	(0.530)	(0.530)
female	0.039	0.079	female	0.265*	0.301**	0.458	0.574**
	(0.213)	(0.207)		(0.152)	(0.152)	(0.287)	(0.286)
age	0.016	0.020**	age	-0.000	0.004	0.016	0.013
	(0.010)	(0.010)		(0.007)	(0.007)	(0.016)	(0.016)
Constant	0.244	-0.017	Constant	-0.079	-0.285	-0.175	-0.226
	(0.416)	(0.409)		(0.274)	(0.274)	(0.544)	(0.540)
χ^2	24.118***	15.384***	χ^2	10.048*	9.448*	8.819	9.465*
pseudo-R^2	0.111	0.064	pseudo-R^2	0.024	0.023	0.072	0.083
ll	-118.239	-124.596	ll	-210.591	-209.849	-64.216	-63.506
N	192	192	N	316	316	100	100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as egalitarian. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. * p<0.1, ** p<0.05, *** p<0.01

Table S7. Spitefulness

	A. Trait level			B. State level All subjects		C. State level Inexperienced subjects	
	Model-based	Choice-based		Model-based	Choice-based	Model-based[#]	Choice-based
CRT score	-0.187**	-0.146**	Time delay	-0.314	-0.489**	-	-0.312
	(0.090)	(0.062)		(0.372)	(0.221)		(0.404)
India	0.134	0.843**	India	0.715**	0.876***	-	1.148***
	(0.457)	(0.371)		(0.314)	(0.213)		(0.379)
CRT x India	0.045	-0.073	delay x India	0.274	-0.001	-	-0.478
	(0.132)	(0.091)		(0.465)	(0.312)		(0.530)
female	-0.215	-0.321	female	0.533**	0.229	-	-0.138
	(0.264)	(0.214)		(0.227)	(0.163)		(0.282)
age	-0.011	-0.004	age	-0.008	-0.008	-	0.020
	(0.017)	(0.011)		(0.012)	(0.008)		(0.017)
Constant	-0.418	0.084	Constant	-1.702***	-0.471	-	-1.210*
	(0.598)	(0.456)		(0.476)	(0.304)		(0.636)
χ^2	8.516	24.013***	χ^2	16.888***	38.865***	-	16.260***
pseudo-R^2	0.067	0.093	pseudo-R^2	0.106	0.108	-	0.124
ll	-55.725	-110.180	ll	-75.958	-175.935	-	-59.273
N	192	192	N	316	316	-	100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as spiteful. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. [#]A probit model cannot be estimated in this case because there is only one individual (from the time pressure condition) classified as spiteful in US. OLS regression reports p-value=0.60 for the interaction term. * p<0.1, ** p<0.05, *** p<0.01

Table S8. Self-interest

	A. Trait level		B. State level All subjects		C. State level Inexperienced subjects
	Model- & Choice-based		Model- & Choice-based		Model- & Choice-based
CRT score	0.122**	Time delay	-0.105		0.374
	(0.061)		(0.191)		(0.423)
India	0.209	India	-0.020		0.162
	(0.380)		(0.206)		(0.361)
CRT x India	-0.090	delay x India	0.319		0.228
	(0.088)		(0.291)		(0.539)
female	-0.144	female	-0.265*		-0.601**
	(0.214)		(0.154)		(0.287)
Age	-0.021**	age	-0.009		-0.005
	(0.009)		(0.007)		(0.016)
Constant	-0.044	Constant	0.200		-0.232
	(0.421)		(0.281)		(0.553)
χ^2	10.603*	χ^2	8.765		8.959
pseudo-R^2	0.039	pseudo-R^2	0.021		0.076
Ll	-117.496	ll	-210.648		-62.201
N	192	N	316		100

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as self-interested. Main explanatory variables: CRT scores (between 0 and 7) in panel A, time delay (vs. time pressure) in panels B and C. * p<0.1, ** p<0.05, *** p<0.01

Accounting for numeracy skills

Table S9. Effect of CRT controlling for numeracy

Dependent variable:	1. Social efficiency		2. Egalitarianism		3. Spitefulness		4. Self-interest
	Model-based	Choice-based	Model-based	Choice-based	Model-based	Choice-based	Model- & choice-based
CRT score	0.150**	0.158**	-0.206***	-0.167***	-0.084	-0.129**	0.140**
	(0.059)	(0.071)	(0.061)	(0.058)	(0.087)	(0.062)	(0.059)
Numeracy	0.118	0.184**	-0.033	0.079	-0.175	-0.113	-0.117
	(0.075)	(0.082)	(0.074)	(0.073)	(0.116)	(0.081)	(0.077)
India	-0.280	-0.346	0.365	0.061	0.093	0.490**	-0.246
	(0.228)	(0.258)	(0.224)	(0.212)	(0.284)	(0.223)	(0.219)
female	-0.053	-0.082	0.044	0.123	-0.255	-0.363*	-0.188
	(0.220)	(0.239)	(0.213)	(0.210)	(0.273)	(0.217)	(0.217)
age	-0.009	-0.004	0.014	0.020**	-0.015	-0.007	-0.024**
	(0.010)	(0.011)	(0.010)	(0.010)	(0.017)	(0.011)	(0.009)
Constant	-0.952**	-1.852***	0.160	-0.463	0.006	0.520	0.432
	(0.471)	(0.557)	(0.456)	(0.448)	(0.693)	(0.506)	(0.464)
χ^2	23.967***	23.483***	23.632***	14.585**	9.372*	25.138***	12.203**
pseudo-R^2	0.099	0.150	0.101	0.055	0.087	0.099	0.044
ll	-110.680	-81.228	-119.557	-125.799	-54.514	-109.482	-116.859
N	192	192	192	192	192	192	192

Notes: Probit estimates. Robust standard errors are presented in parentheses. Main explanatory variables: CRT score (between 0 and 7) and Numeracy score (between 0 and 6). * p<0.1, ** p<0.05, *** p<0.01

Including subjects who did not respect the time constraints

Table S10. Social efficiency

	A. State level All subjects		B. State level Inexperienced subjects	
	Model-based	Choice-based	Model-based	Choice-based
Time delay	0.453***	0.470***	0.716***	0.563*
	(0.130)	(0.151)	(0.239)	(0.293)
India	-0.302**	-0.393**	-0.109	-0.582**
	(0.134)	(0.155)	(0.238)	(0.290)
female	-0.287**	-0.343**	-0.319	-0.419
	(0.138)	(0.160)	(0.249)	(0.295)
age	0.001	0.016**	-0.016	-0.017
	(0.006)	(0.007)	(0.015)	(0.016)
Constant	-0.223	-1.394***	-0.153	-0.382
	(0.244)	(0.275)	(0.511)	(0.561)
χ^2	18.631***	22.078***	10.769**	8.716*
pseudo-R^2	0.034	0.059	0.071	0.078
ll	-261.307	-187.523	-78.423	-51.934
N	396	396	133	133

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as socially efficient. Main explanatory variable: time delay (vs. time pressure). * p<0.1, ** p<0.05, *** p<0.01

Table S11. Egalitarianism

	A. State level All subjects		B. State level Inexperienced subjects	
	Model-based	Choice-based	Model-based	Choice-based
Time delay	-0.433***	-0.241*	-0.557**	-0.450**
	(0.129)	(0.130)	(0.229)	(0.228)
India	0.015	-0.274**	-0.244	-0.390*
	(0.133)	(0.134)	(0.231)	(0.230)
female	0.254*	0.218	0.357	0.309
	(0.137)	(0.138)	(0.243)	(0.243)
age	-0.002	0.007	0.019	0.014
	(0.006)	(0.006)	(0.013)	(0.012)
Constant	0.009	-0.310	-0.242	-0.206
	(0.236)	(0.235)	(0.463)	(0.453)
χ^2	14.085***	14.531***	11.780**	10.722**
pseudo-R^2	0.026	0.028	0.072	0.065
ll	-263.346	-260.055	-85.351	-85.894
N	396	396	133	133

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as egalitarian. Main explanatory variable: time delay (vs. time pressure). * p<0.1, ** p<0.05, *** p<0.01

Table S12. Spitefulness

	A. State level All subjects		B. State level Inexperienced subjects	
	Model-based	Choice-based	Model-based	Choice-based
Time delay	-0.029	-0.440***	-0.094	-0.432*
	(0.195)	(0.137)	(0.315)	(0.229)
India	0.616***	0.759***	0.758**	0.643***
	(0.206)	(0.140)	(0.373)	(0.239)
female	0.353*	0.212	0.066	-0.050
	(0.206)	(0.146)	(0.358)	(0.244)
age	-0.023*	-0.015**	0.006	0.004
	(0.012)	(0.007)	(0.018)	(0.014)
Constant	-1.144***	-0.137	-2.004***	-0.501
	(0.420)	(0.254)	(0.602)	(0.490)
χ^2	12.803**	42.065***	4.326	10.338**
pseudo-R^2	0.076	0.091	0.059	0.063
ll	-100.416	-228.363	-37.927	-83.832
N	396	396	133	133

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as spiteful. Main explanatory variable: time delay (vs. time pressure). * p<0.1, ** p<0.05, *** p<0.01

Table S13. Self-interest

	A. State level All subjects	B. State level Inexperienced subjects
	Model- & Choice-based	Model- & Choice-based
Time delay	0.035	0.269
	(0.129)	(0.227)
India	0.173	0.339
	(0.132)	(0.231)
female	-0.201	-0.370
	(0.138)	(0.243)
age	-0.010	-0.001
	(0.006)	(0.013)
Constant	0.116	-0.436
	(0.241)	(0.469)
χ^2	9.092*	6.540
pseudo-R^2	0.017	0.040
ll	-265.702	-85.808
N	396	133

Notes: Probit estimates. Robust standard errors are presented in parentheses. Dependent variable: subject's choices are classified as self-interested. Main explanatory variable: time delay (vs. time pressure). * p<0.1, ** p<0.05, *** p<0.01

Full experimental instructions

Here we report full experimental instructions of the experiment conducted in the US. The only differences with the experiment conducted in India were the stakes at play, which, in India, were exactly one third of those used in the US.

Introductory screen
Welcome to this HIT.

This HIT will take about 10-15 minutes. For the participation in this HIT, you will earn 90c. You will also earn additional money (a minimum of 36c).

This HIT consists of two parts.

In the first part, you will be asked to make several decisions. In this part, there is no correct or incorrect answer, you will be asked to choose the options you prefer. Your earnings from this part will depend on your decisions or the decisions of other participants.

In the second part, your earnings will depend only on your decisions.

IMPORTANT: at the end of the first part, we will ask four additional simple questions to make sure you understood the task. Each question has only one correct answer. If you fail to correctly answer any of the four questions, the survey will automatically end and you will not receive any completion code and consequently you will not get any payment.

IF YOU SUBMIT THE TASK WITHOUT COMPLETION CODE, IT WILL BE REJECTED.

(here the subjects could either continue or end the survey)

Social preferences elicitation (time pressure condition)
Screen 1.
In the next screens, you will be asked to make six decisions.

You will have **only 5 seconds to make each choice**. A timer will appear at the bottom of the screen.

In each decision problem you will be paired with a different participant.

After the survey is completed, you and the other participants will be paid according to your choices. Specifically, each decision problem has two possible roles: one active and one passive. You will be paid for one single decision problem selected at random among the six; and within that decision problem your final role will also be randomly selected. No deception is used.

Each decision problem consists of choosing between two allocations of points between yourself and the other participant. Option A will be the same across the six decisions: 10 points for you

and 10 points for the other participant. However, the allocation in Option B will change each time.

Each point will be converted into money according to the following exchange rate:
1 point = 9c, that is, 10 points = 90c

If you are ready, go to the next page.

Screen 2.
As mentioned, your earnings and the earnings of the person you have been paired with will depend on the option chosen by the one who is randomly selected as the allocator (active role) for the randomly selected decision problem.

If Option A was chosen in the selected decision problem, both individuals will receive 10 points. If Option B was chosen in the selected decision problem, your earnings and the earnings of the other person will be determined by the allocation specified in that decision problem.

Note that the other participant will never be informed of your personal identity and you will not be informed of the other participant's personal identity.

Once you have finished reading these instructions, select "Continue" to see an example.

Screen 3.
Below there is an example. Note that in this example both options show the same allocation. In the real decisions, 'Option A' will always be the same, however, 'Option B' will change in each decision and will be different from the allocation in 'Option A'.

Please select one option, by clicking on the text describing that option. Once you have chosen one of the two options click on the button to go to the next screen.

Remember that you will have only 5 seconds to make each choice. A timer will appear at the bottom of the screen.

- Option A: 10 points for you and 10 points for the other participant
- Option B: 10 points for you and 10 points for the other participant

Screen 4.
It is now time to make your real choices.

Remember that you will have **only 5 seconds** to make each choice.

If you are ready, select "Continue' and go to the first decision problem.

Screen 5.
Select 'Option A' or ' Option B'

- Option A: 10 points for you and 10 points for the other participant
- Option B: 10 points for you and 6 points for the other participant

(here there was a clearly visible timer counting down from 5 to 0 – the same timer was present also in all subsequent decision screens. The survey did *not* automatically go to the next screen, when the timer reached 0. Thus participants were allowed to make their decision at any time)

Screen 6.
Remember that you will have **only 5 seconds** to make each choice.

Select "Continue' and go to the second decision problem.

Screen 7.
Select 'Option A' or ' Option B'

- Option A: 10 points for you and 10 points for the other participant
- Option B: 16 points for you and 4 points for the other participant

Screen 8.
Remember that you will have **only 5 seconds** to make each choice.

Select "Continue' and go to the third decision problem.

Screen 9.
Select 'Option A' or ' Option B'

- Option A: 10 points for you and 10 points for the other participant
- Option B: 10 points for you and 18 points for the other participant

Screen 10.
Remember that you will have **only 5 seconds** to make each choice.

Select "Continue' and go to the fourth decision problem.

Screen 11.
Select 'Option A' or ' Option B'

- Option A: 10 points for you and 10 points for the other participant
- Option B: 11 points for you and 19 points for the other participant

Screen 12.
Remember that you will have **only 5 seconds** to make each choice.

Select "Continue' and go to the fifth decision problem.

Screen 13.

Select 'Option A' or ' Option B'

- Option A: 10 points for you and 10 points for the other participant
- Option B: 12 points for you and 4 points for the other participant

Screen 14.
Remember that you will have **only 5 seconds** to make each choice.

Select "Continue' and go to the sixth decision problem.

Screen 15.
Select 'Option A' or ' Option B'

- Option A: 10 points for you and 10 points for the other participant
- Option B: 8 points for you and 16 points for the other participant

Social preferences elicitation (baseline condition)
Instructions were exactly the same as in the time pressure condition, apart from the fact that the sentences "You will have **only 5 seconds to make each choice**. A timer will appear at the bottom of the screen" and "Remember that you will have **only 5 seconds** to make each choice" were deleted and no timer appeared at the bottom of the decision screens.

Social preferences elicitation (time delay condition)
Instructions were exactly the same as in the time pressure condition, apart from the fact that the sentences "You will have **only 5 seconds to make each choice**. A timer will appear at the bottom of the screen" and "Remember that you will have **only 5 seconds** to make each choice" were replaced by "You will have to **wait for at least 15 seconds** before making each choice. Use this time to think carefully about the decision problem. A timer will appear at the bottom of the screen" and "Remember that you will have to **wait for at least 15 seconds** before making a choice.", respectively.

Comprehension questions (common to all conditions)
(The following questions were presented in random order. For each question, there were two available answers: Option A and Option B. Subjects failing any of them were automatically redirected to the end of the survey and did not receive any completion code to claim for their payment.)

Screen 1.
Given the following decision problem:

- Option A: 10 points for you and 10 points for the other participant
- Option B: 16 points for you and 4 points for the other participant

Which is the choice by YOU that maximizes YOUR outcome?

Screen 2.
Given the following decision problem:

- Option A: 10 points for you and 10 points for the other participant
- Option B: 10 points for you and 18 points for the other participant

Which is the choice by YOU that maximizes the OTHER PARTICIPANT's outcome?

Screen 3.
Given the following decision problem:

- Option A: 10 points for you and 10 points for the other participant
- Option B: 12 points for you and 4 points for the other participant

Which is the choice by YOU that maximizes the OTHER PARTICIPANT's outcome?

Screen 4.
Given the following decision problem:

- Option A: 10 points for you and 10 points for the other participant
- Option B: 11 points for you and 19 points for the other participant

Which is the choice by YOU that maximizes YOUR outcome?

Numeracy Test
(All participants faced the following seven problems. As usual, the Numeracy score was defined as the number of correct answers).

Problem 1. Imagine that we filp a fair coin 1,000 times. What is your best guess about how many times the coin would come up tails in 1,000 flips?

Problem 2. A lottery ticket offers a 1% probability of winning a $10 prize. Imagine that 1,000 pople buy a ticket each. What is your best guess about how many people would win the $10 prize?

Problem 3. In a TV show, the probability of winning a car is 1 in 1,000. What percent of contestants in the TV show win a car?

Problem 4. Out of 1,000 students in a small university, 500 are in the business school. Out of these 500 students in the business school, 100 are male students. Out of the 500 students that are not in the business school, 300 are male students. What is the probability that a randomly drawn male student is in the business school? Please indicate the probability in percent.

Problem 5a. (shown only to subjects who solved Problem 4 incorrectly). Imagine we roll a fair five-sided die 50 times. On average, out of these 50 rolls, how many times would this fair five-sided dies show an odd number (1, 3, or 5)?

Problem 5b. (shown only to subjects who solved Problem 4 correctly). Imagine we are rolling a loaded die (6 sides). The chance that the dies shows a 1 is twice as higher as the chance of each of the other numbers. On average, out of 70 throws, how many times would the die show the number 1?

Cognitive Reflection Test

(All participants faced the following seven problems. As usual, the CRT score was the number of correct answers).

Problem 1. A table and a chair cost $150 in total. The table costs 100 dollars more than the chair. How much does the chair cost?

Problem 2. If it takes 10 mechanics 10 hours to fix 10 cars, how long does it take 80 mechanics to fix 80 cars?

Problem 3. A new library is purchasing books for its collection. Every week, the number of books acquired doubles. If it takes 36 weeks to buy all the books they need, how long does it take for the library to buy half of the books they need?

Problem 4. In the zoo, the lions eat one ton of meat every 6 weeks, and the tigers eat another ton of meat every 12 weeks. How long would it take them (lions and tigers) to eat one ton of meat together?

Problem 5. John obtained the 25^{th} fastest mark and the 25^{th} slowest mark in a race. How many people participated in the race?

Problem 6. An art collector acquires a famous painting for 50 million and sells it for 60 million. Some years later, the collector buys it back for 70 million, and sells it finally for 80 million. How much has the collector won in total?

Problem 7. Mary invested $12,000 in the stock market in November 2013. Six months later, on May 2014, the stocks she had purchased were down 50%. Fortunately for Mary, from May 2014 to August 2014, the stocks she had purchased went up 75%. At this point, Mary has

a) won money
b) lost money
c) neither won nor lost money