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TRUST AND RECIPROCITY AMONG INTERNATIONAL GROUPS: EXPERIMENTAL EVIDENCE FROM AUSTRIA AND JAPAN

Kenju Akai
and
Robert J. Netzer

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Trust and reciprocity among international groups:

Experimental evidence from Austria and Japan

Kenju Akai[a,b], Robert J. Netzer[c]

[a] *Japan Society for the Promotion of Science, 1-6 Chiyoda-Ku, Tokyo 1028471, Japan*

[b] *Institute of Social and Economic Research, Osaka University, 6-1 Mihogaoka, Ibaragi, Osaka 5670047, Japan*

[c] *Department of Economics, University of Innsbruck, Unicersitaetsstrasse 15, A-6020 Innsbruck, Austria*

Corresponding author: k-akai@iser.osaka-u.ac.jp, Institute of Social and Economic Research, Osaka University, 6-1 Mihogaoka, Ibaragi, Osaka 5670047, Japan.

Tel.: +81-6-6879-8552;

Fax: +81-6-6879-8584.

E-mail: jiro.netzer@gmail.com (R. Netzer)

Abstract: This paper aimed to compare the trust and reciprocity levels among international groups by adopting a modified trust game played among groups from Austria and Japan. Our results were as follows: (i) When the groups interacted intranationally, the trust and reciprocity levels among the Austrian and Japanese groups were identical. (ii) When they interacted internationally, the groups tended to display the same trust levels, and the Japanese groups tended to reciprocate more than the Austrian groups as the trust levels of their respective interacting group increased. These results suggest that a heterolytic group norm exists across nationalities. In other words, the trust between groups is identical across nationality, whereas reciprocity between groups differs. The fact that the Japanese display less in-group favoritism only in terms of reciprocity has an important implication in terms of a comparative analysis of group norms, not only between the EU and Japan but also between individualism and collectivism in larger sense.

Keywords: Trust game, Group norm, International experiment, Intranational experiment

JEL classification: C92, C71

1 Introduction

Rapidly proceeding globalization enhances the mutual interaction between different nations, cultures, or ethnicities in various settings. For instance, when a company begins to jointly develop new technologies at the international level with a foreign company, it will face much uncertainty and risk stemming from the problems unique to each country, in terms of aspects such as accounting systems, labor customs, and patent laws. Even if the risks are minimized, there is still a chance that the partner company will tear up the contract and steal newly developed technology or free-ride the company's developmental efforts—unless the trust and reciprocity levels between two are sufficiently established. To avoid such issues, the company builds a professional team in which several members orally discuss whether or not they trust the partner company and carefully decide whether to invest or not. On the basis of the discussion within the team, the contract is not signed unless the team from the company trusts the partner company's team. As Arrow (1972) indicated, every commercial transaction has an element of trust, and hence, the consideration that globalization is based on such international group interaction allows us to investigate international trust and reciprocity based on group decisions.

In the literature, experimental investigations of intercultural trust and reciprocity have focused on individual interactions in the context of a trust game (Berg 1995). In their seminal paper, Fershtman and Gneezy (2001) identify ethnic stereotypes to be the cause of the Ashkenazi and Eastern Jews' mistrust of Eastern Jews. Willinger et al. (2003) find that the amount that the Germans invested into the French is higher than the reverse case, whereas the amount that the Germans return to the French is not different from that which the French return to the Germans. Further, Bouckaert and Dhaene (2004) find that trust and reciprocity in the case of both Turkish and Belgian small businessmen are independent of ethnic origin and the ethnic origin of the opposite party. In addition, Netzer and Sutter (2009) find that Austrians are more trusting of the Japanese and that the Japanese reciprocate less toward the Austrians than the other way around. In socio-psychology, on the other hand, Takahashi et al. (2008) employ a variation of the trust game and discover that the Japanese display less in-group favoritism with respect to both trust and trustworthiness than the Chinese and Taiwanese.

Even if we exclusively consider domestic interactions, there are only two studies that deal with group interactions in the trust game. The first is Cox (2002), who finds that trust levels do not differ between individuals and groups, whereas reciprocity among groups is less than that among individuals. Second, Kugler et al.'s (2007) result is contradictory to that of Cox: trust in groups is less than that in individuals, whereas there is no difference in reciprocity between groups and individuals.

Following Cox (2002) and Kugler et al. (2007), we expand the study by Netzer and Sutter (2009) and conduct modified trust games played between Austrian and Japanese groups, whose members interact freely in their decision-making processes; this forms part of what we refer to as the international treatment. To evaluate the results of this international experiment vis-à-vis the situation within each country, we also carry out an intranational experiment for purposes of comparison; in this case, the same game is played internally in each country, among Austrian groups and among Japanese groups.

Our study is, to the best of our knowledge, the first experiment employing a trust game in which international groups directly interact in real-time through the Internet, in laboratories separated by a distance of over 5,000 miles. A real-time investigation over the Internet is also employed by Takahashi et al (2008). While Netzer and Sutter (2009) intermediate the interactions of the subjects, all of whom do not join the experiment at the same time, we choose to conduct a real-time investigation over the Internet in order to dispel any doubts the subjects may have regarding their interacting groups.

The results obtained are as follows: (i) When interacting with groups in their own country, the Austrian groups demonstrate the same level of trust and reciprocity as the Japanese groups. (ii) However, when interacting internationally, as their trust level increases, the Japanese groups tend to reciprocate toward the trust shown by the Austrian groups more than the other way around. Furthermore, as their trust level increases, the Japanese groups show a marginally higher reciprocation toward the Austrian groups than the other way around.

These results suggest that a heterolytic group norm exists across nationalities. That is, the trust between groups is identical across nationality, but reciprocity between groups differs. Further, the fact that the Japanese display less in-group favoritism as a group only in terms of reciprocity has an important

implication in terms of a comparative analysis of group norms—not only between the EU and Japan but also between individualism and collectivism in larger sense.

The remainder of the paper is organized as follows: Section 2 presents the experimental design and procedures. Section 3 describes and analyzes the results. Finally, Section 4 provides the conclusion and a discussion.

2 Experimental design and procedure

2.1 Design of our trust game

The subjects were allocated to separate rooms, designated as Rooms A and B. Following Cox (2002) and Kugler et al. (2007), the subjects in the two rooms were randomly assigned to three-member teams who interact freely in making a decision[1]. The subjects were informed that the experiment included two independent parts and that the result of either part 1 or part 2 would be randomly determined as their final payments. Further, they were told that a detailed explanation of part 2 of the experiment would be provided after the completion of part 1.

In part 1, the teams in Rooms A and B were anonymously matched in pairs. They were given to 10 initial tokens as the experimental money. Team A and Team B play the roles of trustor and trustee, respectively. First, Team A inclusively determined how many tokens between 0 and 10 to send to Team B. Team A retained the remaining tokens that were not sent to Team B. The number of tokens that Team A sent to Team B was tripled. Then, Team B decided how many of the tokens they would send back to Team A. Denote the number of tokens sent by Team A as x and those sent back by Team B as y. Team B determined y between 0 and $10 + 3x$ inclusively[2]. The amount Team B sent back to Team A was not tripled. Since we focus on the internalized reciprocity that the subjects potentially maintain before they interact with the others in the experiment, we used a strategy method (Selten 1967) to avoid the possible effect

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[1] We collectively refer to the three-member groups in each room as a "team," namely, Team A (Room A) and Team B (Room B).
[2] In the original trust game (Berg 1995), the trustees are given $10 as a show-up fee; they were told that they cannot use this money in game. However, in order to avoid the possible effect of an imbalance in the endowments on a trustee's decision, we allow trustees to use their endowments.

where the trustee's decision might be influenced by the trustor's decision. While the trustors decided on a single transfer, x, the trustees had to indicate a return, y, for all possible transfers, x, from the trustors. Hence, the trustees decided on returns for 11 transfer possibilities.

We deliberately did not provide the subjects with information as to the interacting group's behavior in part 1 so as to keep parts 1 and 2 of the experiment independent. In part 2, they were informed that the same game was to be played again, but with their roles interchanged. This time around, Team A (B) would play the role of the trustee (trustor). The members of Teams A and B were the same as designated in part 1. The subjects were anonymously matched in pairs and, as before, given 10 initial tokens. The remaining rules were the same as in part 1.

Since we did not inform the subjects as to the rules of the experiment in part 2 at the beginning of the experiment and also about the results of part 1, we consider parts 1 and 2 to be independent. This would ensure that the transfers and returns in a subgame perfect Nash equilibrium in each part are zero. Based on this theoretical prediction, we consider the relative transfer to their holdings, given by $x/10$, to reflect the trust involved in a decision made under the risk stemming from the social uncertainty as to whether or not the counterpart behaves reciprocally. On the other hand, we consider the relative return to their holdings, $y/(10+3x)$, to reflect the reciprocity shown in the willingness to honor the trust received. According to Camerer's survey (2003), average transfers range from 40%–60%, with returns averaging 110% of the transfers in many previous experimental studies[3].

Table 1. Treatment conditions

Experiment	Treatment	Number of sessions	Team A 1st: trustor 2nd: trustee	Team B 1st: trustee 2nd: trustor	Number of teams in each role
Intranational	AA	4	Austrian groups	Austrian groups	18
	JJ	4	Japanese groups	Japanese groups	18
International	AJ	4	Austrian groups	Japanese groups	18
	JA	4	Japanese groups	Austrian groups	18

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[3] In previous studies, the proportion of returns did not include the trustee's endowments.

As summarized in Table 1, our design features two experiments comprising four treatments that differ with respect to which subjects belong to Teams A and B. The intranational experiment consists of treatments AA, where both Teams A and B are Austrian groups, and JJ, where both teams are Japanese groups. Further, the international experiment consists of treatments AJ and JA; in the former treatment, Team A includes the Austrians and Team B the Japanese, and it is the other way around in the latter treatment. A treatment consists of four sessions, each involving 24 or 30 subjects. Further, each treatment involves the participation of a total of 36 groups (18 from Team A and 18 from Team B), comprising 108 subjects in all.

2.2 Procedures

Our experiments were programmed and implemented by using the experimental software z-Tree (Fischbacher 2007). Each treatment consisted of the same number of subjects. The subjects were undergraduate and graduate students from Innsbruck University in Austria and from Osaka University in Japan[4]. They were invited through flyers posted around the campuses. None of the subjects participated in more than one session.

For the intranational experiment, the experiment proceeds as follows. All the subjects initially arrived at a single location for registration before being assigned to their rooms; this was done to dispel any doubts about the existence of interacting groups in other rooms (Frohlich et al. 2001). The subjects were then assigned to Room A or B, and their group identification number was designated through a lottery. Upon arriving at each room, the subjects were seated at separate computer terminals with the other group members. No communication was permitted throughout the sessions, but the group members could have verbal discussions when they had to make decisions.

The subjects were made to listen to prerecorded instructions, which they simultaneously read from the copies handed to each of them. The instructions, given in Appendix A, informed the subjects that the experiment included two independent parts and that the result of either part 1 or 2 would be randomly determined as their final payments. Further, they were told that a detailed

explanation of part 2 of the experiment would follow after part 1. Any remaining questions were privately answered.

At the beginning of part 1, each team received a decision sheet (see Appendix B). Team A, the trustor, entered a single transfer between 0 to 10 tokens (inclusively) on their record sheets and computers in 10 minutes. At the same time, Team B, the trustee, entered their returns for all possible transfers from Team A on their record sheets and computers. Accordingly, Team B decided on the returns for 11 transfer possibilities. They also indicate their expectations regarding the return or transfer made by their interacting group.

After the conclusion of part 1, the decision sheets were collected. The subjects did not receive information about their interacting group's task in part 1, and part 2 of the experiment was commenced. Again, the subjects were made to listen to prerecorded instructions, and simultaneously followed these from their own copies. They were told that the rules in part 2 of the experiment were the same as those in part 1, except that the roles of Teams A and B were interchanged. This time, Team A played the role of the trustee and indicated their returns for all possible transfers from Team B, which played the role of the trustor. Team B decided on one single transfer between 0 to 10 tokens. They also indicated their expectations regarding the return or transfer made by their interacting group.

After part 2 ended, each subject filled out a post-experimental survey (see Appendix E). After they answered all questions, we presented the results of parts 1 and 2. Either part was randomly determined for calculating their earnings.

In the international experiment, the subjects were informed that the Austrian (Japanese) teams were matched with Japanese (Austrian) teams (see the instructions and decision sheets in Appendices C and D, respectively). Further, we disclosed the university names, experimenters' names, and their e-mail addresses. In order to dispel doubts about the existence of interacting groups in the other country, we connected the two laboratories of the respective countries over the Internet in real-time through a Skype call at the beginning of each treatment, and broadcasted a live stream of each room via a webcam.

To avoid any possible emotional effect from seeing the faces of the individuals they interacted with, we asked the subjects to hide their faces and played the live stream in the following manner. First, the live stream of the room

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[4] The subjects included a mixture of economics majors and non-economics majors.

in Austria was shown to the subjects in Japan, but the stream in Japan was not shown in Austria. The Austrian subjects were asked to keep their faces down. Using the Skype chat system, the Japanese experimenter asked the Austrian experimenter to tell the Austrian subjects to raise their hands during the broadcast. The Japanese subjects were shown the Skype chat window in addition to the live stream that was played on a big screen, and they observed that the Austrian subjects responded directly to the instructions of their experimenter but did not see the faces of their interacting groups. As it was nighttime in Japan and daytime in Austria, the Austrian experimenter then moved the webcam toward the window to demonstrate that it was daytime in Austria. Then, the Skype video broadcasting from Austria ended, and the live stream from Japanese was shown to the Austrian subjects by using the same procedure above. Subsequently, the same procedures were followed for the intranational experiment.

All the treatments lasted roughly 1 hour. The subjects were paid in cash as per the value of the tokens held by their own group in a randomly determined part; the conversion rate was 1 token to 0.08 euro in Austria and 12 yen in Japan. Further, the show-up fees were 3.5 euro in Austria and 500 yen in Japan.

We controlled for country-specific variables that could influence our results and accounted for any potential methodological problems. Roth et al. (1991) mention three main problems accompanying multinational experiments: The experimenter effect, the language effect, and the currency effect. Our experiments were conducted by identically following a precisely predetermined written plan of procedures that met the requirements of each step of a session. In each country, the experimenters were local male Ph.D. students who were experienced in conducting experiments. In order to control for language effects, the instructions were originally written in English and translated into German and Japanese, and translated back and checked for possible disparities. We avoided unwanted currency effects by choosing denominations that kept the purchasing power equal across countries. Since our subject samples comprised of only students, we relied on typical student expenditures to determine the payments.

3 Results

Table 1 summarizes the means and standard errors in relative transfers and the returns and payments of subjects. Note that the relative returns in this table are the actual transacted values against the actual transfers. In the intranational experiment, the relative transfers and returns are pooled data across parts 1 and 2 in each country. In the international experiment, on the other hand, relative transfers and returns constitute pooled data across treatments AJ and JA in each country. In both countries, means of relative transfers and returns in the international experiment are higher than those in the intranational experiment. The average payments of the subjects were 16.19 euro in Austria and 18.11 euro (2,716 yen) in Japan for the intranational experiment, and 16.70 euro in Austria and 16.40 euro (2,460 yen) in Japan for the international experiment.

In this section, we statistically compare the relative transfers and returns from the viewpoint of trust and reciprocity. First, we compare the trust levels between the Austrian groups and the Japanese groups in section 3.1. Next, we compare their potential reciprocity in section 3.2.

Table 2. Statistical results of the relative transfers, returns, and payments

|	The intranational experiment		The international experiment	
	Austria	Japan	Austria	Japan
Relative transfers	0.56 (0.07)	0.62 (0.07)	0.68 (0.06)	0.65 (0.06)
Relative returns	0.16 (0.03)	0.13 (0.03)	0.24 (0.03)	0.21 (0.03)
Payments	16.19 (0.71)	18.11 (0.94)	16.70 (0.56)	16.40 (0.60)
No. of pairs	36	36	36	36

Note: Standard errors are in parentheses.

3.1 Trust

Figure 1 (a) presents a histogram of the relative transfers among the Austrian groups and those among the Japanese groups in the intranational experiment. The relative transfers among the Austrian groups and among the Japanese groups constitute pooled data across parts 1 and 2 in treatment AA and in treatment JJ, respectively. The means for Austria and Japan are 0.56 and 0.62,

respectively. The Wilcoxon rank-sum test does not reject the null hypothesis of no difference in the distributions of relative transfers between two countries (z-value = –0.907, two-tailed p-values = 0.364). Therefore, we obtain the result below.

Fig. 1 Relative transfers across countries

(a) The intranational experiment	(b) The international experiment
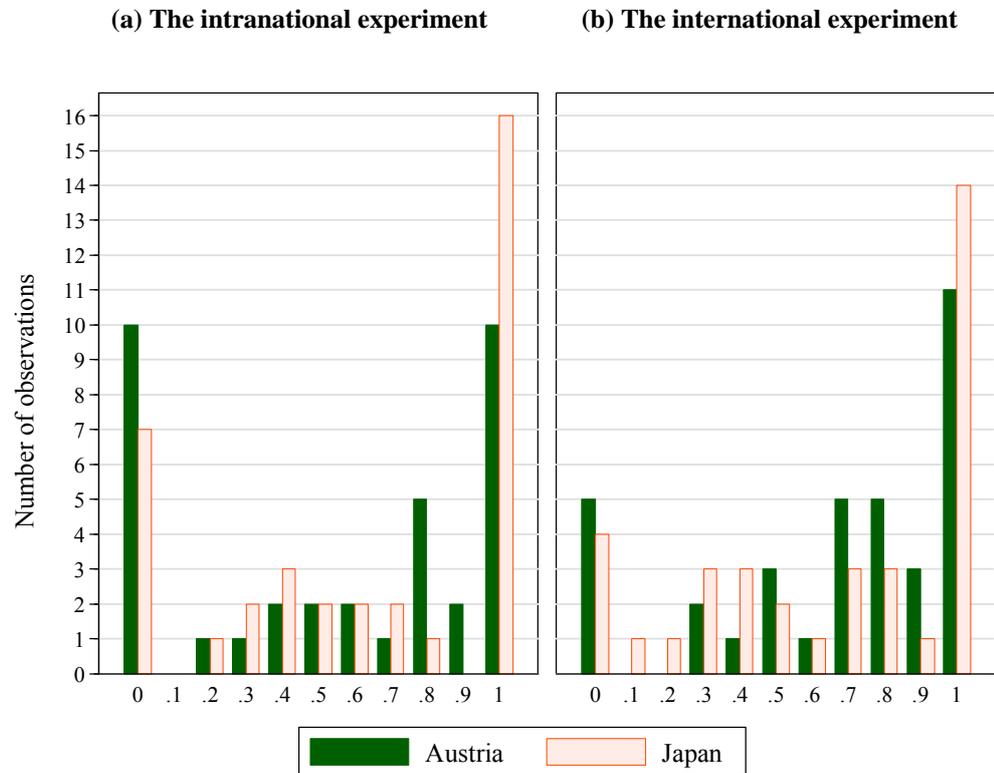
Result 1. The trust level of the Austrian and Japanese groups is the same when the interacting groups are from their own countries.

Figure 1 (b) shows the histogram of the relative transfers of Austrian groups and those of the Japanese groups in the international experiment. The relative transfers of the Austrian (Japanese) groups constitute pooled data of Austrian (Japanese) groups for treatments AJ and JA. The means are 0.68 and 0.65 for Austria and Japan, respectively. The Wilcoxon rank-sum test does not reject the null hypothesis that the distribution of relative transfers for the Austrian groups is the same as those for the Japanese groups (z-value = 0.052, two-tailed p-values = 0.958). Therefore, we obtain the result below.

Result 2. The Austrian and the Japanese groups show the same trust level toward each other.

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Next, we compare the trust levels in the intranational and international experiments for each country in order to examine whether or not the foreign interaction groups affect the trust levels. The Wilcoxon rank-sum test does not reject the null hypothesis that the distribution of relative transfers among the Austrian groups in the intranational experiment is the same as that of the transfers made by them in the international experiment (z-value = –1.05, two-tailed p-values = 0.296). Further, the Wilcoxon rank-sum test does not reject the null hypothesis that the distribution of pooled relative transfers among the Japanese groups in the intranational experiment is identical to that of the transfers made by them in the international experiment (z-value = –0.123, two-tailed p-values = 0.902). Therefore, we obtain the result below.

Result 3. The foreign interaction groups do not affect the trust levels of either group.

3.2 Reciprocity

Figures 2 (a) and (b) show all the relative returns of trustees predetermined on 11 possibilities of relative transfers and the respective OLS regression lines for each country in the intranational and international experiments, respectively. A comparison of the OLS regression lines between the two countries reveals that although the reciprocity levels of the Austrian and Japanese groups are not very different in the intranational experiment, the latter displays higher reciprocity than the former.

Fig. 2 Relative returns across countries

    (a) The intranational experiment   **(b) The international experiment**
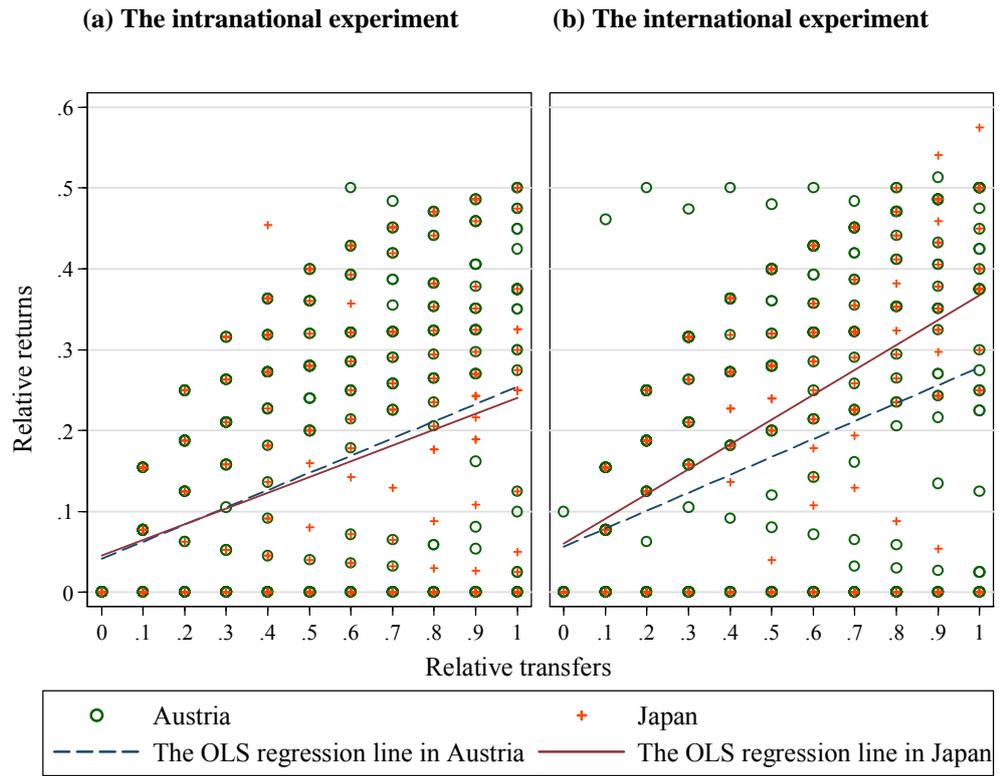
Relative returns are censored variables between 0 and 1 inclusively; thus, we consider a Tobit regression of relative returns on 11 possibilities of relative transfers with subject group identification clustering:

$$\text{Return}_{ij} = a + b \cdot \text{Transfer}_{ij} + \varepsilon_{ij}, \text{ for } i = 1,\ldots,36; j=0,\ldots, 1$$

Table 3. Tobit regression of relative returns on relative transfer

	The intranational experiment		The international experiment	
	Austria	Japan	Austria	Japan
Intercept	−0.11**(0.05)	−0.12** (0.05)	−0.09* (0.05)	−0.02 (0.03)
Transfer	0.34*** (0.03)	0.34*** (0.04)	0.35*** (0.02)	0.39*** (0.03)
R^2	0.17	0.14	0.16	0.32
No. of observations	396	396	396	396
# Left-censored	179	188	172	117
# Right-censored	0	0	0	0

Note: Standard errors in parentheses are adjusted for 36 clusters for a total of 396 subjects. R^2 is the result of the OLS regression. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3 summarizes the results of this regression. The coefficient on transfer in each country is positive and significant at the 1% level in both experiments. At the 5% level, the intercept in each country is negative and significant in the intranational experiment, but this is not the case in the international experiment. Hence, we obtain the following result.

Result 4. Both the Austrian and Japanese groups tend to reciprocate more as their interacting groups display greater trust toward them.

To examine the difference between the two countries, we consider following regressions in each experiment:

$$\text{Return}_{ij} = a + b \cdot \text{Transfer}_{ij} + c \cdot \text{DC} + d \cdot \text{Transfer}_{ij} \cdot \text{DC} + \varepsilon_{ij}, \text{ for } i=1,\dots,36; j=0,\dots, 10$$

where DC is a country dummy variable that takes the value 1 for Japanese groups and 0 for Austrian groups. These results are summarized in Table 4.

Table 4. Result of the dummy test for Austria vs. Japan

	The intranational experiment	The international experiment
Intercept	–0.11** (0.04)	–0.07* (0.04)
Transfer	0.35*** (0.03)	0.33*** (0.02)
DC	0.00 (0.05)	0.03 (0.04)
Transfer·DC	–0.02 (0.06)	0.08** (0.04)
R^2	0.16	0.25
No. of observations	792	792
# Left-censored	367	289
# Right-censored	0	0

Note: Standard errors in parentheses are adjusted for 72 clusters for a total of 792 subjects. R^2 indicates the result of the OLS regression. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

The coefficient on Transfer·DC is not significant in the intranational experiment but is significant at the 5% level in the international experiment. The coefficients

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on DC are not significant in both the intranational and international experiments. Therefore, we obtain the following result.

Result 5. (a) When they interact domestically, the Austrian and Japanese groups tend to have the same reciprocation levels.
(b) When they interact internationally, the Japanese groups tend to reciprocate more than the Austrian groups as their interacting groups display greater trust toward them.

Next, we compare reciprocity in the intranational and international experiments in each country to examine whether or not the foreign interaction groups affect reciprocity.
To examine the difference between the intranational and international experiments in terms of reciprocity, we consider following regressions in each country:

$$\text{Return}_{ij} = a + b\cdot\text{Transfer}_{ij} + c\cdot\text{DE} + d\cdot\text{Transfer}_{ij}\cdot\text{DE} + \varepsilon_{ij}, \text{ for } i=1,\ldots,36; j=0,\ldots, 10$$

where DE is a experimental dummy variable that takes the value of 1 for the international experiment and 0 for the intranational experiment. These results are summarized in Table 5.

Table 5. Result of the dummy test for the intranational vs. international experiments

	Austria	Japan
Intercept	−0.11** (0.04)	−0.09** (0.04)
Transfer	0.35*** (0.03)	0.31*** (0.04)
DE	0.03 (0.05)	0.06 (0.04)
Transfer·DE	0.00 (0.04)	0.10* (0.05)
R^2	0.17	0.26
No. of observations	792	792
# Left-censored	351	305
# Right-censored	0	0

Note: The standard errors in parentheses are adjusted for 72 clusters for a total of 792 subjects. R^2 is the result of OLS regression. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

The coefficient on Transfer·DE is not significant for Austria but is significant at the 10% level for Japan. Thus, we obtain the result below.

Result 6. The foreign interaction groups do not affect the reciprocity of the Austrian group but marginally increase the reciprocity of the Japanese group with the increase in the latter's trust levels.

4 Conclusion and discussion

In this paper, we compare the intranational and international trust and reciprocity levels in the context of group decisions, by adopting a modified trust game between Austria and Japan. In the international experiment, the subjects join the experiment at the same time and interact directly through the Internet over a distance of 5,000 miles.

Our results are as follows: (i) When the Austrian and Japanese groups interact with other groups from their own countries, their trust and reciprocity levels are identical. (ii) In the case of international interaction, the Austrian and Japanese groups tend to display the same trust levels, and the latter group tends to reciprocate more than the former as their respective interacting group's trust levels increase. Moreover, as their trust levels increase, the Japanese groups' reciprocation toward the trust shown by the Austrian groups is marginally higher than the other way around.

As result of Cox (2002) and that of Kugler et al. (2007) suggest that individual norm is not always consistent with the group norm, our results are inconsistent with the original study of Netzer and Sutter (2009), who find that the Austrians exhibited greater trust toward the Japanese and the Japanese reciprocated less toward the Austrians. While Netzer and Sutter find that the Japanese displayed less in-group favoritism in trust, Takahashi et al. (2008) find that the Japanese also displayed less in-group favoritism in reciprocity. Our findings are also different from these studies because Japanese groups display less in-group favoritism only in reciprocity.

Apart from the trust game, our intranational results support some previous studies that compare European norms and Japanese norms. Brandts et al. (2004)

find no significant differences in public good contributions among the US, Japan, the Netherlands, and Spain. Further, Okada and Riedl (1999) find no significant differences in terms of offers, by employing a variation of the ultimate game between Austrians and Japanese. Our results are, however, different from Roth et al. (1991), who find that offers in the ultimatum game are higher in the US and Slovenia than in Japan and Israel.

Although we need to conduct more experiments to arrive at a precise conclusion, our results suggest that a heterolytic group norm exists across nationalities. In other words, trust between groups is identical across nationalities, whereas reciprocity between group levels differ. When groups trust their interacting groups, they face some risk or uncertainty stemming from cultural differences. On the other hand, when they reciprocate their interacting group's trust, they do not face uncertainty because they can make their decisions for all possible transfers from the interacting group, at least, in the laboratory. Therefore, reciprocity constitutes the behavior undertaken in the no-risk environment. The fact that the Japanese display less in-group favoritism as a group in a no-risk environment has an important implication in terms of a contribution toward the comparative analyses of group norms not only between the EU and Japan, but also between individualism and collectivism in larger sense.

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Appendix A – Instructions in the intranational experiment

Experimental instructions

You are about to participate in an experiment on decision-making. During this experiment we ask you and the other participants to make decisions and to fill out a questionnaire.

Please do not talk to anyone except of your team members during the experiment. Communication between teams will lead to your exclusion from the experiment and the forfeit of all monetary earnings.

For identification purposes your team has received an ID card with a number on it. The ID card is your identity during the course of this experiment. Your decisions in the experiment and the data from the questionnaire will be used for scientific purposes only.

The experiment consists of two parts that are independent from each other.
You will receive the earnings from either part one or part two of the experiment. Which part is going to be taken for the calculation of your earnings, will be determined after the second part of the experiment by a random mechanism programmed at the computer.
Your earnings in this experiment will be in "tokens". After the experiment tokens will be converted into Yen (Euro) at an exchange rate of 1 token = 120 yen (80 euro cent).

Additionally to the earnings of the experiment you will be paid a showup fee of 500 yen (3,5 euro). At the end of the experiment you will be paid in cash.

If you have any questions, please raise your hand after we have finished reading the instructions. An experimenter will then come to you and answer your questions privately (this means in a low voice).

Part One:

In this game, there are two roles: **A** and **B**.

You find yourself in a team with 2 other people. For the rest of the experiment the 3 of you will make your decisions in this team. Teams in this and the other room are either in the role of A or B.

Please note that each team in this room will be paired with a team of the other room. That is to say, that each team A in this room will be *anonymously* matched with a team B of the other room and each team B in this room will be anonymously paired with a team A of the other room.

During and after the game you will not be told with which team you have been paired and the other team will not be told that they have been matched with you.

At the beginning of the experiment, both teams A and B receive an initial endowment of 10 tokens. According to the exchange rate, the initial endowment of 10 tokens is worth 1200 yen (8 euro).

Team A has to decide how many tokens of their initial endowment to transfer to team B.

Any *integer* number of tokens between and including 0 and 10 tokens is feasible.

Team A keeps the number of tokens that team A does not send to team B.

The amount of tokens that team A sends to team B will be tripled. That means that team B receives, additionally to its initial endowment of 10 tokens, three times the amount of tokens team A has sent.

The members of team B have to decide how much of this amount they would like to send back to team A. Any *integer* number of tokens between and including 0 and the amount team B owns at that time is feasible.

<u>Please note</u>: The amount team B sends back to team A will not be tripled. That is to say, team A will receive exactly the amount that team B returns to team A (in addition to what team A has kept from his/her initial endowment).

Procedure:

Each team is given 10 minutes for its decision. We ask you to put your decisions into the computer but also to fill in your decisions on the decision sheet. The latter is used as a backup in case the computer system crashes down.

Team A will have to write down/ fill in how much they want to send to team B.

Team B has to indicate how many tokens they want to send back to team A for each possible transfer from team A. In the end, only the decision that corresponds to the actual amount that Team A sends will be taken for the calculation of the profits.

This will become clear to you when you check the following table:

A's initial endowment	A sends to B	A's current profit	B receives in addition to his/her endowment	B's current account	**B sends back the following amount**
10	0	10	0	10	
10	1	9	3	13	
10	2	8	6	16	
10	3	7	9	19	
10	4	6	12	22	
10	5	5	15	25	
10	6	4	18	28	
10	7	3	21	31	
10	8	2	24	34	
10	9	1	27	37	
10	10	0	30	40	

Team B has to decide how many tokens it would like to return for each possible transfer from Team A. The amount that is taken for the calculation of the profits will be the one decision of team B that corresponds to the actual amount that team A sends. The amount Team B returns to Team A will not be tripled.

Profits:

Team A:

Team A will receive the amount kept for themselves out of their initial endowment, plus the amount that has been sent back by team B. The amount of tokens that your team earns will not be divided by three. Each member of the team receives the full amount of tokens that it has earned through its decisions with the team!

Team B:

Members of Team B will receive their initial endowment plus the tripled amount that team A has sent minus the amount which team B sends back to team A. The amount of tokens that your team earns will not be divided by three. Each member of the team receives the full amount of tokens that it has earned through its decisions with the team!

Part 2

In Part 2, the same game will be played again but the teams will change their roles.

Those teams who have been in the role of A in part 1 will be in the role of B in part 2 and teams B of part 1 will be A now.

Again, your team will be anonymously paired with a team (A,B) from the other room.

As a reminder:

Each team's initial endowment is 10 tokens á 120 yen (80 euro cent).

Team A decides how many tokens they want to send to team B. Team B receives additionally to their initial endowment of 10 tokens the tripled amount team A sends. Team B has to decide how many tokens it would like to send back for each possible transfer from Team A. The amount that is taken for the calculation of the profits will be the one decision of team B that corresponds to the actual amount that team A sends.

The amount Team B returns to Team A will not be tripled.

Each team is given 10 minutes for its decision. We ask you to put your decisions into the computer but also to fill in your decisions on the decision sheet. The latter is used as a backup in case the computer system crashes down.

Profits:

Team A will receive the amount kept for themselves out of their initial endowment, plus the amount that has been sent back by team B. The amount of tokens your team earns will not be divided by three. Each member of the team receives the full amount of tokens that your team earns!

Members of team B will receive their initial endowment plus the tripled amount that team A has sent minus the amount which they send back to A. The amount of tokens your team earns will not be divided by three. Each member of the team receives the full amount of tokens that your team earns!

After all participants have made their decisions a random mechanism programmed at the computer will determine whether part 1 or part 2 will be paid out to you after the experiment.

<div align="right">

Team ID number _____

</div>

Decision Sheet team A

<div align="center">

This form serves as a security copy for your decisions made at the computer

</div>

Your team is in the role of A.

Please decide how many tokens out of your initial endowment your team would like to send to team B. You will automatically keep the rest for yourself.

<u>As a reminder:</u>

Your team's initial endowment is 10 tokens.

Team B receives additionally to its initial endowment of 10 tokens the tripled amount of what your team sends. Team B decides how many tokens they want to send back to your team. The amount that B sends back to you is not tripled. Your team has 10 minutes to decide.

How many tokens would your team like to send to team B?

<u>Only integer numbers are feasible</u> {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}!

We would like to send _____tokens to team B.

How many tokens do you think will team B send back to you?

Please note: Team B will not be informed about your expectation and your expectation does not influence the calculation of your earnings.

We think that team B will return _____ tokens.

Decision sheet team B
This form serves as a security copy for your decisions made at the computer

Your team is in the role of B and will be paired with a team A from the University of Innsbruck in Austria. You have 10 minutes to decide.

Please indicate how many tokens out of your current account you want to send back to team A. Please fill in a number for each possible transfer from team A. In the end, only the decision that corresponds to the actual amount that Team A sends will be taken for the calculation of the profits.

Please note that the amount your team sends back is not tripled and that this amount will be deducted from your current account and determine your earnings from this part of the experiment.

Please fill in only integer numbers{0, 1, 2, 3, … 38, 39, 40}.

Initial endowment A	Team A sends you(x)	Current account team A	You receive (3x)	Your team's current account (including your initial endowment)	We would like to send back the following amount of tokens to team A in Innsbruck
10	0	10	0	10	
10	1	9	3	13	
10	2	8	6	16	
10	3	7	9	19	
10	4	6	12	22	
10	5	5	15	25	
10	6	4	18	28	
10	7	3	21	31	
10	8	2	24	34	
10	9	1	27	37	
10	10	0	30	40	

How many tokens do you think will team a send to your team?
Please note: Team B will not be informed about your expectation and your expectation does not influence the calculation of your earnings.

We think that team B will return _____ tokens.

Appendix C – Instructions in the international experiment

Experimental instructions

You are about to participate in an experiment on decision-making. During this experiment we ask you and the other participants to make decisions and to fill out a questionnaire.

Please do not talk to anyone except of your team members during the experiment. Communication between teams will lead to your exclusion from the experiment and the forfeit of all monetary earnings.

For identification purposes your team has received an ID card with a number on it. The ID card is your identity during the course of this experiment. Your decisions in the experiment and the data from the questionnaire will be used for scientific purposes only.

Participants in this experiment are from 2 universities in different countries: Students of the University of Osaka in Japan and the University of Innsbruck in Austria (Europe) will play the experiment simultaneously over the internet.
No participants at any university will see any decisions by the other participants before they make their own decisions.

The experiment consists of two parts that are independent from each other.
You will receive the earnings from either part one <u>or</u> part two of the experiment. Which part is going to be taken for the calculation of your earnings, will be determined after the second part of the experiment by a random mechanism programmed at the computer.
Your earnings in this experiment will be in "tokens". After the experiment tokens will be converted into Yen (Euro) at an exchange rate of 1 token = 120 yen (80 euro cent).

Additionally to the earnings of the experiment you will be paid a showup fee of 500 yen (3,5 euro). At the end of the experiment you will be paid in cash.

If you have any questions, please raise your hand after we have finished reading the instructions. A staff member will then come to you and answer your questions privately (this means in a low voice).

Part One:

In this game, there are two roles: **A** and **B**.

You find yourself in a team with 2 other people. For the rest of the experiment the 3 of you will make your decisions in this team. Teams in this and the other room are either in the role of A or B.

Please note that each team of this university will be paired with a team from the University of Innsbruck. More precisely, each team A in this room will be *anonymously* matched with a team B of the University of Innsbruck and each team B in this room will be anonymously paired with a team A of the University of Innsbruck.

During and after the game you will not be told with which team you have been paired and the other team will not be told that they have been matched with you.

At the beginning of the experiment, both teams A and B receive an initial endowment of 10 tokens. According to the exchange rate, the initial endowment of 10 tokens is worth 1200 yen (8 euro).

Team A has to decide how many tokens of their initial endowment to transfer to team B.

Any *integer* number of tokens between and including 0 and 10 tokens is feasible.

Team A keeps the number of tokens that team A does not send to team B.

The amount of tokens that team A sends to team B will be tripled. That means that team B receives, additionally to its initial endowment of 10 tokens, three times the amount of tokens team A has sent.

The members of team B have to decide how much of this amount they would like to send back to team A. Any *integer* number of tokens between and including 0 and the amount team B owns at that time is feasible.

<u>Please note</u>: The amount team B sends back to team A will not be tripled. That is to say, team A will receive exactly the amount that team B returns to team A (in addition to what team A has kept from his/her initial endowment).

Procedure:

Each team is given 10 minutes for its decision. We ask you to put your decisions into the computer but also to fill in your decisions on the decision sheet. The latter is used as a backup in case the computer system crashes down.

Team A will have to write down/ fill in how much they want to send to team B.

Team B has to indicate how many tokens they want to send back to team A for <u>each</u> possible transfer from team A. In the end, only the decision that corresponds to the actual amount that Team A sends will be taken for the calculation of the profits.

This will become clear to you when you check the following table:

A's initial endowment	A sends to B	A's current profit	B receives in addition to his/her endowment	B's current account	**B sends back the following amount**
10	0	10	0	10	
10	1	9	3	13	
10	2	8	6	16	
10	3	7	9	19	
10	4	6	12	22	
10	5	5	15	25	
10	6	4	18	28	

10	7	3	21	31	
10	8	2	24	34	
10	9	1	27	37	
10	10	0	30	40	

Team B has to decide how many tokens it would like to send back for each possible transfer from Team A. The amount that is taken for the calculation of the profits will be the one decision of team B that corresponds to the actual amount that team A sends.

Profits:

Team A:

Team A will receive the amount kept for themselves out of their initial endowment, plus the amount that has been sent back by team B. The amount of tokens that your team earns will not be divided by three. Each member of the team receives the full amount of tokens that it has earned with its decisions in the team!

Team B:

Members of Team B will receive their initial endowment plus the tripled amount that team A has sent minus the amount which team B sends back to team A. The amount of tokens that your team earns will not be divided by three. Each member of the team receives the full amount of tokens that it has earned with its decisions in the team!

Part 2

Part 2, the same game will be played again but the teams will change their roles. Those teams who have been in the role of A in part 1 will be in the role of B in part 2 and teams B of part 1 will be A now.

Again, your team will be anonymously paired with a team (A,B) from the University of Innsbruck, Austria.

As a reminder:

Each team's initial endowment is 10 tokens á 120 yen (80 euro cent).

Team A decides how many tokens they want to send to team B. Team B receives additionally to their initial endowment of 10 tokens the tripled amount team A sends. Team B has to decide how many tokens it would like to send back for each possible transfer from Team A. The amount that is taken for the calculation of the profits will be the one decision of team B that corresponds to the actual amount that team A sends.

The amount Team B returns to Team A will not be tripled.

Each team is given 10 minutes for its decision. We ask you to put your decisions into the computer but also to fill in your decisions on the decision sheet. The latter is used as a backup in case the computer system crashes down.

Profits:

Team A will receive the amount kept for themselves out of their initial endowment, plus the amount that has been sent back by team B. The amount of tokens your team earns will not be divided by three. Each member of the team receives the full amount of tokens that your team earns!

Members of team B will receive their initial endowment plus the tripled amount that team A has sent minus the amount which they send back to A. The amount of

tokens your team earns will not be divided by three. Each member of the team receives the full amount of tokens that your team earns!

After all participants have made their decisions a random mechanism programmed at the computer will determine whether part 1 or part 2 will be paid out to you after the experiment.

Team ID number _____

Decision Sheet team A

This form serves as a security copy for your decisions made at the computer

Your team is in the role of A and will be paired with a team B from the University of Innsbruck in Austria.

Please decide how many tokens out of your initial endowment your team would like to send to team B. You will automatically keep the rest for yourself.

As a reminder:

Your team's initial endowment is 10 tokens.

Team B receives additionally to its initial endowment of 10 tokens the tripled amount of what your team sends. Team B decides how many tokens they want to send back to your team. The amount that B sends back to you is not tripled.

Your team has 10 minutes to decide.

How many tokens would your team like to send to team B?

Only integer numbers are feasible {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}!

We would like to send _____tokens to team B in Innsbruck.

How many tokens do you think will team B send back to you?

Please note: Team B will not be informed about your expectation and your expectation does not influence the calculation of your earnings.

We think that team B will return _____ tokens.

Decision sheet team B
This form serves as a security copy for your decisions made at the computer

Your team is in the role of B. You have 10 minutes to decide.

Please indicate how many tokens out of your current account you want to send back to team A. Please fill in a number for each possible transfer from team A. In the end, only the decision that corresponds to the actual amount that Team A sends will be taken for the calculation of the profits.

Please note that the amount your team sends back is not tripled and that this amount will be deducted from your current account and determine your earnings from this part of the experiment.

Please fill in only integer numbers{0, 1, 2, 3, … 38, 39, 40}.

Initial endowment A	Team A sends you(x)	Current account team A	You receive (3x)	Your team's current account (including your initial endowment)	**We would like to send back the following amount of tokens**
10	0	10	0	10	
10	1	9	3	13	
10	2	8	6	16	
10	3	7	9	19	
10	4	6	12	22	
10	5	5	15	25	
10	6	4	18	28	
10	7	3	21	31	
10	8	2	24	34	
10	9	1	27	37	
10	10	0	30	40	

How many tokens do you think will Team **A** send to your team?

Please note: Team **A** will not be informed about your expectation and your expectation does not influence the calculation of your earnings.

We think that team A will send _____ tokens.

Appendix E – Post-experimental survey in the international experiment

About Yourself:

Age: _____   Gender: ☐ m   ☐ f

Major: _____

1.) About how many other participants in this room do you know?   _____

2.) Have you ever been to Europe?[5] ☐ yes   ☐ no

3.) Have you ever been to Austria?[6] ☐ yes   ☐ no

4.) Have you ever lived in a foreign country (at least 6 months)? ☐ yes
    ☐ no

The following questions concern your family:

5.) Did your parents graduate from University?
Father: ☐ yes   ☐ no;   Mother: ☐ yes   ☐ no

6) Where did you grow up? (If necessary, please check more than one answer with a cross.)
☐ Tokyo[7] ☐ cities designated by government ordinance ☐ cities ☐ district areas
☐ foreign country

7) Thinking about your family income, compared with other Japanese families in general, would you say your family income at the age of 16 was roughly

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[5] In the intranational expriment, we eliminated this question.
[6] In the intranational expriment, we eliminated this question.

☐ Below average   ☐ average   ☐above average

About teams:

8.) Generally, do you prefer to make decisions by yourself or as a team?
☐ myself   ☐ team

9.) How large was your role in making the team decisions?
☐ very small   ☐ small   ☐ normal   ☐ big
☐ very big

10.) Were your team decisions done by vote?   ☐ yes
     ☐ no

11.) If not, how did your team agree on its decisions?_

_____

_____

12.) Did all members of your team have an equal say in the final decision?
☐ yes   ☐ no

About other people:

Circle only one response for each of the following questions.

13.) Do you think most people would try to
☐ Take advantage of you if they got a chance?   ☐ Be fair?

14.) Do you think most people can be trusted?
☐ Generally no   ☐ generally yes

---

[7] We used Vienna for Austrians.

Please indicate your level of agreement on the following statements

15.) Human nature is fundamentally cooperative.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

16.) Most people are basically good& kind

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

17.) Most people are trustful of others

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

18.) Most people will respond in kind when they are trusted by others

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

19.) People are always interested only in their own welfare

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

20.) In this society one does not need to be constantly afraid of being cheated

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

21.) To make money, there are no right and wrong ways any more, only easy and hard ways.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

22.) These days you can't count on strangers.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

23.) These days, a person doesn't really know who he can count on.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

24.) Most people are basically honest.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

About yourself:

Please indicate your level of agreement on the following statements

25.) I am always trustworthy

Completely wrong ☐ ☐ ☐ ☐ ☐ ☐ Completely correct

26.) In general, I treat other people the same way that they treat me.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

27.) The people I trust are only those with whom I have had long lasting relationships.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

28.) How much do you tend to trust people, when you have a lot at stake?

not at all ☐ ☐ ☐ ☐ ☐ ☐ totally

29.) On a scale from 1 (always careful) to 6 (always trusting), how would you rate your willingness to trust others?

always careful ☐ ☐ ☐ ☐ ☐ ☐ always trusting

30.) Regardless of whether I know my counterpart, I think that I should honor being trusted accordingly, even if it means to make sacrifices, like in this experiment.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ strongly agree

31.) Which culture do you trust more? [8]

Austria ☐ ☐ ☐ ☐ ☐ Japan

32.) Please write down, if you have other thoughts or comments about the experiment, on your strategy, on your reasons for your decisions or on other matters:

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[8] In the intranational expriment, we eliminated this question.