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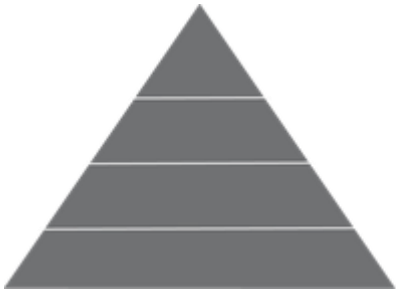

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Solidarity with Third Players in Exchange Networks: An Intercultural Comparison

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Abstract

Social exchange theory postulates a universal scope of self-regarding utility maximization in bargaining contexts. Therefore, experimental tests have hitherto restricted allocations in dyadic exchange situations in networks to the members of the dyad by design. In a previous experiment Schwaninger, Neuhofer, and Kittel (2017) have studied the validity of the self-regarding assumption by opening the allocation space to network positions beyond the negotiating dyad. They found considerable, though not unconditional allocations beyond the dyad. In this paper, we test the universality assumption by replicating the Austrian experiment in China and Japan. The general pattern of results is impressively similar across countries, although we observe some minimal differences between countries.

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1 Introduction

Social exchange theory assumes that social interactions can be expressed as an exchange of tangible or intangible goods between social actors (Homans, 1961). One of the most thoroughly explored forms of exchange is negotiated exchange – actors bargain over the division of a fixed resource. Prominent negotiated exchange theories, such as Power-Dependence Theory (Emerson, 1972a, 1972b) or Elementary Theory (Willer & Anderson, 1981) and their refinements (Cook, Cheshire, Rice, & Nakagawa, 2013), embed social exchange in a network structure. The network structure describes the bilateral relations between network members, and thereby defines which dyads may benefit from exchange. The constellation of relations allows some network members to exclude others from exchange. The presence or absence of edges between nodes, hence, the structure of the network, determine the power of a network member on a particular node. Social exchange theories predict the distribution of a resource within a network depending on the structural power of its members.

We consider a three-node network, in which one member is connected to two peripheral members, who themselves are not connected to each other. If the central network member can only exchange once, i.e. can agree on a division of the resource with only one peripheral network member, the other peripheral network member is excluded from exchange and, thus excluded from any payoff. While the peripheral network members share the probability of exclusion from exchange, the individual holding the central position cannot be excluded. As a result, these two actors need to outbid each other, giving less to themselves, and more to the broker.

Studies on negotiated exchange investigated how network structures affect bargaining power and influence the distribution of outcomes for almost five decades now (Neuhofer, Reindl, & Kittel, 2015). By and large, experimental results showed that structural power, emanating from the possibility to exclude others, leads to unequal payoff shares between network members (Willer & Emanuelson, 2008). The stronger the structural position, the larger the payoff share a subject generates from exchanging. For a long time the theoretical point predictions have been acknowledged as being universal, in the sense that the network structure produces universal outcomes independent of the specific subjects in the network. This assumption, however, conflicts with a broad range of results of experimental work in behavioral economics, which reveals other-regarding preferences in many decision and bargaining contexts (Fehr & Gintis, 2007). A first exploration of social value orientations in social exchange (Willer, Gladstone, & Berigan, 2013), though, has produced results supporting a rejection of the relevance of social values (Lewis & Willer, 2017). In contrast, Schwaninger et al. (2017) find that social values indeed influence the outcomes if the experimental design relieves the restriction to distribute payoffs only within the exchanging dyad and allows for the inclusion of third players. They also observe a declining trend in allocations beyond the dyad. Given the strong results in behavioral economics and the scant data in social exchange theory, the issue is far from being settled.

Another important dimension of human diversity is cultural socialization. The way we are socialized affects the social norms we internalize and, thus, affects our behavior. Most experiments in the social exchange tradition so far have been implemented in Western countries. The theories that have been developed on these empirical foundations are, therefore, based on a strongly biased sample of 30% of the world's population. This may pose a problem when one wishes a theory to apply to all humans, not only people of a specific culture. Social exchange theory has an universal aspiration (Willer et al., 2014), and, therefore should be scrutinized in perspective of cultural differences.

This article investigates the scope of social exchange theory by replicating the study of Schwaninger et al. (2017) (henceforth SNK) in two cities: Tianjin in China and Kyoto in Japan. The aim of this contribution is a twofold replication. Firstly, the findings of classical bilateral negotiated exchange shall be tested for their validity in Japan and China and compared to Austria. According to social exchange theory we should expect no significant outcome differences in the experiments conducted in the three cities.

The structure of the article is as follows. In the following section we briefly summarize the related literature and present the expectations we draw from it in Section 3. In Section 4 we explain the study of Schwaninger et al. (2017) and their main findings. In Section 5 we describe the experimental setup and implementation of the experiment. In section 6 we summarize the most important results and discuss them in Section 7.

2 Related Literature

Some experiments in the social exchange tradition have been implemented outside of North America and Europe, mostly in Japan (Yamagishi, Cook, & Watabe, 1998; Hayashi, Ostrom, Walker, & Yamagishi, 1999; Kuwabara et al., 2007). More recently, Kuwabara, Vogt, Watabe, and Komiya (2014) investigated the effect of trust violations in generalized exchange in the US and Japan. Another strand of literature that connects one form of social exchange (bilateral negotiated exchange) to culture, is negotiation research, which is concerned with the process of negotiations, but not the structural impact of networks (see Gelfand & Brett, 2004).

In behavioral economic research on bargaining behavior, various cross-cultural experiments have been conducted. Henrich et al. (2004, 2005) studied ultimatum games in various small-scale societies remote from the Western world and found marked differences between societies that relate to the degree of market integration and cooperation beyond the family. In a meta-study of ultimatum games Oosterbeek, Sloof, and Van De Kuilen (2004) find no significant differences in the amounts offered across countries. However, they do find that rejection rates are higher in Japan than in the US and that they are higher at the East cost than at the West coast of the US. Even though these differences may be interesting for themselves, it is also amazing that these are the only significant differences found when comparing 37 results for 25 countries. To a large extent, the similarities in behavior outweigh the differences.[1]

Other experiments on the ultimatum game find no differences when examining coalition formation across cultures (Okada & Riedl, 1999) or the effects of altruism and punishment (Roth, Prasnikar, & Okuno-fujiwara, 1991). However some findings on cultural differences in laboratory experiments are ambiguous. Some studies observe significant behavioral differences in some games, such as the trust game (Croson & Buchan, 1999), or in some bargaining experiments (see Roth, 1995), but not in others.

The experimental evidence on the effect of cultural differences in bargaining-like experiments acorss Western and Asian societies is inconclusive. In a questionnaire study with a slightly changed prisoner's dilemma X.-P. Chen and Li (2005) found that Chinese students were on average less

[1] It is also not entirely clear which cultural differences affect variation in behavior in the ultimatum game in Japan and the USA. The authors tried to approximate different cultural values, using concepts borrowed from Hofstede (1991) or Inglehart (2000), levels of trust and competition in a country, as well as information on per capita income and income inequality. Only the measure of "respect for authority" (Inglehart, 2000) varies with proposer behavior. Other measures do not add any explanatory power.

cooperative than Australian students. The relationship with the opponent (compatriot vs. non-compatriot) made a difference for Chinese subjects who were more cooperative towards compatriots but not for Australian subjects. These results were replicated in a second study with a public goods game. The decisions were, however, mediated by individual cultural values of the subjects. Liu, Friedman, and Chi (2005) observed in classroom studies that the counter-offer in ultimatum games was more influenced by the opening offer in China than in America.

In an experiment conducted in China and Germany by Henning-Schmidt and Li (2006), two groups of three persons each bargained on the distribution of a given amount of money. Payoffs for the more powerful group were higher in the Chinese experiments than in the German sessions. The authors argue that this is due to higher initial demands of the more powerful group in China and a higher willingness of the other group to accept the difference in power than in Germany. Y. R. Chen, Mannix, and Okumura (2003) conducted a video experiment on dyadic face-to-face negotiations with students in the USA, China, and Japan. They found that egoistic motives were more relevant in the USA than in China and also more relevant in China than in Japan. Furthermore, the more prosocial a cultural context was, the more egoistic parties were able to take advantage of their social motive orientation when they demanded higher profits than their opponent. The cultural effect was, however, insignificant when the probability of meeting an egoistic opponent was taken into account.

Similarly, Y. R. Chen et al. (2003, 3) argue that "[i]t is not culture per se, but rather who someone is most likely to meet in a given cultural context that makes the difference. Cultural context affects the distribution of egoistic vs. prosocial social orientations among negotiators. Regardless of the cultural context, however, it is the social motive of a negotiator's opponent (in combination with relative aspiration differentiation) that ultimately has an effect on his/her final profit in a given negotiation."

3 Hypotheses

Despite marked economic differences in economic development, wealth and inequality between Austria, China and Japan, we can assume that student populations in these countries are more similar in socioeconomic status but vary in the cultural context in which they have been socialized. The first of our hypotheses, therefore, assumes that there is no difference in negotiation outcomes between Austria, China and Japan.

Hypothesis 1: Patterns of bilateral social exchange are universal among humans.

We also use the experimental design of Schwaninger et al. (2017) in these countries in order to test whether social values motivate the inclusion of a player that is not directly involved in negotiations, but nevertheless member of the same social exchange network could differ between cultures. According to Lewis and Willer (2017) these players should not receive any allocations at all. Therefore we test the hypothesis that allocations to the third subject do not differ between cultures and that they are zero.

Hypothesis 2: Allocations to third actors in bilateral social exchange are universally zero across cultures.

4 Allocations beyond the dyad

Social exchange theory examines the way structures affect the division of a fixed resource between dyads embedded in a network. Within this framework, the experimental study of SNK focused on offer restrictions and whether those influence distribution outcomes in two three-person exchange networks. Typically, network exchange experiments limit the scope of the allocation to the negotiating dyad. Yet, the results show that the limitation to allocate payoffs only bilaterally and not across the whole network significantly increases inequality in the networks, driven by prosocial network members who aim to allocate payoffs equally. Furthermore, SNK replicate stylized findings of previous studies. Their results are in line with the findings from previous experiments that payoff shares of structurally advantaged subjects are on average higher than payoff shares of structurally disavantaged subjects, especially after subjects learn to make use of structural power in networks (Cook & Gillmore, 1984; Markovsky, Willer, & Patton, 1988; Molm, Takahashi, & Peterson, 2000; Skvoretz & Willer, 1991, 1993; Willer & Emanuelson, 2008). Moreover, the data show that fairness concerns counteract the use of predicted structural power (Cook & Emerson, 1978; Molm, Peterson, & Takahashi, 2003; Molm, Schaefer, & Collett, 2009). In addition, in the treatment which restricts the distribution offers to the negotiators, social value orientations have no impact (Lewis & Willer, 2017). In the following we review the study in more detail, before we explain the experimental design in the next section.

SNK study the triangle and the three-line network. These three-person networks are relatively simple, and yet it is possible to examine two distinct power distributions. The triangle is an equal power network, meaning that structural power is equally distributed across the network, where all network members are bilaterally connected to each other. Given that only the one agreement over the division of the resource counts, subjects face the same probability of exclusion. In this setting, exclusion goes along with the exclusion of any profits. The second network, the three-line network, is a strong power network, in which only one central network member is connected to two peripheral network members. The central network member has structural power since she cannot be excluded from exchange. The probability of exclusion is distributed equally between the two peripheral subjects, who, in order to avoid exclusion are forced to offer the best deal to the broker, resulting in a "race to the bottom" of their own payoff, when trying to outbid each other. Thus, the two networks enable a simple test of the predictions of social exchange theory, as the predictions of a wide variety of models are similar (Willer & Emanuelson, 2008).

Social exchange theories typically assume that subjects solely aim to maximize their own payoffs. Offer restrictions should not matter, since self-interested subjects do not care about third subjects in the network independent of the possibility to allocate payoff shares beyond the negotiating dyad. The models predict that members of dyads should divide the payoff equally between themselves in the triangle. In the three-line network, however the strong power subject are expected to extract between 83 and 100 percent of the resource, depending on the theoretical model. Those hypotheses are tested in the experiment of SNK. They also measure the social value orientations of the subjects before the experiment (Murphy, Ackermann, & Handgraaf, 2011) and find that these influence the bargaining outcomes. In fact, prosocial subjects are systematically more likely to allocate payoff shares to third network members than proself subjects. The same individuals who allocate the payoff between the dyad, if they are restricted to do so, allocate significant payoff shares well above zero to third network members if this is possible. One way to interpret this finding is that prosocial subjects use their structural bargaining power to achieve equality of payoffs instead of the highest possible individual payoff. In this sense, there is a difference in outcomes between structural and

exercised bargaining power.

5 Experimental Setup

The experimental design fully replicates SNK's, who used a 2 x 2 experimental design that varies the distribution mode within subjects and the network structure between subjects. All subjects complete the SVO slider task (Murphy et al., 2011) prior to the experiment, but they do not receive information about their payoff from this task until the end of the experiment.[2] After the main part of the experiment, subjects complete a questionnaire including several socio-economic questions. In each country the setup was exactly the same. Two of the authors were physically present in all of the sessions in each country.

5.1 Design

Subjects are randomly allocated to groups of three and engage in exchange over ten periods. In each period, subjects negotiate the distribution of 24 profit points under the restrictions set by the network structure. Proposals can only be communicated within a dyad. The format of the proposals is restricted to numbers. Agreements have to be reached within three minutes. Within this period, subjects are free to send as many offers and counteroffers as they choose. If no agreement is reached, all three network members receive zero points. In each period, network members are randomly rematched and positioned in the network in order to avoid the development of direct reciprocity or insurance motives between subjects. At the end of the experiment two out of ten random rounds are paid, which should also limit reciprocal behavior. Subjects are informed about the network, their position and the size of the resource to be distributed (see Molm (2014), for the choice and variation of these factors).

In the triangle network, all positions have the same opportunities and the same ex ante probability of exclusion. In the three-line network, one of the two peripheral positions will be excluded from exchange, and thus from any profit, while the central position cannot be excluded. The exchange mode determines whether excluded subjects can receive payoff shares from the exchange outcome. In the exclusive treatment (henceforth ET) subjects can make only offers that include the two negotiating subjects (i.e. the dyad), but not the third subject. In the inclusive treatment (henceforth IT) offers can include a share for the third subject, who is not part of the bilateral negotiation and does not receive any information about interim offers made during the negotiations. ET and IT are both played for five consecutive periods. In half of the sessions ET is implemented first and in the other half IT comes first. The network structure is fixed throughout the session.

5.2 Instructions

The instructions are formulated as neutrally as possible and all subjects receive all information relevant to the experiment. In Austria the experiment was implemented in German language. For the other experiments the instructions (on paper and all instructions in the experimental programm) were translated to suit the Chinese and Japanese subjects. In a first step the original instructions

[2]The SVO slider measure is an incentivized task assessing an individual's SVO score, based on decisions in various scenarios as the sender in a dictator game. The SVO scores are clustered into four main types – competitive, individualistic, prosocial, and altruistic – and serve as an estimate of individual fairness preferences.

were translated to Chinese and Japanese, second they were retranslated to German by a different person and possible ambiguities were altered.

5.3 Sample

The experiments were implemented at the University of Vienna in Austria in April 2016 at Tianjin University in China in December 2016 and at Kyoto University in Japan in May 2017 using z-tree (Fischbacher, 2007). In total 324 subjects participated in the experiment, 108 in each country. In total we have 810 observations in each treatment and each network on the individual level and 270 observations for each treatment and network on the group level. The Universities differ in some respects. The University of Vienna is a public University without tuition fee and currently about 94.000 students are enrolled. The Nankai University of Tianjin is a public University with a tuition fee of 650 - 780€ per year and currently 25.647 students are enrolled. The Kyoto Sangyo University is a pivate University with 7.674€ tuitiuon fee for social sciences and 10.744€ tuition fee for natural sciences per year; currently about 20.000 students are enrolled at this university.

The experimental sample consisted of AT: 41% male and 59% female , CN: 38% male and 62% female, JPN: 73% male and 27% female students, with a mean age of (AT) 22.23 years (median = 22), (CN) 21.03 years (median = 22), and (JPN) 18.50 years (median = 19). The mean participation in laboratory experiments is (AT) 2.93 times, (CN) 1.88 times, and (JPN) 1.18 times.

A drawback of many cross cultural experimental studies is, that most of them only use one city per country (Oosterbeek et al., 2004, 172). This restriction also holds for our study. The cities in which the experiments were implemented may not necessarily be representative for the whole country or culture and the universities may attract very different types of students. Nevertheless, university students as a subject pool may be comparable enough, as they share certain features, such as educational level, age, socio-economic conditions, and urban lifestyle.

6 Results

6.1 Negotiated Exchange

The results for ET largely support the fist hypothesis about the universality of previous experimental results on negotiated exchange in small laboratory social exchange networks. The distribution of points is significantly different between the triangle and the three-line network for all three countries. There are no significant differences in the average profits of the subjects in the *triangle network* between all three countries (Mann-Whitney U test: Austria and China $p = 0.86$, nor between Austria and Japan $p = 0.80$, nor between China and Japan $p = 0.75$).

In the *three-line network* the broker should obtain more of the resource than the peripheral positions (difference significant in all three countries). In Austria the broker received 12.80 points, in China 12.91 and in Japan 12.79. There are no significant differences in broker payoff at $\alpha = 0.05$ between Austria and China (MWU test: $p = 0.09$), and non-significant differences between Austria and Japan ($p = 0.69$) and China and Japan ($p = 0.11$). These findings support *Hypothesis 1*, that assumes no differences in negotiation outcomes between countries for all three countries in both networks.

Table 1 displays the mean range of allocations for both networks and treatments, by country. The larger the range, the large the inequality of payoffs in a network. Even though the mean span is larger in Japan, the difference is not significant in either network (columns 2 and 3). The

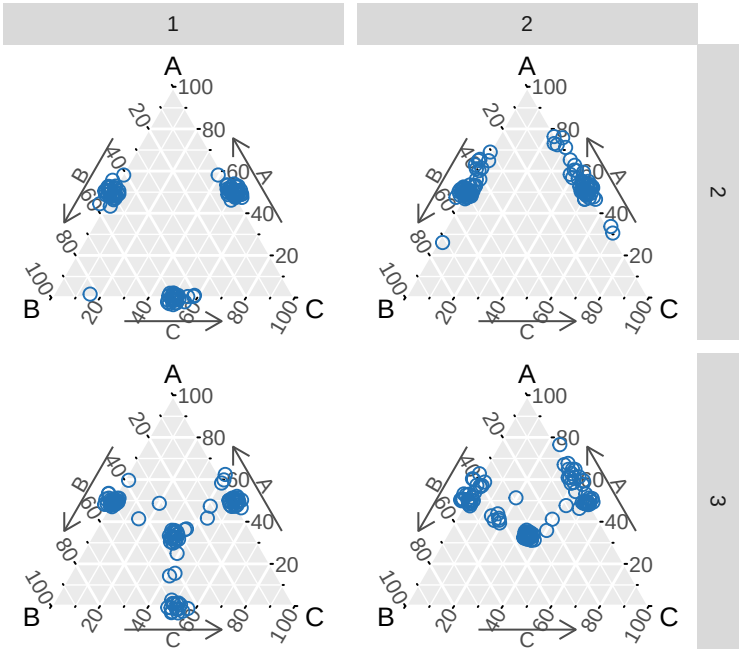


Figure 1: AT - implemented distributions

	Triangle: ET	Three-line: ET	Triangle: IT	Three-line: IT
Austria	12.31	13.18	9.11	9.04
China	12.54	13.22	10.07	11.03
Japan	13.79	15.30	8.21	7.57

Table 1: Range of distributions

distribution of agreements is also displayed in Figures 1, 2, and 3 for each country. The triangles represent the networks used; each edge of the graph represents a subjects' position in the three-person network. In the first column, the triangle network is displayed, the three-line in in the second and third columns. In the upper panel of each of the graphs the agreements made under ET are plotted, below the agreements in IT. In the upper panel there are no dots in the center of the triangle, as it was impossible by design to allocate points to the third. Given that the resource was to be split between two subjects, the dots are on the outer lines between the edges of the triangle. The larger mean range in Japan is reflected well in Figure 3, where we see that the dots scatter both left and right around the central point of the equal split. However, the striking finding is that the patterns of the distribution of agreements is very similar across all three countries.

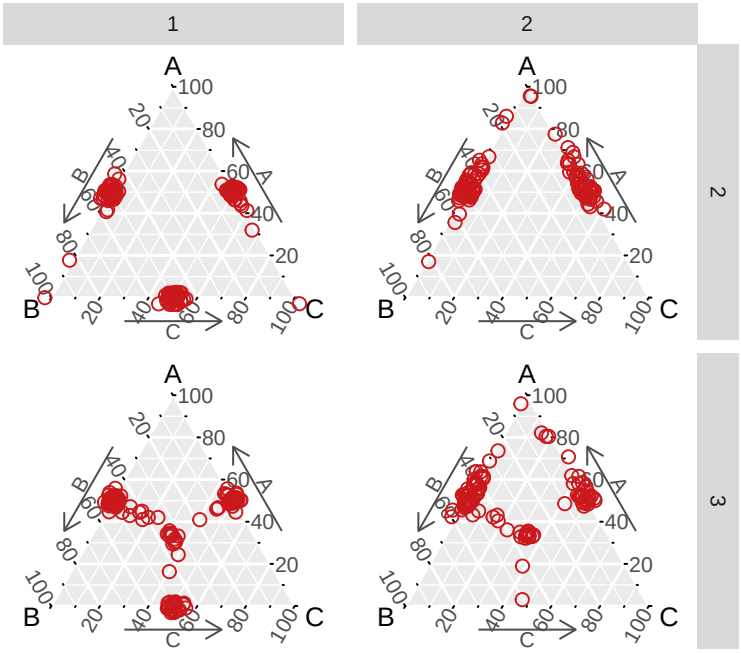


Figure 2: CN - implemented distributions

6.2 Beyond the Dyad

In IT there is a significant difference in the triangle network between all three countries with $\alpha = 0.05$ for one of three positions, and for one position between China and Japan, but not for the other positions. Differences in the triangle (position A) between Austria and China (MWU test: p = 0.05), between Austria and Japan (p = 0.03) and between China and Japan (p = 0.00).

Positions B are not significantly different between Austria and China (p = 0.35), between Austria and Japan (p = 0.81) and between China and Japan (p = 0.19). Positions C are not significant between Austria and China (p = 0.26), between Austria and Japan (p = 0.47) and significantliy different between China and Japan (p = 0.04). This may be due to the fact that there are differences in incomes between positions *within* countries. By theory there should be no siginifcant difference on average between the network positions' income in this network, as the likeliyhood of exclusion is equally large for each position. However, it might be that in our experiment 5 repetitions per treatment were not enough to equalize payoffs on average. It might also be that reading from left to right gives a small preference to the chat window on the left side. On the other hand, people may be used to click on the right lower panel of a computer screen to proceed. SO even though the differences between some positions in the triangle network are significant, the networks do not differ from each other entirely between countries and the patterns of exchange are relatively similar. Thus, *Hypothesis 2* of no difference in behavior in IT is partly supported for the triangle network. Other drivers of this result may be the frequency of allocations to the third, which may be related to the SVO of the agreeing dyad.

In the three-line network, the broker earned on average 11.46 points in Austria, 12.22 points in

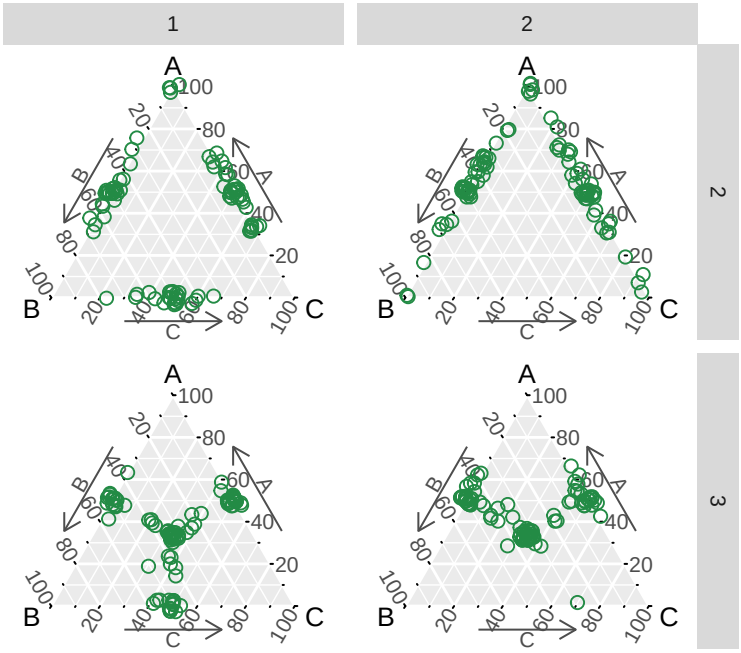


Figure 3: JPN - implemented distributions

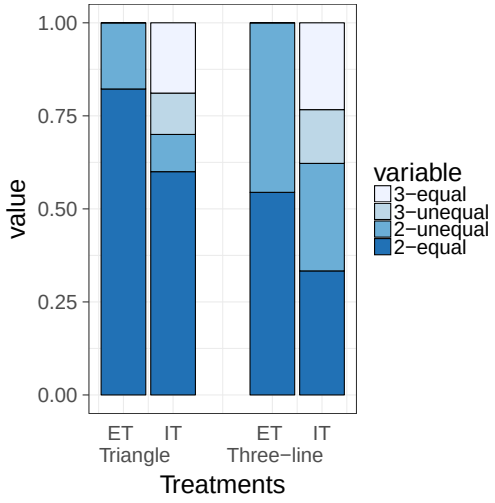
China, and 10.50 points in Japan. The difference of allocations to the broker is significant between all three countries (Austria and China (MWU test: p = 0.01), Austria and Japan (p = 0.00), China and Japan (p = 0.00)). Thus, *Hypothesis 2* of no difference in behavior in IT must be rejected for the three-line network.

So, overall, in IT there is a consistent difference between all three countries for the three-line network. These differences can be investigated more closely by looking at range of profits and the different types of allocations that were implemented. Nevertheless, it is important to note that the patterns of behavior are strikingly similar between countries. Even though some of the allocations are significantly different from each other, the difference is not large and we essentially find the same treatment effects in each country.

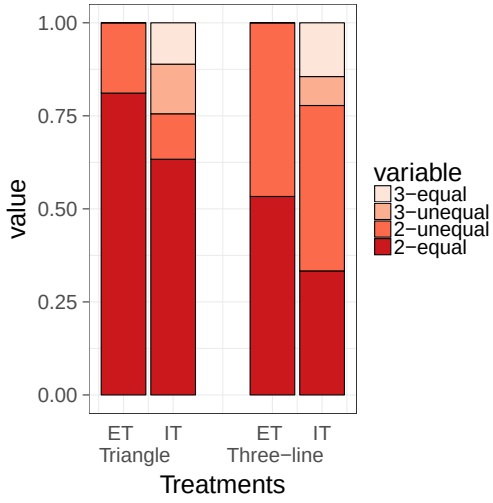
6.2.1 Types of agreements

Agreements, and hence distributions, in this experiment can be classified into four main groups. Allocations that (1) split equally between two subjects, (2) unequally between two subjects, (3) equally between all three subjects, and (4) uneuqally between three subjects. Note that splits between three subjects (equal and unequal) can only occur in the Inclusive Treatment. In the ET they are ruled out by design.

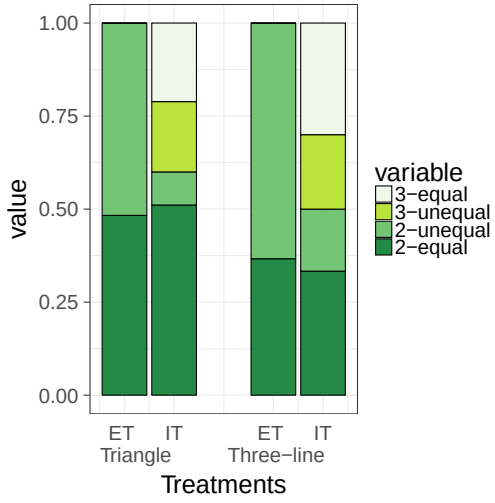
Figure 4 displays the frequency and distribution of types of offers across networks and treatments for each country (according numbers can be found in the Appendix in Table 3). If two subjects agreed on an equal two-way split, those two received 50% of the resource and the third subject received nothing. Analogously, an equal three-way split distributes 33.3% of the resource to each



(a) Austria



(b) China



(c) Japan

Figure 4: Types of offers across countries, split by treatment and network

of the three network members. By contrast, unequal two-way splits allocate more of the ressource to one of the network members. Unequal three-way splits allocate some parts of the ressource also to the third subject.

The data reveal similarities between Austria and China in the triangle network. In ET, the distribution of offer types are very similar: about 80% are equal two-way splits in the triangle and about 54% in the three-line. In Japan, however, the frequency of equal two-way splits is considerably lower: 48% in the triangle and 37% in the three-line network. In the IT in China we observe the fewest allocations to the excluded subject: in the triangle 24% and three-line 22% of the cases in China, compared to 37% (three-line) and triangle 30% in Austria, and triangle 40% and three-line 50% in Japan. Interestingly, equal three-way splits occurred less often than unequal ones in China; in Austria and Japan equal splits are the dominant type of allocations.

Comparing all three countries we observe that most agreements that include the third were concluded in Japan, but at the same time, we observe the lowest frequency of equal splits in that country. On the other hand, equal-two way splits occured more often in China and Austria, which are not markedly different from each other considering the distribution of offer types.

6.3 Social Value Orientations

Prior to the actual experiment, subjects completed the Social Value Orientation slider measure (SVO). We find that 56.00% of Austrian subjects show an individualistic social value orientation and 44% a prosocial one. In China, 66% of subjects are classified as individualistic and 34% as prosocial type. There are no competitive or altruistic SVO types in either country. In Japan, 1% is classified as competitors, 61% as individualists, 36% as prosocials and 2% as altruistic types. So individualists were most frequent in China, least frequent in Austria, and Japan lies inbetween.

Table 2 displays a tobit regression, evaluated for each network individually, since the variable of interest is measured at the network level. The profit span within networks, which reflects the inequality of allocations, is the dependent variable. It can range from 0, which occurs when the resource is split equally, to 24, which occurs if one person obtains all of the resource for herself (see Table 1 for means by treatments and countries). The explanatory variables include treatments, order of participation in treatments, country, period, the number of prosocials within a network (ranging from 0 to 3) and an interaction of country and the number of prosocials), and, in the three-line network, an indicator of whether the broker is an individualist.

In the triangle (Model 1) we find a significant effect of treatments. In IT the range is significantly and substantially narrower. An increasing number of prosocials present in the network significantly reduces the range in the triangle network in Austria. Country dummies show no significant effect, neither do the interaction terms. As the game progresses, the range rises significantly, indicated by the positive coefficient of the Period variable. Subjects may become more egoistic or learn to negotiate to their own advantage.

In the three-line network (Model 2) we find an even stronger treatment effect. Under IT, the span is significantly narrower than under ET. Somewhat more than half of this effect is due to the presence of a prosocial broker, as indicated by the positive and significant effect of the individualistic broker indicator. Note, however, that the span is signicantly wider in China than in the other two countries, a finding that holds for prosocial brokers but not for individualistic ones (Model 3). This counter-intuitive effect requires further elaboration in future studies. The Period effect is also significant in the three-line network, but there are no sequence effects.

Overall we find that there are similar patterns of social exchange in all three countries. Also,

	M1: Triangle	M2: Three-line	M3: Three-line
(Intercept)	19.70 (1.02)***	21.76 (1.14)***	19.68 (1.05)***
Inclusive Treatment (ref. ET)	−4.02 (0.37)***	−5.11 (0.45)***	−5.16 (0.45)***
Order of Treatments	−0.06 (0.34)	0.50 (0.68)	0.84 (0.69)
China (ref. AT)	−0.63 (0.63)	−0.57 (0.85)	2.37 (0.74)**
Japan (ref. AT)	−0.61 (0.82)	0.20 (0.95)	0.20 (0.84)
Period	0.69 (0.13)***	0.87 (0.16)***	0.94 (0.16)***
Number of Prosocials	−0.85 (0.39)*	−0.64 (0.45)	
China x Prosocials	1.02 (0.56)	1.31 (0.57)*	
Japan x Prosocials	0.59 (0.61)	−0.06 (0.72)	
Log(scale)	1.39 (0.05)***	1.59 (0.04)***	1.58 (0.04)***
Powerful Individualist			2.07 (0.72)**
China x Powerful Ind.			−2.11 (0.98)*
Japan x Powerful Ind.			0.04 (1.09)
AIC	2919.46	3055.80	3047.47
BIC	2962.37	3098.72	3090.39
Log Likelihood	-1449.73	-1517.90	-1513.73
Deviance	628.02	636.80	635.93
Total	540	540	540
Left-censored	48	62	62
Uncensored	492	478	478
Right-censored	0	0	0
Wald Test	123.72	139.19	145.57

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 2: Tobit Regression on range of incomes split by networks

the effect of allowing allocations to the excluded subject occurred in all three countries to a similar degree. Even though there are small differences to be seen in the types of agreements, considering the treatment effects there is no signifiant difference between the three countries.

7 Conclusion

We have explored the generalizability of findings from a study on allocations in dyadic negotiations that extend beyond the dyad to third players that were observed in a previous study (Schwaninger et al., 2017) by replicating the experiment at a Chinese and a Japanese university. We have studied two three-node networks, the triangle and the three-line. Overall, the similarity in findings is striking, thus providing evidence of the universality of bargaining behavior in social exchange networks.

When power is distributed equally (the triangle) behavior appears to be very similar across cultures. In the asymmetric power structure of the three-line network, the general pattern is also similar, but we found some nuance in the inclusive treatment. In this network, the distribution of points depends on whether power is used and to what effect. We observe that the brokers' use of their power in the three-line network depends on their social value orientations. This effect varies somewhat across countries, deviating at the chinese university from from the other sites.

Cultural differences are more than the aggregation of different individual preferences. It matters how much value a specific behavior, such as cooperation with strangers, has in a society as a whole (Kuwabara et al., 2014, 350). In societies characterized as individualistic giving to the excluded may not be as important as in a society oriented toward the collective, where every member that is affected counts, not only the one a person is directly interacting with. The use of power may be influenced by social norms that vary between cultures. However, given the restriction of our study to one experimental site per country, it is impossible to resolve this puzzle here.

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Appendix

	Country	Network(Treatment)	equal-3-split	3-split	2-split	equal-2-split
1	AT	Triangle (ET)	0	0	0.18	0.82
2		Triangle (IT)	0.19	0.11	0.1	0.6
3		Three-line (ET)	0	0	0.46	0.54
4		Three-line (IT)	0.23	0.14	0.29	0.33
5	CN	Triangle (ET)	0	0	0.19	0.81
6		Triangle (IT)	0.11	0.13	0.12	0.63
7		Three-line (ET)	0	0	0.47	0.53
8		Three-line (IT)	0.14	0.08	0.44	0.33
9	JPN	Triangle (ET)	0	0	0.52	0.48
10		Triangle (IT)	0.21	0.19	0.09	0.51
11		Three-line (ET)	0	0	0.63	0.37
12		Three-line (IT)	0.3	0.2	0.17	0.33

Table 3: Types of accepted offers across network and treatment

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