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## The Preference Survey Module: Evidence on social preferences from Tehran

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# The Preference Survey Module: Evidence on Social Preferences from Tehran

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# The Preference Survey Module: Evidence on Social Preferences from Tehran\*

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## Abstract

We provide evidence on the extent to which survey items in the Preference Survey Module and the resulting Global Preference Survey measuring social preferences – trust, altruism, positive and negative reciprocity – predict behavior in corresponding experimental games outside the original participant sample of Falk et al. (2022). Our results, which are based on a replication study with university students in Tehran, Iran, are mixed. While quantitative items considering hypothetical versions of the experimental games correlate significantly and economically meaningfully with individual behavior, none of the qualitative items show significant correlations. The only exception is altruism where results correspond more closely to the original findings.

**Keywords:** Preference survey module, global preference survey, validation, replication, social preferences

**JEL codes:** C81, C83, C90, D01, D03

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# 1 Introduction

Falk et al. (2022) develop the “Preference Survey Module” (PSM) to measure important economic preferences such as trust, altruism, positive and negative reciprocity, risk preferences, and time discounting. The module identifies survey items that are able to predict individual behavior in incentivized experimental economic games such as the trust game, dictator game, ultimatum game, etc. It serves as an important basis for the subsequently developed “Global Preference Survey” (GPS) providing a novel, comparable set of representative data on the above-mentioned economic preferences from more than 70 countries across the globe (Falk et al., 2018).<sup>1</sup>

Results in Falk et al. (2018) demonstrate the validity of the utilized preference measures by convincingly documenting – both across and within countries – significant correlations with a range of relevant economic outcomes in line with economic theory. Still, it remains an open question to what extent PSM and GPS measures predict behavior in experimental games in *other participant samples* than the one used in the original validation.<sup>2</sup> Bauer et al. (2020) provide a first replication analysis for a subset of preference measures with participants from low-income households in Kenya. They find that quantitative survey items, which are based on hypothetical, i.e., non-incentivized games, are generally good predictors of participants’ choices in the experiments, while qualitative items based on self-assessments in real-world scenarios do not correlate significantly with experimental behavior.

The present paper contributes to these analyses by providing results from a replication study we implemented with student participants in Tehran in April 2018. We chose Tehran for two main reasons: First, we wanted to validate the survey modules in a country that has sufficient contrast to Germany, where the original experiments took place, in terms of culture, language, religion, history, geography, etc. Tehran as a capital city of a country located in the Middle East fits very well to this condition. Second, we had access to a lab at the University of Tehran that resembles the lab at the University of Bonn well regarding its student sample. This helped us besides the new country to remain close to the original study in important other aspects. However, our access to the lab was limited, which led us to restrict the sample size and the range of preferences to be included in the present study. Our data come from laboratory experiments with 102 students at the University of Tehran and we focus on social preferences. In consequence, we only included survey items and experiments from Falk et al. (2022) that aim at measuring these preferences.

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<sup>1</sup> See also <https://www.briq-institute.org/global-preferences/home>.

<sup>2</sup> The experiments in Falk et al. (2022) are conducted with student participants at the University of Bonn, Germany.

Overall, our results are mixed and, by and large, complementary to the findings of Bauer et al. (2020). While for altruism we find that PSM items are significantly correlated with behavior, for the other social preference dimensions we find that correlations between survey items and behavior in the corresponding games are often low and insignificant. In general and very similar to Bauer et al. (2020), quantitative items that elicit behavior in hypothetical games perform better than qualitative items asking for self-assessments or behavior in real-world scenarios. When applying a comparable item selection procedure as in Falk et al. (2022) to identify the survey items that best predict individual behavior in the experimental games in Tehran, we never identify any of the qualitative items included in the PSM but almost always identify the quantitative item.

Our replication study differs from Bauer et al. (2020) in several dimensions. Firstly, our participant pool is different: university students in Iran v. low-income households in Kenya. Secondly, we include the full set of PSM/GPS items and experiments on social preferences, while Bauer et al. include only the two GPS items for each preference but consider also time discounting and risk preferences. Thirdly, our protocol stays as close as possible to Falk et al. (2022), while Bauer et al. adjust their implementation in several ways. Still, both our replication studies contain the same message: quantitative survey items predict well, while qualitative items do only poorly. We can only speculate at this point why this is the case. One possible explanation is that qualitative items are simply noisier than quantitative items. Neither our study nor Bauer et al. (2020) can rule this out definitely, as both are based on relatively small sample sizes of about 100 participants each. Future studies should therefore focus on replications that involve larger  $N$ . An alternative explanation is that qualitative items are more country-/culture-dependent than quantitative items, because different real life experiences feed into participants' answers. Below, we provide some evidence for this explanation in the case of positive reciprocity. Still, more research is warranted.

## 2 Design

Our experimental design closely follows Falk et al. (2022). In their study, about 400 students from the University of Bonn each participated in two laboratory sessions scheduled one week apart. In both sessions, subjects answered a non-incentivized survey and made decisions in incentivized experiments. Survey and experiment(s) for the same preference were never run in the same session. Half of the subjects participated in the first session in a survey related to risk and time preferences and in experiments relating to social preferences, and in the second session, it was the other way round. For the other half, the order was reversed.

We only consider social preferences in this study. 102 students from the University of Tehran participated in two laboratory sessions scheduled one week apart in April 2018. All students answered the social preference survey in the first session and participated in the corresponding experiments in the second

session. Whenever available we used the Persian translation from Falk et al. (2018) for questions in the survey. We translated the remaining questions as well as the experimental instructions ourselves. The English wording of all survey items and experimental instructions are provided in the Appendix B.

Based on Falk et al. (2022), social preferences elicited in the experiments consider trust, altruism, as well as positive and negative reciprocity. Trust is measured by first-mover behavior in two different versions of the investment game (Berg et al., 1995), where the amount sent by the first mover is either doubled or tripled. Altruism is measured by a dictator game with a charitable organization as a receiver. Positive reciprocity is measured by second-mover behavior in the investment game (Berg et al., 1995) using the strategy method. Finally, the measure of negative reciprocity is based on the second-mover's minimum acceptable offer in an ultimatum game (Güth et al., 1982) as well as investment into punishment after the unilateral defection of the opponent in a prisoner's dilemma game (Falk et al., 2005). Subjects are randomly matched with each other in these games based on a perfect stranger protocol. The order of games is fixed as follows: investment game, dictator game, ultimatum game, and prisoner's dilemma game.

All experiments in our study were programmed in oTree (Chen et al., 2016). For the survey we used Limesurvey. Earnings were calculated in points during the experiment and exchanged into Iranian Rial at the end based on an exchange rate of 100 points / 10,000 Iranian Rial. The exchange rate is comparable to Falk et al. (2022) in terms of average earnings as a student assistant. On average, a session lasted 65 minutes and subjects earned 359,710 Iranian Rial in the experiments.

### **3 Results**

Table A1 in the Appendix A1 provides a summary and comparison of average behavior in the social preference experiments in Falk et al. (2022) and in our sample. Overall, Tehran subjects reveal a higher level of pro-sociality with differences in positive reciprocity being statistically significant in particular. While these differences are informative and consistent with differences based on GPS measures from Falk et al. (2018), they are not our main focus in this paper. In the following, we explore the extent to which answers in the survey correlate with behavior in the experiments and whether items selected for the PSM and GPS, based on the original data, predict behavior in the corresponding games in Tehran.

To do so, we proceed as follows. For each preference, we first check whether the PSM and GPS items are correlated with behavior in the corresponding games. This answers the question, to what extent the two modules are valid instruments to predict social preferences from the incentivized experiments conducted in Tehran. Subsequently, we apply the same procedure as in Falk et al. (2022) to select the two survey items that best predict subjects' behavior in our data. The results, details of which are reported in

the Appendix A2, produce a (potentially different) battery of survey questions to which the PSM and GPS can be compared.

### 3.1 Trust

Table 1 presents our results for trust. Panel A shows the correlations between the selected items for each module and the behavioral measure in the original study, while Panel B shows the same results for our replication study. In each panel, we report Spearman correlation coefficients and OLS coefficients obtained from a multivariate regression of the standardized behavioral measure on standardized survey items. Recall that trust is behaviorally measured by the average amount a subject sends as a first mover in two different versions of the investment game, where the amount to be sent is either doubled or tripled.

As is evident from Panel B in Table 1, the quantitative item (T24) from the PSM, which is a hypothetical version of the investment game, significantly correlates with behavior in the incentivized investment game, though coefficients are smaller compared to the original study. In contrast, the qualitative item “*People have only the best intentions*” (T16), which is also the only trust item included in the GPS, shows no significant correlation, while the coefficient is positive but small.

Table 1. Correlation of PSM and GPS items with the behavioral measure of trust in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

		Panel A: Falk et al. (2022)		Panel B: Replication study	
Item Description		Corr.	OLS	Corr.	OLS
PSM	Hypothetical first-mover behavior in the investment game (T24)	0.620***	0.629*** (0.043)	0.513***	0.339*** (0.093)
	<i>As long as I am not convinced otherwise, I assume that people have only the best intentions.</i> (T16)	0.283***	0.133*** (0.038)	0.082	0.102 (0.093)
	N		382		102
	Adjusted R <sup>2</sup>		0.452		0.112
F			158.4		4.14
GPS	<i>As long as I am not convinced otherwise, I assume that people have only the best intentions.</i> (T16)	0.283***	Not reported	0.082	0.123 (0.099)
	N		Not reported		102
	Adjusted R <sup>2</sup>		Not reported		0.0052
	F		Not reported		1.53

*Notes:* Item numbers are based on the numbering as summarized in the Appendix B2. The first column in each panel is the Spearman correlation between the survey item and the behavioral measure. The second column shows the OLS coefficients from a multivariate regression of the standardized behavioral measure on the standardized module items. Standard errors are in parentheses. \*\*\* and \*\* denote significance at the 1- and 5-percent level, respectively.

Table A2 (Model 1) in the Appendix A2 presents our results for trust when applying the same item selection procedure as in Falk et al. (2022). The two survey items that explain behavior in the investment game best in the Tehran sample are the quantitative item (T24), also selected by the PSM, together with the qualitative item “*Most people would be fair to you*” (T21). Interestingly, replacing the latter item with the standard trust question from the World Value Survey “*In general, one can trust other people*” (T17), works also considerably well. Both do better than the qualitative GPS item “*People have only the best intentions*” (T16).

### 3.2 Altruism

Unlike the other preference dimensions, in the case of altruism, the PSM and GPS both include a quantitative and a qualitative item. Table 2 shows correlations of them with the behavioral measure of



Table 2. Correlation of PSM and GPS items with the behavioral measure of altruism in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

		Panel A: Falk et al. (2022)		Panel B: Replication study	
Item Description		Corr.	OLS	Corr.	OLS
PSM and GPS	Hypothetical dictator game (A11)	0.3913***	0.1845*** (0.049)	0.3059***	0.189* (0.097)
	<i>How do you assess your willingness to share with others without expecting anything in return in the following contexts: Charity (A10)<sup>3</sup></i>	0.3845***	0.3210*** (0.044)	0.1921*	0.182* (0.097)
	Observations		382		102
	Adjusted R <sup>2</sup>		0.175		0.058
	F		41.41		4.13

Notes: Item numbers are based on the numbering as summarized in the Appendix B2. The first column in each panel is the Spearman correlation between the survey item and the behavioral measure. The second column shows the OLS coefficients from a multivariate regression of the standardized behavioral measure on the standardized module items. Standard errors are in parentheses. \*\*\* and \* denote significance at the 1- and 10-percent level, respectively.

altruism based on the charitable dictator game. Again, Panel A considers the original study of Falk et al. (2022), Panel B the replication study in Tehran. Both items are significantly correlated with behavior in the replication study, at least on the 10 percent level. Similar to trust, correlations of the quantitative item (A11), which is a hypothetical version of the dictator game, are again stronger compared to the qualitative item “Willingness to share with others in the context of charity” (A10). In addition, coefficients of the quantitative item (A11) are remarkably close to the results of the original study (0.3059 vs. 0.3913, 0.189 vs. 0.1845), while the coefficients of the qualitative item A11 are only about half the size of the coefficients (0.1921 vs. 0.3845, 0.182 vs. 0.3210).

Results on the item selection procedure in Table A3 (Appendix A2) reveal that for altruism, again, the quantitative item (A11) is selected, together with the qualitative item “Other people regard me as an unselfish person” (A21) or alternatively, the qualitative item “I am willing to help others even if I expect that I will never meet them again” (A14). Thus, while the qualitative PSM/GPS item (A10) is significantly correlated with behavior in the dictator game, it does not come out as the winner from the item selection procedure.

<sup>3</sup> In the GPS, the question is re-phrased to the willingness to give to good causes.

Table 3. Correlation of PSM and GPS items with the behavioral measure of positive reciprocity in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

		Panel A: Falk et al. (2022)		Panel B: Replication study	
Item Description		Corr.	OLS	Corr.	OLS
PSM	Hypothetical second-mover behavior in the investment game (PR11)	0.556***	0.486*** (0.049)	0.255***	0.286*** (0.097)
	<i>Thank-you gift in the lost-in-an-unfamiliar-city scenario</i> (PR9) <sup>4</sup>	0.353***	0.164*** (0.049)	0.136	0.084 (0.097)
	N		360		102
	Adjusted R <sup>2</sup>		0.329		0.0783
	F		89.15		5.29
GPS	<i>Willingness to return a favor</i> (PR12)	0.297	Not reported	0.010	0.034 (0.100)
	<i>Thank-you gift in the lost-in-an-unfamiliar-city scenario</i> (PR9)	0.353***	Not reported	0.136	0.131 (0.100)
	N		Not reported		102
	Adjusted R <sup>2</sup>		Not reported		-0.0016
	F		Not reported		0.92

Notes: Item numbers are based on the numbering as summarized in the Appendix B2. The first column in each panel is the Spearman correlation between the survey item and the behavioral measure. The second column shows the OLS coefficients from a multivariate regression of the standardized behavioral measure on the standardized module items. Standard errors are in parentheses. \*\*\* denote significance at the 1-percent level.

### 3.3 Positive Reciprocity

A similar picture emerges for positive reciprocity; see Table 3. Recall that positive reciprocity is measured by the second-mover behavior in the incentivized investment game. A hypothetical version of this game, which is what the quantitative item (PR11) captures, is again highly significantly correlated with this measure in our replication study (PSM, Panel B) although coefficients are smaller compared to the original study (Panel A). In contrast, the qualitative item “*Thank-you present in a hypothetical helping scenario*” (PR9) selected for the PSM, as well as the qualitative items “*Willingness to return a favor*” (PR12), which

<sup>4</sup> Because bottles of wine are a very uncommon gift in Muslim societies, we replaced it by a more neutral and common gift in form of (different sizes of) a chocolate box. Falk et al. (2018) proceed in a similar way for the GPS.

is additionally included in the GPS, show no significant correlation and coefficients are only very small (Panel B).

Our results from the item selection procedure for positive reciprocity reveal an intriguing finding (see Table A4 in the Appendix A2 for details). Besides the quantitative measure (PR11), which is again selected similar to what we have seen for trust and altruism, the qualitative item “*Hypothetical scenario (need medical treatment): willingness to pay for a thank-you gift*” (PR10) is found to best predict positive reciprocity in the investment game. This item is almost identical to the qualitative item in PSM (PR9) by asking the respondent to decide how much to spend on a thank-you present in return for the help received from a stranger. The only difference is in the situation the respondent is asked to imagine. In PR9, the respondent is lost in an unfamiliar city. A stranger provides help in taking the respondent by car to the desired destination. In PR10, the respondent needs medical treatment in a foreign country but does not have any cash to pay the doctor. A stranger helps by giving the corresponding amount as a gift. In both scenarios, the respondent is then asked to specify how much he or she is willing to spend on a present as a thank you to the stranger. While in the original study with student participants in Bonn responses to the lost-in-an-unfamiliar-city scenario best predict reciprocal behavior in the investment game, the same item has no predictive power with student participants in Tehran. Instead, the medical-help scenario serves as the best predictor here.

We believe a possible and quite intuitive explanation for this discrepancy is the difference in social norms between Germany and Iran with respect to the described situations, leading to different perceptions of the level of kindness that the help received by the stranger signals. Whereas in Germany driving a lost stranger to his or her desired destination is rather unusual and therefore likely contains a strong signal of kindness, the same behavior is not uncommon and almost expected in Iran. Consequently, the signal of kindness is much weaker, although the described behavior is exactly the same. This does not apply to the medical-help scenario, where in both countries receiving money as a gift from a stranger can be regarded as quite unexpected and therefore a clear signal of kindness.

To a certain degree, we can of course only speculate whether this explanation is correct. However, if so, i.e., if in Iran the level of kindness perceived in the medical-help scenario is indeed higher than in the lost-in-an-unfamiliar-city scenario, the average response in form of a thank-you present should be higher in the former scenario compared to the latter. This is indeed what we find: 0.76 vs. 0.58 (standardized values, Wilcoxon signed rank test,  $p < 0.01$ ). Further, if as a consequence the medical-help scenario is a better measure of positive reciprocity than the lost-in-an-unfamiliar-city scenario, the corresponding distribution of participants’ answers in our sample should be closer to typical distributions of positive

reciprocity, which are found to be left-skewed (Dohmen et al., 2009; Falk et al., 2018). We find this as well. While the distribution of answers to the lost-in-an-unfamiliar-city scenario is symmetric, the distribution in the medical-help scenario is skewed to the left. See the Appendix A4 for details.

The suggested explanation highlights in our opinion an important challenge for the analysis of cross-country/-cultural differences based on answers to survey items that are framed in real-world scenarios. Participants from different countries and cultural backgrounds may perceive and assess the same question or situation very differently, one important reason being that social norms governing the described scenario differ between the respective countries and cultures. In this respect, questions about behavior in an abstract game – even if non-incentivized – seem to have a powerful advantage.

### **3.4 Negative Reciprocity**

We finally come to negative reciprocity. Table 4 contains the results. The behavioral measure for negative reciprocity is the average score obtained from the minimum acceptable offer in an ultimatum game and the amount invested into punishment in a prisoner's dilemma game after unilateral defection of the opponent (cf. Appendix A2 for details). Panel B shows the performance of the proposed survey items in the replication study. Neither the quantitative item (NR9), which is the minimum acceptable offer in a hypothetical ultimatum game nor the qualitative item "*Willingness to punish unfair behavior*" (NR1), are significantly correlated with the behavioral measure and the coefficients are also tiny. Similarly, for the qualitative items that were eventually included in the GPS, we find no significant correlation with negatively reciprocal behavior in the Tehran data. Table 5 shows that results do not change, if we repeat the analysis for both games separately.

Table 4. Correlation of PSM and GPS items with the behavioral measure of negative reciprocity in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

		Panel A: Falk et al. (2022)		Panel B: Replication study	
Item Description		Corr.	OLS	Corr.	OLS
PSM	Minimum acceptable offer in the hypothetical ultimatum game (NR9)	0.342***	0.328*** (0.059)	0.064	0.044 (0.075)
	<i>How do you see yourself: Are you a person who is generally willing to punish unfair behavior even if this is costly</i> (NR1)	0.161***	0.1479*** (0.059)	-0.017	-0.006 (0.075)
	N		360		102
	Adjusted R <sup>2</sup>		0.134		-0.0165
	F		28.83		0.18
GPS	<i>If I suffer a serious wrong I will take revenge at the first opportunity.</i> (N11)	0.110	Not reported	-0.166	0.036
	<i>Willingness to punish unfair behavior towards self.</i>	Not reported	Not reported	-	-
	<i>Willingness to punish unfair behavior towards others.</i>	Not reported	Not reported	-	-
	N		Not reported		102
	Adjusted R <sup>2</sup>		Not reported		-0.007
	F		Not reported		0.24

Notes: Item numbers are based on the numbering as summarized in the Appendix B2. The first column in each panel is the Spearman correlation between the survey item and the behavioral measure. The second column shows the OLS coefficients from a multivariate regression of the standardized behavioral measure on the standardized module items. Standard errors are in parentheses. \*\*\* denote significance at the 1-percent level.

Results on the item selection procedure in Table A5 (Appendix A2) show that also for this preference, the survey items that explain behavior in the replication study have a quantitative question “*Hypothetical scenario: willingness to spend on hiring the detective to find and punish an unfair person*” (NR10). The qualitative question “*If someone behaves unfairly towards me in sports, I will also behave unfairly towards them*” (NR16) has a clear link to negative reciprocity.

Overall, quantitative items seem to perform consistently better than qualitative items in predicting individual behavior in our replication study. The adjusted R<sup>2</sup>s are small, indicating a low predictive power of the PSM and GPS modules for the observed behavior in general.

Table 5. Correlation of the PSM items with behavior in the Ultimatum and Prisoners' Dilemma game separately (Replication study only)

Item Description	Ultimatum game		Prisoner's Dilemma	
	Corr.	OLS	Corr.	OLS
Minimum acceptable offer in the hypothetical ultimatum game (NR9)	0.128	0.149 (0.098)	-0.061	-0.061 (0.100)
<i>How do you see yourself: Are you a person who is generally willing to punish unfair behavior even if this is costly</i> (NR1)	-0.123	-0.115 (0.099)	0.232**	0.102 (0.100)
N		102		102
Adjusted R <sup>2</sup>		0.017		-0.005
F		1.89		0.73

Notes: Item numbers are based on the numbering as summarized in the Appendix B2. The first column in each panel is the Spearman correlation between the survey item and the behavioral measure. The second column shows the OLS coefficients from a multivariate regression of the standardized behavioral measure on the standardized module items. Standard errors are in parentheses. \*\* denote significance at the 5-percent level.

## 4 Conclusion

We report results from a replication study with university students in Tehran aimed at testing to what degree survey items selected for the Preference Survey Module (PSM) as well as the Global Preference Survey (GPS) predict behavior in corresponding games in a different country than where the PSM was originally developed. Our results show that except for altruism, where both the quantitative and the qualitative survey item are found to significantly predict behavior, at least on the 10-percent level, for the other social preference dimensions only the quantitative item, which consider hypothetical versions of the corresponding experimental game, reveal a statistically significant and economically meaningful correlation. For negative reciprocity, neither the qualitative nor the quantitative items are significantly correlated with behavior. As none of the quantitative items – except for altruism – are included in the GPS, the results cast doubt on a straightforward generalization of correlations between survey items in the PSM and GPS and behavior in corresponding experimental games to other countries.

Our study corroborates findings from Bauer et al. (2020), despite several differences in the experimental implementation between their and our replication (participants, measures, protocol):

Quantitative items seem to predict well across countries and cultures; qualitative items do not, or less so. The result is important, because it suggests that quantitative items that are based on questions about behavior in abstract games – even if hypothetical, i.e., non-incentivized – may have a powerful comparative advantage in cross-country analyses.

Obviously, we need more comprehensive evidence before jumping to conclusions. Firstly, the number of participants in both our study and in Bauer et al. (2020) is relatively small.<sup>5</sup> This implies that noise may play role, in particular with respect to the observed differences between quantitative and qualitative survey items. Secondly, existing replications consider only two countries, Iran and Kenya. Thirdly, our study focuses on social preferences only and hence cannot say much about the predictive power of PSM and GPS items for risk and time preferences. All three issues can be resolved in future research. Then, the aim should be to not only test whether the results from Falk et al. (2022) can be replicated in full in other countries – it would be surprising if they could – but to broaden the research agenda towards a comprehensive validation and development of truly global measures of economic preferences.

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<sup>5</sup> Except for negative reciprocity, however, a power analysis suggests that the sample size in our study is sufficient to replicate the original findings.

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## Appendix A

### A1. Comparison of experimental measures in Falk et al. (2022) and our replication study

Table A1. Descriptive statistics on experimental measures based on experimental points in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

	Panel A: Falk et al. (2022)			Panel B: Replication study			P-value
	Mean (SD)	Min/Max	Obs.	Mean (SD)	Min/Max	Obs.	
<b>Trust<sup>1</sup></b>							
Trust	179 (148)	0/500	394	206.3 (130.9)	0/500	102	0.09
Trust (doubled version)	168 (152)	0/500	394	187.7 (126.3)	0/500	102	0.22
Trust (tripled version)	190 (160)	0/500	394	225 (153.6)	0/500	102	0.04
<b>Trustworthiness</b>							
Trustworthiness	249 (164)	0/820	394	358.3 (154)	0/687	102	0.00
Trustworthiness (doubled version)	221 (144)	0/668	394	316.2 (129.5)	0/550	102	0.00
Trustworthiness (tripled version)	276 (192)	0/973	394	400.3 (189.3)	0/825	102	0.00
Trustworthiness (tripled version, when the first-movers transfers the whole endowment)	510 (412)	0/1600	397	746.8 (367.4)	0/1500	102	0.00
<b>Altruism<sup>2</sup></b>	137 (107)	0/300	394	119 (94)	0/300	102	0.12
<b>Ultimatum<sup>3</sup></b>							
Ultimatum Game: offer	229 (67)	0/500	394	219.9 (87)	0/500	102	0.25
Ultimatum Game: Minimum acceptable offer	175 (80)	0/460	394	177 (72.7)	0/300	102	0.8

<sup>1</sup> Endowment: 500 points

<sup>2</sup> Endowment: 300 points

<sup>3</sup> Endowment: 500 points

<b>Prisoner's dilemma<sup>4</sup></b>							
Decision to cooperate	0.53 (0.49)	0/1	394	0.66 (0.47)	0/1	102	0.01
Punishment in bilateral cooperation	8 (33)	0/300	394	5.1 (20.4)	0/160	102	0.39
Punishment in the unilateral defection of the opponent	43 (86)	0/350	394	90.7 (139.5)	0/540	102	0.00
Punishment in his own unilateral defection	10 (40)	0/240	394	11.7 (41.2)	0/300	102	0.7
Punishment in the bilateral defection	6 (28)	0/300	394	3.4 (16.3)	0/120	102	0.36

*Notes:* Panel A and B represent the results for the experimental games in the original study and the replication study, respectively. The p-values are the results of a t-test that compares the average amount in each game (in experimental points) in the two studies.

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480, 480	240, 540
540, 240	300, 300

## A2. Predictive models selected for each preference based on data from the replication study

### Trust

Table A2. The predictive model selected for trust (Tehran data)

Items	(1)	(2)
Hypothetical investment game: first mover behavior (T24)	0.327*** (0.0887)	0.342*** (0.0928)
Most people would be fair to you (T21)	0.649*** (0.178)	
In general, one can trust other people. (T17, WVS question)		0.166* (0.0928)
Constant	-0.280** (0.117)	-0.000704 (0.0924)
Observations	102	102
R-squared	0.223	0.147
Adjusted R <sup>2</sup>	0.207	0.129
BIC	276.5	286.1

Notes: Item numbers are based on the question numbers as given in Appendix B. Standard errors are in parentheses. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

### Altruism

Table A3. The predictive model selected for altruism (Tehran data)

Items	(1)	(2)
Hypothetical donation (A11)	0.170* (0.0968)	0.204** (0.0960)
Other people regard me as an unselfish person. (A21)	0.238** (0.0968)	
I am willing to help others even if I expect that I will never meet them again. (A14)		0.209** (0.0960)
Constant	3.52e-09 (0.0949)	4.10e-09 (0.0955)
Observations	102	102
R-squared	0.099	0.088
Adjusted R <sup>2</sup>	0.0812	0.07
BIC	291.65	292.9

Notes: Item numbers are based on the question numbers as given in Appendix B. Standard errors in parentheses. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

## Positive reciprocity

Table A4. The predictive model selected for positive reciprocity (Tehran data)

Items	(1)	(2)
Hypothetical investment game: second mover behavior when the sender transfers the <b>whole</b> endowment (PR11-4)	0.247** (0.0964)	
Hypothetical investment game: second mover behavior (PR11)		0.246** (0.0964)
Hypothetical scenario (need medical treatment): willingness to pay for a thank-you gift. (PR10)	0.219** (0.0963)	0.222** (0.0963)
Constant	-.0005281 (0.0930)	0002956 (.0929)
Observations	102	102
R-squared	0.137	0.136
Adjusted R <sup>2</sup>	0.1195	0.1187
BIC	287.41	287.5

*Notes:* Item numbers are based on the question numbers as given in Appendix B. Standard errors in parentheses. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

## Negative reciprocity

For this preference, the best predictive model includes item NR11 with a negative coefficient. Below we report results for the second best model excluding this question.

Table A5. The predictive model selected for negative reciprocity (Tehran data). Dependent Variable: the amount invested into punishment after unilateral defection

Items	(1)
Hypothetical scenario: willingness to spend on hiring the detective to find and punish an unfair person (NR10)	0.201** (0.0985)
If someone behaves unfairly towards me in sports, I will also behave unfairly towards them. (NR16)	0.136 (0.0985)
Constant	0.000740 (0.0965)
Observations	102
R-squared	0.068
Adjusted R <sup>2</sup>	0.05
BIC	295.07

*Notes:* Item numbers are based on the question numbers as given in Appendix B. Standard errors in parentheses. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

### A3. Correlations with experimental measures

The correlations of each preference in the complete battery of survey questions with the respective experimental measure are reported in the Tables below. Panel B reports the correlation of questions with the experimental measures in our study in Tehran. Panel A of each table reports the results for the original study in Bonn based on the information that is provided in Falk et al. (2022).

#### Trust

Table A6. Correlations with the experimental measure of trust in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

	Panel A: Falk et al. (2022)	Panel B: Replication study
Item No.	Corr.	Corr.
T1	0.2672	0.1122
T2	0.2592	0.0773
T3		0.0194
T4		-0.0202
T5		0.0236
T6		0.0835
T7	0.3477	0.1958**
T8	0.2581	0.1151
T9	0.2848	0.0836
T10		0.1573
T11		-0.0828
T12		0.1691*
T13	0.2551	0.1381
T14		-0.1025
T15		-0.1152
T16	0.2829	0.0828
T17	0.2756	0.1396
T18		-0.1888
T19		-0.1788
T20		-0.2511***
T21		0.3401***
T22		-0.0898
T23		0.0898
T24	0.6201	0.5132***

*Notes:* Item numbers are based on the question numbers as given in Appendix B. Correlations are the Spearman correlation between the survey item and the experimental measure. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

## Altruism

Table A7. Correlations with the experimental measure of altruism in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

Item No.	Panel A: Falk et al. (2022) Corr.	Panel B: Replication study Corr.
A1	0.2057	0.0841
A2	0.2268	0.1796*
A3		0.1804*
A4		0.0558
A5		0.0212
A6		0.0256
A7	0.2095	0.0872
A8		0.1421
A9	0.2186	0.1900*
A10	0.3845	0.1921*
A11	0.3913	0.3059***
A12		-0.1693*
A13	0.2658	0.2024**
A14		0.2046**
A15	-0.2034	-0.1651*
A16		-0.1051
A17	0.2612	-0.1973**
A18		0.0141
A19		0.1107
A20		-0.1478
A21		0.2878***
A22		0.2135**
A23		-0.1441

*Notes:* Item numbers are based on the question numbers as given in Appendix B. Correlations are the Spearman correlation between the survey item and the experimental measure. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

## Positive reciprocity

Table A8. Correlations with the experimental measure of positive reciprocity in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

Item No.	Panel A: Falk et al. (2022) Corr.	Panel B: Replication study Corr.
PR1		-0.1422
PR2		-0.1087
PR3		0.0306
PR4	0.1648	0.0629
PR5		-0.1531
PR6	0.1543	-0.0131
PR7	0.2082	0.2225**
PR8		0.0216
PR9	0.3530	0.1362
PR10	0.2032	0.3087***
PR11	0.5560	0.2556***
PR12	0.2970	0.0098
PR13	0.2175	-0.1217
PR14		-0.0513
PR15		-0.0858
PR16		0.0098
PR17	0.2137	0.1729*

*Notes:* Item numbers are based on the question numbers as given in Appendix B. Correlations are the Spearman correlation between the survey item and the experimental measure. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

## Negative reciprocity

Table A9. Correlations with the experimental measure of negative reciprocity in the original study of Falk et al. (2022) (Panel A) and our replication study in Tehran (Panel B)

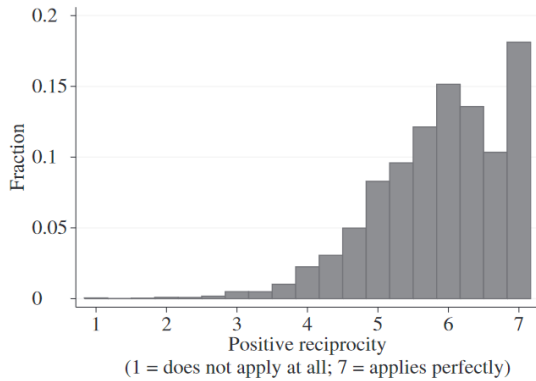
Item No.	Panel A: Falk et al. (2022)	Panel B: Replication study	
	Corr.	Corr. PD and UG	Corr. PD
NR1	0.1609	-0.0166	0.2324**
NR2	0.1422	-0.0262	0.1699*
NR3	0.1349	0.0084	0.1602
NR4		0.1443	0.1901*
NR5	0.1436	0.0554	0.2045**
NR6		0.1011	0.2664***
NR7		0.1402	0.1192
NR8		0.1195	0.2064**
NR9		0.0642	-0.0614
NR10	0.3416	0.0761	0.2025**
NR11	0.1101	0.0583	0.0822
NR12	0.1096	0.1250	0.1693*
NR13		0.1392	0.1803*
NR14		0.1284	0.1943*
NR15		0.0552	0.0674
NR16	0.1343	0.1639	0.2072**
NR17		-0.0704	0.0296
NR18		0.1389	0.2072**
NR19	0.1030	-0.0567	0.0709
NR20		0.0174	0.1247
NR21	0.1487	-0.0888	0.1001
NR22		-0.1708*	-0.0461
NR23		0.0521	0.1070
NR24		0.0913	0.1527
NR25		0.0465	-0.0064
NR26		0.0367	0.1681*
NR27		0.0573	0.0998

*Notes:* Item numbers are based on the question numbers as given in Appendix B. Correlations are the Spearman correlation between the survey item and the experimental measure. First column of Panel B represents the spearman correlation between survey items and combined experimental measure, ultimatum game and prisoner's dilemma; the second column of this panel, however, considers the prisoner's dilemma as the experimental measure. \*\*\*, \*\*, and \* denote significance at the 10-, 5-, and 1-percent level, respectively.

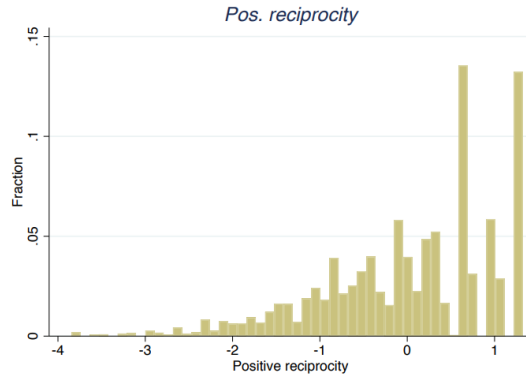


## A4. Distributions of Positive Reciprocity

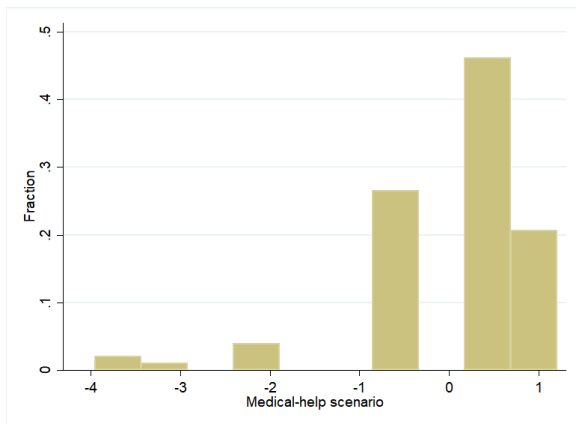
As it is shown in Figure A1, in case of the medical-help scenario (PR10), the corresponding distribution of participants' answers in our sample is closer to typical distributions of positive reciprocity, which are found to be left-skewed in previous studies (e.g., Dohmen et al., 2009; Falk et al., 2018), whereas the distribution of responses for the lost-in-an-unfamiliar-city scenario exhibits a closer resemblance to a normal distribution.



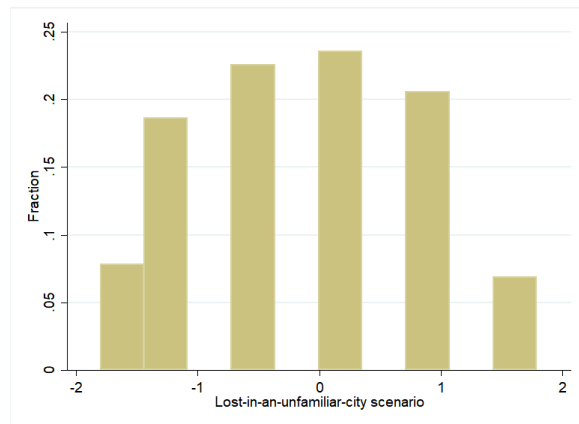
A. Figure 2, Dohmen et al. (2009)



B. Figure 5, Online Appendix Falk et al. (2018)



C. Distribution of responses to medical-help scenario in our replication study



D. Distribution of responses to lost-in-an-unfamiliar-city scenario in our replication study

Figure A1. Distributions of Positive Reciprocity

## **Appendix B**

### **B1. Experiments**

#### **Trust**

Two versions of the Investment Game, referred to as Trust Game, are conducted to measure trust. In one version of this game, the amount sent by the first to the second mover is doubled by the experimenter, in the second version the amount is tripled. In both versions, subjects (first mover and second mover) are endowed with 500 points. The choice set of the first mover is restricted to amounts in (0; 50; 100; ...; 500) because the behavior of the second mover is measured by contingent response method.

Each subject act in the role of the first and second mover in each version, such that overall each subject takes part in four Investment Games. All outcomes of the four decisions are payoff relevant. The average amount sent as a first mover in the two versions serves as the measure of the subjects' willingness to trust strangers.

#### **Altruism**

Subjects are endowed with 300 points and have to decide how many of these points to assign to a charitable organization. They choose from a list of well-established and well-known charitable organizations with various purposes. They can also name a different charitable organization (well-known in the correspondent city of the experiment) to which they want the money to be donated. The receipts received from charitable organizations sent to the subjects after the last day of the experimental sessions. The amount an individual transfers to charity serves as a measure of his/her altruistic inclination.

#### **Positive reciprocity**

Positive reciprocity is elicited from second mover behavior in the Trust Games described above. The use of the contingent response method for second-mover behavior allows to measure how much a subject wants to send back for each possible amount sent to them by the first mover. The payoff relevant choice is the one corresponding to the actual choice made by the first mover. Average second mover behavior in the Investment Games then constitutes the behavioral measure of the individual's willingness to reciprocate positively. Subjects are informed about their opponents' decisions and the resulting payoffs at the end of the laboratory session.

#### **Negative reciprocity**

In Falk et al. (2022), negative reciprocity is measure by two different types of experimental game. We also include these two games in our incentivized experimental measures. In first game, subjects take part in two Ultimatum Games as introduced by Güth et al. (1982). Subjects are randomly assigned the role of

the proposer in one game and the role of the responder in the other game. Proposers have to decide how many of 500 points they want to offer to the responder. Responders, in turn, have to indicate their minimum acceptable offer and this is taken as a first measure of the individuals' level of negative reciprocity. As the other measure, a Prisoner's Dilemma with a subsequent punishment stage is conducted. The Prisoner's Dilemma is framed as a project in which both players could decide to participate or not. Figure A1 illustrates the payoff structure of this part of the experiment. First, subjects have to decide how many points to invest into punishing their opponent contingent on every possible first stage outcome. The punishment is costly. Each point invested in punishment lead to three points being deducted from the other player. Then they are asked to decide whether they wanted to participate in the project or not. All decisions are taken simultaneously. The amount invested into punishment given unilateral defection of the other player, is the considered as a measure of the individuals' willingness to reciprocate negatively.

		Player 2	
		In	Out
Player 1	In	480, 480	240, 540
	Out	540, 240	300, 300

Figure A1- Payoff Matrix: Prisoner's Dilemma

## B2. All Survey Items

### Trust

- T1. Generally speaking, are you a person who is willing to trust other people, or are you not willing to trust other people?
  - T2. In comparison to others are you a person who is generally willing to trust other people, or you are not willing to trust others (in comparison to others)?
  - T3. Do other people assess you as a person who is generally willing to trust others or as a person who is not willing to trust others?
- How do you assess your willingness to trust others in the following contexts?
- T4. When it comes to people in your hometown.
  - T5. When it comes to people in your circle of friends.
  - T6. When it comes to your professional environment.
  - T7. When it comes to strangers.
  - T8. When it comes to people in your neighborhood.
  - T9. You are on vacation in a foreign country. A person, whom you meet in your hotel but whom you do not know, asks you for a favor. He or she urgently needs cash in order to pay for their

partner's doctor visit and promises to pay you back the following day. How much money would you be willing to lend to that person?

How often does it happen that...

T10. you take a hitchhiker with you?

T11. you leave your personal belongings unattended in a public place?

T12. do not lock your apartment door?

How well do the following statements describe you as a person?

T13. In comparison to others I quickly (build up) trust with strangers.

T14. Other people regard me as too credulous and trusting.

T15. I find it difficult to talk about personal issues with people I haven't known for a long time yet.

T16. As long as I am not convinced otherwise, I assume that people have only the best intentions.

What do you think: how well do the following statements apply?

T17. In general, one can trust other people.

T18. Nowadays one cannot rely on anyone anymore.

T19. When dealing with strangers it is better to be careful before one relies on them.

Do you think...

T20. that most people would take advantage of you when they have the chance, or...

T21. that most people would be fair to you?

Would you rather say...

T22. that most people try to be helpful/cooperative, or...

T23. that most people only act in their own best interest?

T24. See question PR11 in Positive Reciprocity.

### **Altruism**

A1. Are you a person who is generally willing to share with others without expecting something in return, or are you not willing to do so?

A2. In comparison to others, are you a person who is generally willing to share with others without expecting something in return, or are you not willing to do so (in comparison to others)?

A3. Do other people assess you as a person who is generally willing to share with others without expecting something in return or as a person who is not willing to do so?

How do you assess your willingness to share with others without expecting anything in return in the following contexts:

A4. With people in your hometown.

- A5. With people in your circle of friends.
- A6. With people from your professional environment.
- A7. With strangers.
- A8. With people in your neighborhood.
- A9. With people in distress or emergency situations.
- A10. When it comes to charity.
- A11. Imagine the following situation: you won unexpectedly received 1,000 Euro. Considering your current situation, how much would you donate to charity?
- How well do the following statements describe you as a person?
- A12. At work, I am only willing to do something for a colleague if I expect that he would do the same for me.
- A13. I am willing to donate time and money to charity, even if I don't profit from that directly.
- A14. I am willing to help others even if I expect that I will never meet them again.
- A15. When I spend time and money on something I expect to profit from that in the future.
- A16. When I donate money I expect that this is recognized and acknowledged.
- A17. I do not understand why some people spend their lifetime fighting for a cause which they do not benefit from directly.
- A18. I am a person who would give their shirt off their back to help others.
- A19. In comparison to others I am a rather selfless person.
- A20. I am only willing to help others if I expect that they would do the same for me.
- A21. Other people regard me as an unselfish person.
- A22. Please specify as precisely as possible how many hours per month you volunteer for good causes, e.g. protecting the environment.
- A23. How many people know that you commit time to charitable purposes?

### **Positive and negative reciprocity**

- PR1. Are you a person who is generally willing to go out of their way to return a favor or a help even if it is costly, or are you not willing to do so?
- PR2. In comparison to others, are you a person who goes out of their way to return a favor or a help even if it is costly, or are you not willing to do so (in comparison to others)?
- PR3. Do other people assess you as a person who goes out of their way to return a favor or a help even if it is costly or as a person who is not willing to do so?
- How do you assess your willingness to return a favor or a help in the following contexts?
- PR4. When it comes to people in your hometown.
- PR5. When it comes to people in your circle of friends.
- PR6. When it comes to your professional environment.

PR7. When it comes to strangers.

PR8. When it comes to people in your neighborhood.

NR1. Are you a person who is generally willing to punish unfair behavior even if it is costly?

NR2. In comparison to others, are you a person who is generally willing to punish unfair behavior even if it is costly, or are you not willing to do so (in comparison to others)?

NR3. Do other people assess you as a person who is generally willing to punish unfair behavior even if it is costly, or as a person, who is generally not willing to do so?

How would you assess your willingness to punish unfair behavior even if it is costly in the following contexts?

NR4. When it comes to people in your hometown.

NR5. When it comes to people in your circle of friends.

NR6. When it comes to your professional environment.

NR7. When it comes to strangers.

NR8. When it comes to people in your neighborhood.

PR-NR-1. Are you a person who is generally willing to reward fair behavior and punish unfair behavior even if it is costly, or are you not willing to do so?

PR-NR-2. In comparison to others, are you a person who is generally willing to reward fair behavior and punish unfair behavior, even if it is costly, or are you not willing to do so (in comparison to others)?

PR-NR-3. Do other people assess you as a person who is generally willing to reward fair behavior and punish unfair behavior even if it is costly, or as a person who is not willing to do so?

Imagine the following situation: together with a person whom you do not know you unexpectedly received 100 Euro in a lottery. The rules stipulate the following: One of you has to make a proposal about how to divide the 100 Euro between you two. The other one gets to know the proposal and has to decide between two options. He or she can accept the proposal or reject it. If he or she accepts the proposal, the money is divided according to the proposal. If he or she rejects the proposal, both receive nothing.

NR9. Assume that the other person makes the proposal about how to divide the money. You, on the other hand, have to decide whether to accept or reject the proposal. What is the minimum amount the other person has to offer you for you to be willing to accept the proposal?

PR9. Imagine the following situation: you are shopping in an unfamiliar city and realize you lost your way. You ask a stranger for directions. The stranger offers to take you with their car to your destination. The ride takes about 20 minutes and costs the stranger about 20 Euro in total. The stranger does not want money for it. You carry six bottles of wine with you. The

cheapest bottle costs 5 Euro, the most expensive one 30 Euro. You decide to give one of the bottles to the stranger as a thank-you gift. Which bottle do you give? (Options: The bottle for 5/10/15/20/25/30 Euro)

PR10. Assume that you are abroad and need medical treatment. In the country you are in it is common that the doctor treats patients only for cash. The treatment costs about 100 Euro. You don't have any cash with you. A stranger in the waiting room observes the situation and gives 100 Euro as a gift to you. You are happy to take the gift. You ask the stranger for their address. When returning home two weeks later you decide that you want to thank the stranger and send them a present. How much do you spend on a present that you then send to the stranger?

NR10. Please consider what you would do in the following situation: you and a stranger are involved in a car accident. You are not to blame for the accident, but the stranger claims that you ran a red light even though it was the stranger himself who ran the red light. Even though the stranger's claim is false, the claim is believed to be correct and you have to pay a fine of 300 Euro. There was an eyewitness who saw what really happened. If the eyewitness testifies, you don't have to pay the fine but the stranger has to instead. In addition, the stranger will then have to pay a fine for making a false testimony. Assume that there is a detective who will definitely find the eyewitness, and that the eyewitness will testify if the detective finds him. What is the maximum amount of money that you are willing to spend on hiring the detective?

PR11. Please consider what you would do in the following situation: you and a person whom you do not know both have to make a decision about the employment of money and together you achieve an outcome. The rules are the following: both of you get an account with 20 Euro. Thus, at first, both you and the other person have 20 Euro each on their account. The other person has to decide first. She can transfer money to your account. She can transfer any round amount, i.e. 0 Euro, 1 Euro, 2 Euro, etc. up to 20 Euro. Each Euro that the other person decides to transfer to you is tripled by the people conducting the study and then credited to your account. Thus, after the first step, the other person has 20 Euro minus the amount she transferred to you on her account. You, on the other hand, have 20 Euro plus three times the amount that was transferred to you on your account. Now you have to make a decision. You can transfer money back to the other person. You can transfer any amount to the other person, i.e. 0 Euro, 1 Euro, 2 Euro, etc. up to 80 Euro depending on how much money is on your account after receiving the transfer from the other person. After this decision, the study is over, and the amount on the two accounts are final. The other person has 20 Euro minus the amount she transferred to you plus the amount you transferred back on her account. You have 20 Euro plus three times the amount the other person transferred

to you minus the amount you transferred to the other person on your account. For a given transfer of the other person we would now like to know how much money you would decide to transfer back.

PR11-1. Assume that the other person transfers 5 Euro to your account. After the first step you have  $20+3*5$  Euro = 35 Euro, the other person has  $20-5$  Euro = 15 Euro. Which amount do you transfer back?

PR11-2. Assume that the other person transfers 10 Euro to your account. After the first step you have  $20+3*10$  Euro = 50 Euro, the other person has  $20-10$  Euro = 10 Euro. Which amount do you transfer back?

PR11-3. Assume that the other person transfers 15 Euro to your account. After the first step you have  $20+3*15$  Euro = 65 Euro, the other person has  $20-15$  Euro = 5 Euro. Which amount do you transfer back?

PR11-4. Assume that the other person transfers 20 Euro to your account. After the first step, you have  $20+3*20$  Euro = 80 Euro, the other person has  $20-20$  Euro = 0 Euro. Which amount do you transfer back?

T24. Finally, a different question: assume you were in the position of the other person and had to decide which amount to transfer. Which amount would you transfer?

How well do the following statements describe you as a person?

PR12. When someone does me a favor I am willing to return it.

NR11. If I suffer a serious wrong I will take revenge at the first opportunity.

NR12. When someone puts me into a difficult situation I will do the same to them.

PR13. I go out of my way to help someone who has helped me before.

NR13. If someone insults me I will also behave in an insulting way towards him.

PR14. I am willing to incur costs to help someone who has helped me before.

NR14. If someone harms me on purpose I will try to give that person a taste of his own medicine.

NR15. I am not a person who is taken for a fool.

PR15. I do not like the feeling of owing something to someone.

NR16. If someone behaves unfairly towards me in sports, I will also behave unfairly towards them.

NR17. I am not a person who lets others push me around.

PR16. If a colleague does me a favor at work, I make sure to return the favor at the next occasion, even if I have to invest precious time to do so.

NR18. When someone treats me in a bad way, I don't just let it go.

NR19. I absolutely dislike being the fool.

NR20. It is important to me to be respected by others.



NR21. You sometimes have to play tough in order not to be taken advantage of.

PR17. Imagine the following situation: you are shopping in an unfamiliar city and realize you lost your way. You ask a stranger for directions. The stranger offers to take you with their car to your destination. The ride takes about 20 minutes and costs the stranger about 20 Euro in total. The stranger does not want money for it. You have six bottles of wine with you. One bottle costs 5 Euro. You decide to give a bottle to the stranger as a thank-you gift. How many bottles do you give? (Options: One/two/three/four/five/six bottles.)

NR22. Imagine the following scenario: A business in a city with a high level of unemployment makes profits despite a recession. The enterprise's chairman announces a decision to cut all wages and salaries by 5%. How fair do you think is this decision?

NR23. Imagine the following scenario: It is the weekend of the annual fair, which is well-attended as usual. It is warmer than expected, so that the people at the fair drink much more than in the preceding years. As a result, the hosts decide to raise the prices of the drinks. How fair do you think is this decision?

Imagine the following scenario: you and two other students have to prepare a presentation as a team for a seminar at the university. You and one of the other two students have already prepared your respective parts of the presentation. On the evening before the presentation, you realize that the third student still has not started to work on their part of the presentation. Consequently, you and the other student decide to work all night in order to prepare the third part of the presentation. On the day of the presentation, the third student presents your work as his work. Please express the intensity of your feelings towards that student.

NR24. How upset are you on a scale from 0 to 10?

NR25. How angry are you on a scale from 0 to 10?

Imagine the following scenario: The preparation of the annual accounts is coming up for the business you are employed by. Hence, all employees have to work overtime in order to manage and finish the workload that the boss expects from them. Nevertheless, one of your co-workers leaves the office every day at the usual time, so that you and the other colleagues additionally have to take on his workload as well. Please express the intensity of your feelings towards that co-worker.

NR26. How upset are you on a scale from 0 to 10?

NR27. How angry are you on a scale from 0 to 10?

### B3. English translation of instructions<sup>5</sup>

#### Trust

##### Instructions:

In this experiment you and one of the other participants will both make a choice over how to use an amount of money and together your choices will determine the outcome. You and the other participant will be matched randomly. Neither you nor the other participant will ever know who they are matched to. Moreover, it is ensured that you and the other participant have not been matched in one of the preceding experiments and that you will not be matched again in any of the upcoming experiments.

In this experiment, each of you is assigned a role: either the role of the **sender** or of the **recipient**.

For the experiment, each participant is **endowed with 500 points**.

##### The experiment has two stages:

**In the first stage**, the sender can make a transfer to the recipient.

The transfer is an amount between 0 and 500 points, in increments of 50 points. Thus, the sender can transfer 0 points, 50 points, 100 points, ..., 450 points, or 500 points to the recipient. The amount transferred is **doubled** by the people running the experiment.

For example, if the sender transfers 100 points, the recipient gets 200 points. If the sender transfers 200 points, the recipient gets 400 points. If the sender transfers 0 points, the recipient gets 0 points, etc.

Thus, at the end of the first stage, the recipient has his/her initial endowment plus twice the transfer that the sender made.

**In stage two**, the recipient can transfer back any amount to the sender. This back transfer will not be doubled.

The back transfer has to be an amount between 0 and 1500.

After the back transfer, the payments resulting from the experiment are determined.

Please click on Continue.

Continue

---

<sup>5</sup> German and Persian instructions available from the authors upon request.

Instructions:

The **payments** for the sender and the recipient are calculated as follows:

**For the sender: 500 points - transfer + back-transfer**

**For the recipient: 500 points + 2 \* transfer - back-transfer**

Example: Assume the sender makes a transfer of 150 points.

At the end of the first stage the sender has  $500 - 150 = 350$  points and the recipient has  $500 + 2*150 = 800$  points.

In stage two, the recipient chooses to transfer back 200 points.

Then, the payments are: for the sender:  $500 - 150 + 200 = 550$  points. For the recipient:  $500 + 2* 150 - 200 = 600$  points.

On the next screen you will be informed whether you are assigned the role of the sender or the recipient and you can make your choices.

If you have any questions, please let us know. We will come to you and answer them.

Please click on Continue.

Continue

Please wait for the experiment to continue.

**You are assigned the role of the sender!**

How many points do you want to transfer to the recipient?

Please click on Continue when you have made your decision!

Continue

Help

Please indicate how much you want to transfer.

You can transfer any amount between 0 and 500 points, in increments of 50 points. You can thus transfer 0, 50, 100, 150, 200, 250, 300, 350, 400, 450, or 500 points.

Please click on Continue when you have made your decision!

Please wait for the experiment to continue.

Instructions:

In this experiment, you and a different participant than before are randomly matched with each other by the computer. Neither you nor the other participant will ever know who they are matched to. In addition, it is ensured that you have not been matched to the other participant in any of the previous experiments, and that you will not be matched to the other participant in any of the following experiments.

**The same rules apply as in the previous experiment.**

A short summary:

Both participants receive 500 points. There is a sender and a recipient. The points transferred by the sender to the recipient will be doubled. The recipient can transfer points back to the sender that will not be doubled. If both participants have made their decisions, the payments from this experiment are determined accordingly.

Please click on Continue.

Continue

Please wait for the experiment to continue.

**You are assigned the role of the recipient!**

Since you do not know yet how much the sender transfers to you, you have to indicate how much you want to transfer back to the sender for every possible amount the sender can transfer to you. The back transfer is an amount between 0 and 1500 points.

<b>Suppose...</b>	<b>The points at the end of the first stage are then</b>	<b>How much do you transfer back?</b>
the sender transfers 0 points	500 points for the Sender und 500 points for you	
the sender transfers 50 points	450 points for the Sender und 600 points for you	
the sender transfers 100 points	400 points for the Sender und 700 points for you	
the sender transfers 150 points	350 points for the Sender und 800 points for you	
the sender transfers 200 points	300 points for the Sender und 900 points for you	
the sender transfers 250 points	250 points for the Sender und 1000 points for you	
the sender transfers 300 points	200 points for the Sender und 1100 points for you	

the sender transfers 350 points	150 points for the Sender und 1200 points for you	
the sender transfers 400 points	100 points for the Sender und 1300 points for you	
the sender transfers 450 points	50 points for the Sender und 1400 points for you	
the sender transfers 500 points	0 points for the Sender und 1500 points for you	

Please click on Continue when you have made your decision!

Continue

Please wait for the experiment to continue.

Instructions:

In this experiment, you and a different participant than before are randomly matched with each other by the computer. Neither you nor the other participant will ever know who they are matched to. In addition, it is ensured that you have not been matched with the other participant in any of the previous experiments, and that you will not be matched with the other participant in any of the following experiments.

**The only difference to the previous experiment is the following:**

The points that the sender transfers to the recipient are **tripled**, not doubled as before.

Again a short summary: Both participants receive 500 points. There is a sender and a recipient. The points transferred by the sender to the recipient will be tripled. The recipient can transfer points back to the sender that will not be tripled. If both participants have made their decisions, the payments from this experiment are determined accordingly.

Please click on Continue.

Continue

Please wait for the experiment to continue.

**You are assigned the role of the sender!**

How many points do you want to transfer to the recipient?

Please click on Continue when you have made your decision!

Continue

**Help**

Please indicate how much you want to transfer.

You can transfer any amount between 0 and 500 points, in increments of 50 points. You can thus transfer 0, 50, 100, 150, 200, 250, 300, 350, 400, 450, or 500 points.

Please click on Continue when you have made your decision.

Please wait for the experiment to continue.

**Instructions:**

In this experiment, you and a different participant than before are randomly matched with each other by the computer. Neither you nor the other participant will ever know who they are matched to. In addition, it is ensured that you have not been matched with the other participant in any of the previous experiments, and that you will not be matched with the other participant in any of the following experiments.

**The same rules apply as in the previous experiment.**

Again a brief summary: Both participants receive 500 points. There is a sender and a recipient. The points transferred by the sender to the recipient will be tripled. The recipient can transfer points back to the sender that will not be tripled. If both participants have made their decisions, the payments from this experiment are determined accordingly.

Please click on Continue.

Continue

Please wait for the experiment to continue.

**You are assigned the role of the recipient!**

Since you do not know yet how much the sender transfers to you, you have to indicate how much you want to transfer back to the sender for every possible amount the sender can transfer to you.

The back transfer is an amount between 0 and 2000 points

Suppose...	The points at the end of the first stage are then	How much do you transfer back?
the sender transfers 0 points	500 points for the Sender und 500 points for you	

the sender transfers 50 points	450 points for the Sender und 650 points for you	
the sender transfers 100 points	500 points for the Sender und 800 points for you	
the sender transfers 150 points	450 points for the Sender und 950 points for you	
the sender transfers 200 points	500 points for the Sender und 1100 points for you	
the sender transfers 250 points	450 points for the Sender und 1250 points for you	
the sender transfers 300 points	500 points for the Sender und 1400 points for you	
the sender transfers 350 points	450 points for the Sender und 1550 points for you	
the sender transfers 400 points	500 points for the Sender und 1700 points for you	
the sender transfers 450 points	500 points for the Sender und 1850 points for you	
the sender transfers 500 points	0 points for the Sender und 2000 points for you	

Please click on Continue when you have made your decision!  
Please wait for the experiment to continue.

Continue

## Altruism

### Information:

The following experiment is about donation behavior. You will receive a list of organizations to which you can make a donation. In case you would rather donate to a different organization, you can indicate the organization to which you would like your donation to go. However, this needs to be an officially registered charitable organization.

In a few days, you can visit a website where we will upload the receipts for you to verify the donation. We will provide you with the website's address at the end of the experiment.

Continue

## Donation

You will now receive an amount of 300 points. How many of these points would you like to donate?

Continue

## Organization<sup>6</sup>

Which organization should receive your donation?

- MAHAK, society to support children suffering from cancer
- Imam Ali charity
- Ameneh Nursery
- Hands compassionate charity
- Kahrizak Charity Foundation
- Society to support people suffering from kidney disease
- Others (This has to be an officially registered Charitable organization)

If you chose "Others", insert the name of organization in this field: \_\_\_\_\_

Continue

Please wait for the experiment to continue.

## Prisoner's dilemma

### Instructions:

In the following experiment, you will be randomly matched to another participant. Neither you nor the other participant will ever know who they are matched to. In addition, it is ensured that you have not been matched with the other participant in any of the previous experiments, and that you will not be matched with the other participant in any of the following experiments.

This experiment has two stages.

In stage 1, you and the other participant have to make a decision without knowing the decision of the other person. Together, the two decisions determine your payment and the payment of the other participant.

In stage 2, both players can deduct points from the other player through which the total payment of the other player decreases.

After the second stage this experiment is over.

On the next screen we will explain the rules to you in more detail.

Please click on Continue.

Continue

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<sup>6</sup> When collecting data, we replaced the organizations in the original study with organizations based in Iran.



### Stage 1

Both you and the other participant get 300 points.

Then, both participants can decide whether they contribute the 300 points to a project, or not.

If both contribute, both get **480 points** at the end of this stage.

If neither one contributes, both keep their **300 points**.

If one contributes and the other one keeps the points for him/herself, the one who contributes will get **240 points** at the end of this stage and the other one gets **540 points**.

### Stage 2

In stage 2, you can reduce the other participant's payment by deducting points from him/her.

Similarly, the other participant can reduce your payment by deducting points from you.

If you decide to deduce points from the other participant, his/her payment will be reduced by the amount of points you deducted. If you decide not to deduct points from the other participant, his/her payment remains unchanged.

Deducting points from the other participant is costly. Each point you deduct from the other player costs you one third of a point. Of course, if you decide not to deduct points from the other participant, you do not incur any costs.

### Your total payment from this experiment:

Your total payment in points is determined by the payment from the first stage minus the points deducted from you, minus the costs you incur for deducting points.

If you have any questions, please us know. We will come to you and answer your questions.

Please click on Continue.

Continue

In what follows, we would like to know your decisions in stage 2 of the experiment, for every possible outcome of stage 1 of the experiment.

Afterwards, you will indicate your decision for stage 1.

Subsequently, your decision will be matched with that of the other participant by the computer and the payments will be determined. You will receive the payment at the end of today's experiment.

Continue

What is your decision in stage 2, if the following decisions have been made in stage 1:

You chose "contribute".

The other participant chose "contribute".

Therefore, you receive 480 points.

The other participant receives 480 points.

How many points would you like to deduct from the other participant?

Continue

What is your decision in stage 2, if the following decisions have been made in stage 1:

You chose "contribute".  
The other participant chose "don't contribute".

Therefore, you receive 240 points.  
The other participant receives 540 points.

How many points would you like to deduct from the other participant?

Continue

What is your decision in Stage 2 if the following decisions have been made in Stage 1:

You have chosen "don't contribute".  
The other participant has chosen "contribute".

Therefore, you receive 540 points.  
The other participant receives 240 points.

How many deduction points do you want to assign to the other participant in this case?

Continue

What is your decision in stage 2, if the following decisions have been made in stage 1:

You chose "don't contribute".  
The other participant chose "don't contribute".

Therefore, you receive 300 points.  
The other participant receives 300 points.

How many points would you like to deduct from the other participant?

Continue

<b>What is your decision in stage 1 of the experiment?</b>	As a reminder: If both participants contribute, both will get 480 points. If neither contributes, both get 300 points. If one contributes while the other does not contribute, the one who contributes gets 240 points, the other gets 540 points. The table below provides a summary.	
	Contribute	Don't contribute
Contribute	480, 480	240, 540
Don't contribute	540, 240	300, 300

**Your decision:**

Contribute  
Don't contribute

Please wait for the experiment to continue.

## Ultimatum game

### Instructions:

In this experiment, you and another participant are randomly matched. Neither you nor the other participant will ever know who they are matched to. In addition, it is ensured that you have not been matched with the other participant in any of the previous experiments, and that you will not be matched with the other participant in any of the following experiments.

You and the other participant are each assigned one of two roles: the role of the **sender** or the role of the **recipient**. The experiment is about splitting an amount of 500 points between the sender and the recipient.

The **sender** makes a proposal about **how the 500 points should be split** between him/her and the recipient.

To this end, the sender indicates how many points s/he wants to send to the recipient.

The **recipient** decides whether s/he **accepts or rejects** the proposal about how to divide the points.

To this end, the recipient has to indicate how many points s/he at least wants to receive so that s/he is willing to accept the proposed division of points. The recipient will make this decision before knowing the actual proposal of the sender.

If the amount of points that the sender sends to the recipient is larger or equal to the minimum amount that the recipient is willing to accept, the proposal about the division of points made by the sender will be implemented.

Conversely, the proposal made by the sender will be rejected in case the amount of points the sender sends to the recipient is smaller than the minimum amount that the recipient is willing to accept.

After both the sender and the recipient have made their decisions, the decisions are compared.

If the recipient is willing to **accept** the proposal about the division of the points made by the sender, the amount of points is split between the two according to the proposal of the sender. If the recipient is **not** willing to accept the proposal, both the sender and the recipient **receive 0 points**.

Please read the instructions again to make sure you understand everything. If anything is unclear, please let us know. We will come to you and answer your question.

Please click on Continue to make your decisions.

Continue

Please wait for the experiment to continue.  
**You are assigned the role of the sender!**

Please indicate the amount you want to send to the other person.

OK

Please wait for the experiment to continue.

**Instructions:**

In this experiment, you will be randomly matched to a **different participant** than before. Neither you nor the other participant will ever know who they are matched to. In addition, it is ensured that you have not been matched with the other participant in any of the previous experiments, and that you will not be matched with the other participant in any of the following experiments.

As with the experiment before, each of you is assigned a role: you are either sender or recipient. **As before, the same rules apply:**

The sender makes a proposal for the division of an amount of 500 points and the recipient decides whether to accept or reject the proposal.

The recipient indicates the minimum amount of points from which s/he accepts the division proposed by the sender.

If the amount of points that the sender sends to the recipient is larger or equal to the minimum amount that the recipient is willing to accept, the proposal about the division of points made by the sender will be implemented.

Conversely, the proposal made by the sender will be rejected in case the amount of points the sender sends to the recipient is smaller than the minimum amount that the recipient is willing to accept.

After both the sender and the recipient have made their decisions, the decisions are compared.

If the recipient is willing to **accept** the proposal about the division of the points made by the sender, the amount of points is split between the two according to the proposal of the sender. If the recipient is **not** willing to accept the proposal, **both** the sender and the recipient **receive 0 points**.

If anything is still unclear, please let us know. We will then come to you and answer your questions.

Please click on Continue to make your decisions.

Continue

Please wait for the experiment to continue.

**You are assigned the role of the recipient!**

Please indicate the minimum amount that you are willing to accept.

OK

Please wait for the experiment to continue.

End of the experiment. You will be informed about your payment from this experiment at the end of today's session.

Please wait.

A new experiment will begin shortly

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