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Why People Reject Advantageous Offers – Non-monotone Strategies in Ultimatum Bargaining

Evaluating a Video Experiment Run in PR China

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Abstract

When using the strategy method in ultimatum bargaining, many researchers ask responders for the minimal acceptable offer only implicitly assuming strategies to be monotone. Recent research has shown, however, that subjects decline disadvantageous and advantageous proposals. We report on an ultimatum game video experiment where more than 50 percent of the responders rejected advantageous offers. Proposers and responders acted together in groups of three people each and were video taped during decision making. The videotapes then were content analyzed. Our experimental design provides the unique opportunity to learn from participants' spontaneous discussions about their motivations for rejecting advantageous offers. Main motives are social concern, non-expectancy of high offers, emotional, ethical, and moral reasons, group-specific decision rules and aversion against unpleasant numbers.

Keywords: ultimatum game, video experiments, strategy method, content analysis, non-monotone strategies, social preferences

JEL Classification Number: C78, C81, C91, C92, F00, O53, O57

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1. Introduction

Experiments on the ultimatum game have shown remarkably stable deviations from purely selfish behavior. In the standard ultimatum game (GÜTH et al. 1982), a proposer can decide on how to split a given amount of money (the pie) between himself and a responder. The responder can either accept or reject the proposal. In case of acceptance, both receive the amounts as allocated, in case of rejection both receive nothing.

Results from numerous symmetric ultimatum game experiments (UG in the following) with zero outside options have shown that individual proposers typically offer 30-50 percent of the pie, with the equal split often being the modal and median offer. Proposers who offer the responders less than 20 percent face rejection with high probability. These findings have been replicated across different subject populations, with different monetary stakes and different experimental procedures (c.f. CAMERER 2003, FEHR and GÄCHTER 2000).

Apparently, responders perceive highly disadvantageous allocations as unfair. In this situation, being treated unfairly corresponds to comparatively low payoffs. The monetary and the motivational incentive are not at odds. Thus, rejecting a low offer becomes a likely action.

How do responders, however, behave if confronted with highly advantageous allocations? *Advantageous offers*¹, i.e. amounts higher than 50 percent of the pie, are unfair though, compared to the proposer's low share. In this situation, being treated unfairly corresponds to comparatively *high* payoffs. Does the now existing conflict between the monetary and the motivational incentive induce rejections of advantageous though unfair offers as well?

There is growing experimental evidence that refusing advantageous offers is not a negligible phenomenon (c.f. section 2). In the present paper, we report on a remarkably high number of high offer rejections in a UG video experiment we have been conducting in the People's Republic of China. Here, subjects were observed during decision making. Participants acted together in responder and proposer groups of three people each being video taped while making their decision. This experimental setup provides the unique opportunity to learn from participants' spontaneous discussions about their reasons and motivations for rejecting advantageous offers.² The same rejection pattern as with groups, we in a UG played by individuals (GENG et al. 2004).

Given our research agenda, it was essential to observe discussions on all *potential* offers. We therefore modified the standard sequential protocol of UG experiments by using a variant of the strategy method (SELTEN 1967) where responders have to discuss acceptance or rejection for the full strategy space.

¹ HENRICH et al. (2001) call these offers „hyper-fair“.

Why is it important to analyze discussions on advantageous offer rejections? Despite the growing experimental evidence, the literature is far from giving a consistent explanation for such seemingly implausible behavior. Most of the available data allow indirect inferences only, based on observed decisions as well as on participants' social characteristics (c.f. BAHRY and WILSON), follow-up questions, debriefings and conversations (c.f. CARDENAS 2003) or on analyzing participants' cultural environment (c.f. HENRICH et al. 2001, TRACER 2004). To the best of our knowledge no data on advantageous offer rejections is analyzed so far that allow an investigation of subjects' spontaneous articulations not being mediated by the researcher's personal interpretation. The verbal material we obtained by combining video recording and strategy method allows to open the black box of decision motives regarding rejections of advantageous offers.

Our study provides new insights in several respects. First, we found social concern to be the main motivation for refusing advantageous offers. This is in agreement with the basic assumption of models of inequity aversion. An inequity averse responder suffers a loss in utility when he is worse off and when he is better off than the proposer (c.f. BOLTON and OCKENFELS 2000, FEHR and SCHMIDT 1999). Second, other motives turn out important as well. Among these are beliefs about sender behavior, in particular non-expectancy of high offers, but also emotional, ethical, and moral reasons, special decision rules employed in some groups and aversion against unpleasant numbers. Finally, the empirical findings on advantageous offer rejections might induce a reconsideration of the assumptions on the parameter space in the models of inequity aversion.³

Last but not least, we assessed the robustness of our results as to advantageous offer rejections. To this end, we repeated the experiment with individual decision makers that were not observed. We found individuals to show the same rejection behavior regarding high offers as groups do. For that reason, the assumption seems justified that motivations revealed during group discussions in the UG pertain to individuals as well.

The remainder of the paper is organized as follows. Section 2 gives an overview on other experimental studies reporting advantageous offer rejections. In Section 3, we state our research goals, give a detailed description of the video and strategy method and report the experimental design. Section 4 presents the results. In the final section 5, we discuss our findings and conclude.

2. Experimental evidence on advantageous offer rejections

In the past, experimental research on UG typically focused on rejections of offers unfair to responders. Advantageous offers did not attract the attention of the profession the reason probably

² According to LOOMES (1999), the use of audio or video records makes up one of the real challenges of experimental economics in the future, see also CAMERER (2003, p.35) and GÜTH (2001). For a more elaborate discussion on this research method, see HENNIG-SCHMIDT (1999).

³ Even though these models account for aversion against advantageous inequality they do not consider rejections of advantageous offers. Either the model does allow for declining advantageous offers rejections but assumes a rejection threshold not higher than the equal split (BOLTON and OCKENFELS 2000). Or the model parameters are specified in such a way that advantageous offers cannot occur (FEHR and SCHMIDT 1999).

being that experimental evidence on advantageous offers as well as on their rejection is rare. Moreover, some of the literature take it for granted that subjects have problems in understanding the game if they offer and/or reject more than 50 percent of the pie (c.f. BORNSTEIN and YANIV 1998).

Recently, however, researchers show growing interest in advantageous offer rejection starting with the striking findings of HENRICH et al. (2001, 2004). The authors investigated non-student populations of small scale societies in twelve countries on four continents. HENRICH et al. not only found that making advantageous offers are common in some of their subject pools⁴. They also report that in some populations both unfair and advantageous offers are rejected with nearly equal frequency even when the offers amount to nearly a day's wage (see, for instance, the Au and Gnau of Papua New Guinea).

A deeper look into the experimental literature shows that in addition to the HENRICH et al. investigation, advantageous offer rejections have been observed in quite a few studies even though the percentage is low when compared to rejections of unfair offers. In the following, we will report on some of the literature.

ROTH et al. (1991) run a sequential repeated UG with students in Israel, Japan, Slovenia, and the United States. A small percentage of US and Japanese participants rejected proposals larger than 50 percent (c.f. figures 3 and 4 in ROTH et al.). BORNSTEIN and YANIV (1998) report that 10 percent of the 20 individual proposers offer more than 50 percent of the pie in a one-shot UG. FALK et al. (2003) conducted a mini UG with proposers having only two choices, either an offer smaller or an offer larger than the equal split. About 28 percent of the 45 proposers choose the high offer. Roughly 8 percent of these advantageous offers are rejected⁵. CAMERER (2003) surveys 15 UG studies in 13 of which small percentages of advantageous offers are reported. Four of these papers in addition to ROTH et al. (1991) state rejections of such offers.

In a newspaper experiment using the strategy method⁶, GÜTH et al. (2003) found 97, i.e. 9 percent, of the 1,035 participating readers of a large German daily rejecting unfair and advantageous offers. BELLEMARE and KRÖGER (2004) had a sample of the Dutch CentERpanel play the UG and found 41 percent of the 355 responders stating non-monotone strategies. Andreoni et al. (2003) conducted a convex UG (CUG) where proposers choose to divide a pie according to pre-determined allocations. Responders then can shrink the pie down to 0 dollars. About 5 (2) percent of the 56 proposers in each treatment offered more than the equal split in the convex (standard) UG. Moreover, 25 percent of the responders reduced the pie for unfair and advantageous offers in CUG, 5 percent rejecting both kinds of offers in UG. ECKEL (2004) reported non-monotone rejection behavior as well.

BOLTON et al. (2004) run a similar mini UG experiment like FALK et al. (2003) but used the strategy method. In their game, proposers have three options, the equal split, an unfair and an advantageous offer. The authors report about 15 percent rejections of advantageous offers. One

⁴ In fact, in 12 of their subject pools advantageous offers are made (HENRICH et al., 2004, figure 2.2, p. 19).

⁵ In absolute terms, there are about 13 advantageous offers (own calculation based on figure 3 of FALK et al. 2003) and one rejection of such an offer.

⁶ The following papers use the strategy method if not reported otherwise.

sender (about 1 percent) made an offer favoring the responder. SADRIEH and OSTERHOLT (1998) find a similar behavioral pattern in an UG group experiment where three subjects acted together as either a proposer or a responder. One out of nine responder groups (11 percent) rejected an offer higher than the equal split, one proposer group offered 80 percent of the pie.

Finally, we report on studies conducted in cultural environments different from Western standards. In a field UG experiment, conducted in two former soviet republics, Tatarstan and Sakha, BAHRY and WILSON (forthcoming) report 7 percent advantageous offers and 56 percent non-monotone responder strategies. CARDENAS (2003) running UG experiments with villagers near the Pacific coast of Colombia found the same rejection pattern with regard to offers unfair to either player. Moreover, about 10 percent of the 30 village proposers offered more than 50 percent of the pie.⁷

3. Research questions, experimental methods and experimental design

3.1 Research questions

Apparently, rejections of advantageous offers occur in different cultures and in student as well as in non-student populations. Having access to discussions on advantageous offer rejections, our main research goal is to identify reasons and motivations that might cause subjects to reject such offers. Do we find evidence in the verbal data for social concern like bilateral fairness or aversion against advantageous inequality which might eventually lead to turning down high offers? Are there other motives that induce subjects to reject favorable offers? We use content analysis as the method for extracting the answers to our research questions. Two coders independently assigned segments of the video-taped discussions to categories constructed to capture potential motives for refusing high offers. The frequency of groups articulating a category at least once is taken as the measure of importance for the underlying motive.

Why does our research add important contributions to the existing body of evidence on advantageous offer rejections? First of all, most of the available studies can only indirectly infer from observed decisions on participants' underlying motives. Our data, however, allows the investigation of motives expressed by the subjects themselves during spontaneous conversation. Second, the few papers studying refutations of high offers do not give a consistent explanation for such seemingly implausible behavior. This is not surprising because due to the lack of motivational data, these studies restrict their analysis on social characteristics or subject-independent data like participants' cultural environment. We, however, base our investigation on subjects' own verbalizations and thus on a much richer data base.

Our research might prove also important for model building. Subjects' discussions might not only corroborate existing models of social preferences but also reveal other important motives that are not captured yet. In addition, the empirical findings on rejecting high offers might lead to re-examine the assumptions on the parameter space in the models of inequity aversion (BOLTON and OCKENFELS 2000, FEHR and SCHMIDT 1999).

⁷Rejections of advantageous offers have also been found in UG experiments with incomplete information on the size of the pie (c.f. GÜTH and HUCK 1997, MITZKEWITZ and NAGEL 1991, 1993)

Other issues we are interested in are the following. Are groups heterogeneous in terms of strategies, and if so how does this affect the motives for rejecting advantageous offers? We assume that a classification of strategies will help to understand differences in decision behavior, as it has helped to explain behavior in other game settings (e.g. FISCHBACHER et al., 2001). Does rejection behavior with regard to advantageous offers differ when the situation changes from a symmetric to an asymmetric setting?⁸ Do individuals behave similar to groups as to rejecting high offers?

3.2 Experimental methods

Our main approach for eliciting subjects' motivations on advantageous offer rejections is the video method. Three subjects play together as a group and have to take a consensus decision. As in the standard UG, proposers have to decide on dividing the pie, and responders have to decide on acceptance or rejection of the offer. Intra-group discussions are video taped, inter-group contacts are anonymous with the experimenter transmitting decisions. The video-taped discussions are transcribed word for word into text protocols by graduate students having been particularly trained and instructed for this task. The transcripts are used for subsequent content analysis.⁹ All transcripts have been translated into German allowing Chinese and German researchers to simultaneously work on the text protocols.

The video method changes the standard experimental protocol in two respects. For one thing, individuals are substituted by groups. Secondly, groups are video taped. Both modifications may have an impact on behavior.¹⁰ Yet, our focus is on understanding motives. Eliciting motives, however, involves a tradeoff between (a) directing subjects' attention to the research interest by using for instance questionnaires or scales, or (b) using a natural environment for spontaneous discussions in a group setting where behavior can easily be observed. We decided to use the latter approach keeping in mind that the video method might change behavior. To control for group behavior and observation, we repeated the UG experiment with individual decision makers that were not observed.

Another feature of our experiment is the application of a variant of the strategy method (SELTEN 1967). Players decide simultaneously, responders having to report acceptance or rejection for any possible offer.¹¹ In this respect, our design differs from other research approaches in

⁸ We run sessions with zero outside options for both the proposer and the responder as well as sessions where in case of rejection the proposer gets a higher payoff than the responder. For a detailed analysis on the impact of asymmetric outside options on decision behavior see HENNIG-SCHMIDT (2002), HENNIG-SCHMIDT and KOHNZ (2004).

⁹ Verbal data are increasingly used to explain quantitative results. See for instance CHARNESS and DUFWENBERG (2004) and COOPER and KAGEL (2003) who analyse messages written by experimental subjects. See also BEWLEY (1999) who interviewed business people to learn about wage rigidity in recessions.

¹⁰ It is not clear that both modifications indeed induce an effect. There is inconclusive evidence whether groups behave differently from individuals. Moreover, the available evidence in the literature suggests that observation does not systematically affect behavior. See BOSMAN et al. (2004) for a detailed discussion of these two issues.

¹¹ We decided to use the strategy method because it asks not only for acceptance or rejection of the actual offer but also for all other possible allocations. Thus, it provides the information we require with respect to our research agenda. The literature on how the strategy method affects behavior is inconclusive, though. BRANDTS and

that we elicit the full strategy space and not only minimal acceptable offers (MAOs) as for instance BUCHAN et al. (forthcoming) and KNEZ and CAMERER (1995). Asking for MAOs only, implicitly assumes, however, that responders state monotone strategies, i.e. accept all offers above the stated acceptance threshold. Non-monotone strategies, i.e. rejections of low *and* high offers, cannot be revealed by this elicitation method.

3.3 Experimental design and procedures

Design

Our experiment is based on a one-shot UG, with in this case groups (of three participants) as players. A proposer P has to decide about the division of a given pie of 20 tokens which she can allocate between herself and the responder R. P decides on the amount $x \in \{0, 1, \dots, 19, 20\}$ to be sent to R. Simultaneously and independently, R states acceptance or rejection for any possible offer. In case of acceptance of x , P receives the payoff $20 - x$, and R gets x . In case of rejection, both receive nothing (treatment T1). In two additional treatments, P is guaranteed a positive outside option of 8 in case of rejection whereas R's outside option is 0 or 2 respectively (T2 or T3).

Table 1 summarizes the parameters of the three treatments.

Table 1 – Experimental treatments

treatment abbreviation	treatment characterization	outside option proposer	outside option responder	number of independent observations	number of proposer groups	number of responder groups
T1	symmetric	0	0	12	12	12
T2	asymmetric	8	0	12	12	12
T3	asymmetric	8	2	12	12	12

The sub-game perfect equilibrium in T1 is $x=0$ if money is infinitely divisible. P will keep the whole endowment which R will accept. With a smallest money unit of 1 token a second sub-game perfect equilibrium exists, namely $x=1$. P will send an amount equal to the smallest money unit which R will accept since she is better off than when rejecting. With a similar argument, the second sub-game perfect equilibrium in T2 (T3) is $x=1$ ($x=3$).

The experiment was run at Sichuan University, Chengdu, PR China, in July 2001 and August 2002. In total, 208 students, almost all undergraduate students from Sichuan University, participated in 12 experimental sessions of each treatment, each session providing one independent observations. Students majored in natural sciences, economics and humanities. Subjects were recruited by campus advertisements promising monetary reward for participation in a video decision-making task. Registration was arranged such that three subjects played together in a group being assigned to rooms separate from each other. This procedure guaranteed full ano-

CHARNESS (2000), CASON and MUI (1998), OXOBY and MCLEISH (2004) do not find differences on behavior whereas BROSIG et al. (2003) and GÜTH et al. (2001) do. In a recent study, BROSIG et. al. (2004) find no behavioural divergence when investigating groups as decision makers.

nymity between proposer and responder groups interacting in a session. Due to no show-ups, 8 of the 72 groups consisted of only 2 people. Groups were randomly assigned to be proposers or responders.

Sessions lasted for about 35 minutes. The monetary reward was calculated to equal the hourly wage in a typical students' job of about 35 - 45 RMB (Chinese Yuan). For each token retained by his/her group, *each* group member was paid 2 RMB. In addition, a show-up fee of 10 RMB was paid independently of the subject's earning in the experiment. On average subjects earned 27.82 RMB (3.72 Euro) including the show-up fee. The amounts paid to participants are at the upper range of the wage distribution for Chinese students. Instructions have been worded as neutral as possible, avoiding any suggestive terms (a translation of the Chinese instructions is provided in Appendix C).

Procedures

In each experimental session, the following procedure was used. Participants of the proposer and responder groups arrived in separate rooms. In each room, one native experimenter read the Chinese instructions for the Ultimatum Game¹². Subjects were then requested to read them carefully again and to ask questions which were answered. All participants were fully informed on all features of the experimental design and the procedures.

Each proposer group had 15 minutes to make a decision on their proposal x to the responder group. Each responder group also had 15 minutes to make their decision on acceptance or rejection of any possible offer. All discussions were video taped. The decisions had to be taken jointly within the groups and then filled in on the corresponding forms (decision forms are provided in Appendix C). All group members had to agree by signing the forms. When the decision time was over, the experimenters matched the proposal and acceptance or rejection and informed the groups about the result. There was no face-to-face contact between proposer and responder groups. Finally, participants were paid out in their groups and dismissed.

4. Results

4.1 Final decisions

We first report on final decisions in the three treatments. Results in the standard treatment T1 are in line with individual non-observation UG experiments discussed in the introduction. Proposers' mean offer is 41 percent of the pie, and responders on average reject offers lower than 20 percent (c.f. Table 2). These numbers are far above the standard game theoretic predictions stated in section 3.3. In T2 and T3, average offers and average lowest acceptance levels (LAL in the following) are higher than predicted, too.

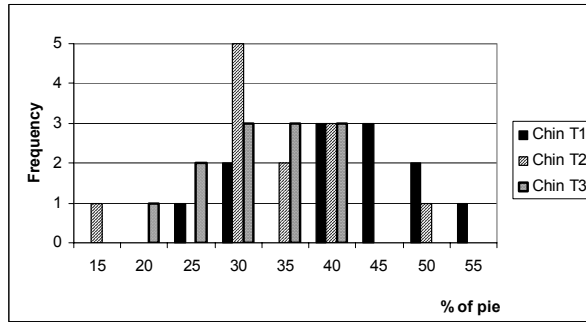
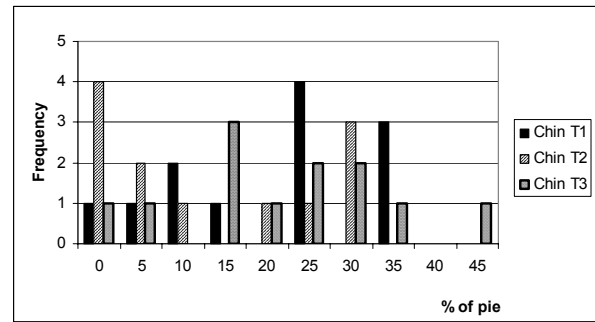
¹² Instructions were translated into Chinese by one of the authors, Chaoliang Yang, who is a Chinese native speaker and both linguistically and culturally fluent in German. All three authors intensively collaborated during the translation process.

Table 2 - Offers, lowest acceptance levels (percent of pie) and rejections of advantageous offers

Treatment	Average offer ¹⁾ (std. dev.) ¹⁾	Average lowest acceptance level ¹⁾ LAL (std. dev.)	Rejections of advantageous offers ²⁾
T1	41.2 (9.1)	20.4 (12.1)	58.3 (7/12)
T2	33.7 (8.6)	12.5 (13.4)	58.3 (7/12)
T3	32.1 (6.6) [22.1 (6.6)]	21.6 (12.7) [11.7 (12.7)]	41.7 (5/12)
All treatments	35.7 (8.9) [32.4 (11.2)]	18.2 (13.0) [14.9 (13.0)]	52.8 (19/36)

¹⁾ Numbers in italics account for responders' positive outside option in T3²⁾ percent of sessions

Offers and LALs in all three treatments are shown in Figure 1a and 1b.

**Figure 1a: Offers in T1, T2, T3****Figure 1b: Lowest acceptance levels in T1, T2, T3**

4.2 Classification of strategies

We next deal with strategy types. Figures 1-3 in Appendix A show responder groups' strategies and proposer groups' offers. Two kinds of strategies can clearly be distinguished with regard to monotonicity of rejection behavior. We call a strategy *monotone as to rejection* if all offers lower than any rejected offer are rejected as well. *Non-monotone* strategies are those where the above definition does not hold. In the context of the present paper, we use non-monotonicity of a strategy synonymously with rejecting one or more advantageous offers.

Monotone and non-monotone strategies can again be split into two subcategories each. *Rational* monotone strategies conform with the standard game theoretic predictions discussed in section 3.3. Strategies are termed *stylized* if they correspond to the stylized facts known from UG experiments discussed in the introduction, i.e. subjects reject offers higher than the lowest monetary unit as well.

Non-monotone strategies are classified as follows. *Systematic* non-monotone strategies show a clear pattern. They either entail one rejection threshold involving acceptance of all offers lower than this limit. Or they comprise two rejection thresholds, all offers below the lower acceptance level being rejected, all offers above the higher acceptance level being rejected as well.

The low and the high rejection thresholds are the boundaries of an area of accepted offers.¹³ *Unsystematic* non-monotone strategies do not exhibit a clear pattern of rejection behavior.

Table 3 – Classification of strategies

Classification	T1	T2	T3	Frequency all	Percent all
monotone	5	5	7	17	47.2
rational	1	2	3	4	11.1
stylized	4	3	4	13	36.1
non-monotone	7	7	5	19	52.8
systematic	3	5	4	12	33.3
unsystematic	4	2	1	7	19.5

Table 3 shows the frequency of strategies according to our classification. A remarkably low percentage of only 47 percent of the strategies are monotone. Roughly two thirds of these strategies conform to the stylized facts of numerous standard UG experiments.

Non-monotone strategies are stated by more than half of all responder groups. We find this a surprising result in light of the previous findings on UG experiments. Note, however, that non-monotonicity of strategies can only be revealed if subjects have to state the full strategy space and not only minimal acceptable offers as elicited in other experiments (c.f. KNEZ and CAMERER 1995).

RESULT 1:

More than half of the groups state non-monotone strategies.

4.3 Analysis of verbal data

Result 1 shows non-monotone strategies to be a non-negligible phenomenon in the present study. Therefore, our main research goal is to identify reasons and motivations that might cause subjects to reject advantageous offers. We are particularly interested in finding evidence in the verbal data for social concern like fairness and aversion against advantageous inequality that might eventually result in turning down high offers. Are there other motivations that induce subjects to refuse amounts higher than the equal split?

Categories

We use content analysis as the method of analyzing the transcribed video-taped discussions within the groups. According to SMITH (2000, p. 314), content analysis is "... a technique used to extract the desired information from a body of material (usually verbal) by systematically and objectively identifying specified characteristics of the material". The desired information we are interested in are the reasons and motivations of subjects' rejecting advantageous offers. We extract this information by coding the verbal protocols. Coding denotes the process of assigning text segments to categories. These categories were designed to capture potential motives for refusing high offers. Creating the categories was based on the following considerations. Firstly, categories account for hypotheses stated in the literature.

¹³ BELLEMARE and KRÖGER (2004) call such behavior 'plateau behavior'.

- Concern for others is incorporated into models of social preferences (c.f. BOLTON and OCKENFELS 2000, FEHR and SCHMIDT 1999). Concern for others also matches the obligation for social attention essential to the Confucian background of our experimental subjects (c.f. CHINESE CULTURE CONNECTION, 1987).
- We base our analysis on Chinese verbal material. We, therefore, account for categories matching other features of our participants' cultural environment. These are for instance shame avoidance, face damage and other ethical and moral norms. Moreover, subjects might reject advantageous offers on emotional grounds or because of ethical reasons other than bilateral views of social concern (c.f. BOND 1996, BOND and HWANG 1986).
- It has also been argued that high offers are rejected because subjects do not expect proposers to make advantageous offers thus truncating the strategy space (c.f. HUCK 1999). As BOLTON et al. (2004, 9) put it "... responders understood that Proposal *A* [an advantageous offer in our terminology] was very unlikely and rejections represent a form of cheap (fairman) talk". Therefore, responders do not bear any costs when turning down these offers.
- HENRICH et al. (2004) attribute the refusal of seemingly generous offers to the culture of status-seeking through gift-giving. They argue that accepting gifts, even unsolicited ones, implies strong obligations to reciprocate at some point in the future, possibly not to the responder's liking. Therefore excessively large offers are frequently refused (see also HANNIG 1988, OSTMANN 2002).

Secondly, we base categories on characteristics of the discussions we found important as to our research agenda.

- Participants use specific rules to decide on acceptance or rejection, as for instance random choices.
- They reject offers when unpleasant numbers are involved.
- One group made a mistake when stating rejection of an advantageous offer.
- In many cases, subjects asserted refusal without reasoning.

Table 4 shows the main categories of our classification system.

Inter-coder reliability

Two undergraduate native raters were extensively trained to do the coding. They screened the Chinese transcripts for discussions of advantageous offer rejections. 109 occurrences of such discussions were found which we call the pool of discussed advantageous offer rejections. The coders then independently classified the discussions according to the classification system in table 4¹⁴. They were provided with a detailed coding manual which carefully explained categories and gave examples what to code and what not to code (for requirements as to the coding manual c.f. SMITH 2000). Coding was made very restrictive in order to exclude raters' interpretations as

¹⁴ For the categories that constitute a main category, see Table B1 in Appendix B.

far as possible. Only when a rejection of an advantageous offer and the category characteristic were explicitly mentioned during a discussion, this text segment was assigned to a category¹⁵.

Table 4 – Classification system

Cate- gory no.	Main categories
1	Social concern
2	Group-specific rules
3	Unlikeliness of high offer
4	Emotional, ethical, moral reasons
5	Unpleasant numbers
6	Error (mistakenly stating rejection)
7	Reciprocity avoidance
8	No reasoning

Data are reliable only if inter-coder agreement on category assignments is high. Therefore, inter-rater reliability was assessed after coding had been finished. A generally accepted measure for inter-coder reliability is Cohen's Kappa K which accounts for the agreement that would result if coders merely make random assignments (c.f. SIEGEL and CASTELLAN 1988)¹⁶. K can take values between +1.00 and -1.00, where +1.00 means complete agreement, 0 means no agreement above chance, and -1.00 is complete disagreement. $K \geq .80$ indicates satisfactory inter-rater reliability (c.f. MERTENS 1995, SMITH 2000). With regard to values $< .80$, there is no definite answer in the literature. KRIPPENDORF (1980, 147) remarks: "Standards for data reliability should not be adopted ad hoc. They must be related to the validity requirements imposed upon research results, specifically to the cost of drawing wrong conclusions. ... If it is an exploratory study without serious consequences that level may be relaxed considerably, but it should not be so low that the findings can no longer be taken seriously." For our exploratory study we take $K \geq .70$ as a satisfactory reliability standard.

For the vast majority of categories, $K \geq .70$ or slightly below our acceptance standard (see Table B1 in Appendix B). We find an unsatisfactory agreement level in four categories only. These low agreement levels result from categories that were coded infrequently demonstrating that a small number of codings might have a large effect on K if raters disagree.¹⁷ We conclude that on average our classification system yields satisfactory data.

Finally, coder disagreement has to be resolved in order to base our analysis on as much data as possible. We followed a procedure suggested by BARTHOLOMEW et al. (2000). If two coders disagree on a categorical assignment, a third rater is added, and the classification agreed upon

¹⁵ In several cases, subjects started sentences which they did not finish. One could have inferred from the context what they probably wanted to say. These discussions, however, were *not* included in the pool of advantageous offer rejections.

¹⁶ K is the ratio of the proportion of times the coders agree, $P(A)$, (corrected for chance agreement, $P(E)$) to the maximum proportion of times they could have agreed (corrected for chance agreement), i.e. $K = [P(A) - P(E)] / [(1 - P(E))]$.

¹⁷ For instance can the value of K change from 1 to 0 if there is only one assignment in a category, and coders agree or disagree, respectively.

by two of the three raters becomes the final rating. With this procedure, 13 out of the 19 disagreements could be resolved.

Data analysis

We now turn to the analysis of motivations inducing subjects to reject advantageous offers. The motivations correspond to the categories of our classification system. We base our analysis on the main categories 1 - 8 in table 4. We measure the *importance of a main category* by the percentage of groups that articulate this main category at least once.¹⁸ Figure 3 displays the importance of main categories. Note, that groups articulate more than one motivation (see table 5). Therefore, percentages add up to *more* than 100 percent.

Our measure of importance also allows us to resolve the remaining inter-rater disagreements up to category 4a “shame avoidance”. All other categories have been agreed upon by at least two coders for every non-monotone responder group. Category 4a will be referred to as “not classifiable” in the following.

We are now able to answer our main research question. Do we find evidence in the verbal data for social concern that might eventually result in turning down high offers? Are there other motivations for rejecting advantageous offers?

In the following, we discuss the main categories according to their importance. Quotations from the transcripts can be found in Appendix B2.

MAIN CATEGORY 1: *Social Concern* The most important main category is Social Concern. 58 percent of the non-monotone groups discuss this category. Main category 1 was designed to capture the basic idea of social preferences (see FEHR and SCHMIDT 2003 for an overview) including further aspects of subjects’ caring about others in addition to aversion against advantageous inequality. There are five categories, 1a: Mutually unacceptable allocations, 1b: Injuring bilateral fairness, 1c: Allocations to the disadvantage of either player are unlikely, 1d: Rejecting all but middle (balanced) allocations and 1e: Extensive responder's profit.

Worrying about others’ material benefit is, however, not the only motivation that induce subjects to turn down favorable offers. Nearly as important are the main categories *Group-specific Rules* and *Unlikeliness of High Offer*.

¹⁸ We do not use the frequency of a main category as a measure of importance because from our point of view this is not appropriate. Firstly, the frequency of coding does not necessarily tell us something about the importance of a category. Imagine, for instance, a group that disagrees on accepting an offer of say 17. They will discuss this proposal rather frequently until they come to an agreement. If the group agrees on the same offer, however, they will talk about this allocation much less often. Secondly, our last research goal is to relate our findings to group behavior, i.e. strategy types and treatments. We, therefore, need a measure of importance that directly refers to group behavior. Note that there is a high correlation between frequency of coding in a main category and the number of groups discussing the corresponding main category at least once (Spearman's rho: 0.976).

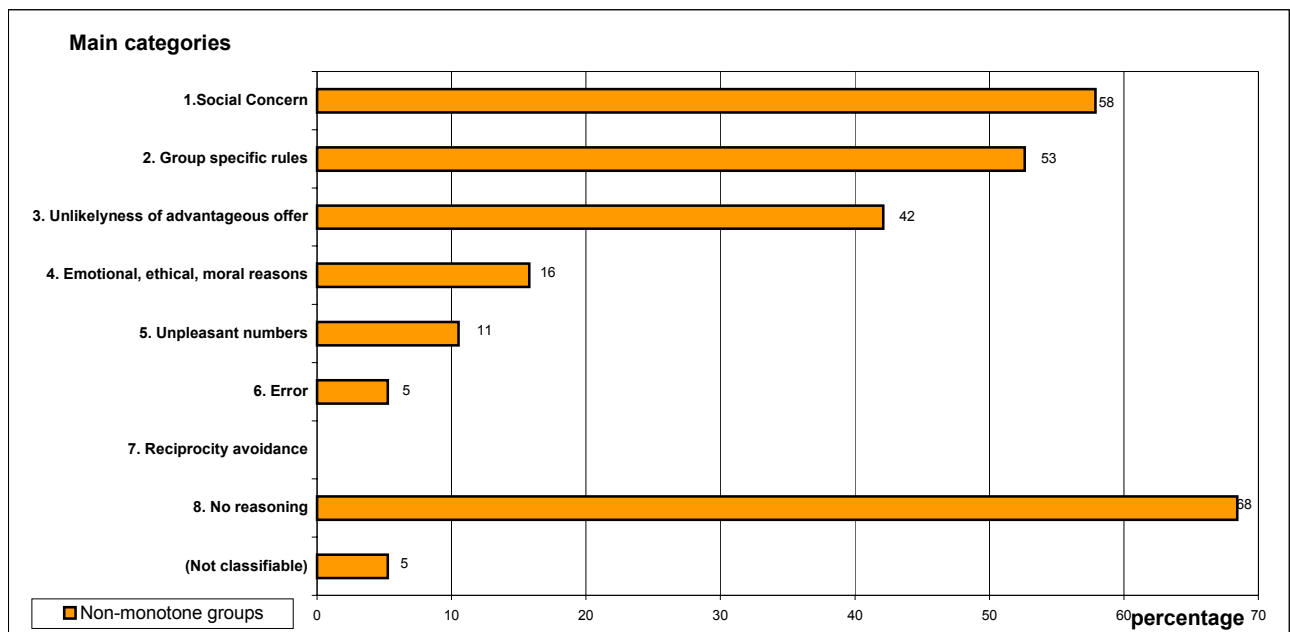


Figure 3: Importance of main categories

MAIN CATEGORY 2: *Group-specific Rules* The second most frequently articulated main category concerns group-specific rules being discussed by 53 percent of the non-monotone groups. It comprises categories 2a: Reinterpretation of the experimental rules, 2b: Going for risk, 2c: Group specific systems or methods for acceptance or rejection, 2d: Point matching of advantageous offer and accepted allocation. Here, groups are coded that for different reasons suggest specific choice procedures. Some subjects intentionally suggest to go for risk or choose randomly (using the game ‘rock, paper, scissors’) being aware that this might turn out costly. Finally, some groups apparently have difficulties in applying the experimental rules properly.

MAIN CATEGORY 3 *Unlikeliness of High Offer* Main category 3 is designed to capture beliefs about sender behavior, in particular non-expectancy of advantageous offers. It is the third most frequently coded main category which 42 percent of the groups discuss.

MAIN CATEGORY 4: *Emotional, ethical, moral reasons* Main category 4 is coded in 16 percent of the groups. It comprises categories that refer to the Confucian background of our subjects. 4a: Shame avoidance (not classifiable), 4b: Face damage, 4c: Refusal due to emotional, ethical, moral reasons other than 4a and 4b, 4d: Refusal due to particular Chinese ways of thinking and norms other than 4a – 4c.

MAIN CATEGORY 5: *Unpleasant numbers* is coded in 11 percent of the groups. Unpleasant numbers are those perceived by our Chinese subjects as unlucky like for instance 4, 14 (same pronunciation like death) and 13. Subjects sometimes also have an aversion against odd numbers (整数) as well as against “non-round” numbers because they are not divisible by 10 without remainder. Participants dislike allocations involving these numbers even though accepting a corresponding offer would have provided them with a higher payoff.

MAIN CATEGORY 6: *Error (mistakenly stating rejection)* The text analysis revealed that one group (group 6, treatment 2) wanted to reject the extremely unfair allocation 0/20 rather than the advantageous allocation 20/0 which they mistakenly refused in the decision sheet.

MAIN CATEGORY 7: *Reciprocity avoidance* is the main category that captures arguments in favor of status-seeking through gift-giving. As HENRICH et al. (2001) reason, in some cultures subjects may reject advantageous offers even in a one-shot experiment with anonymous interaction. Subject experience the experimental setting like a familiar real-life situation where they would have to reciprocate a large gift at some point in the future.

We expected to find comparable arguments during the group discussions because in the Chinese society, large gifts do create strong obligations to give in return at a later date. We, however, did not find any argument explicitly favoring rejection because of reciprocity avoidance in the future. Yet we did find arguments showing that subjects feel uncomfortable about advantageous offers because they may involve a trick or a ploy.

MAIN CATEGORY 8: *No reasoning* 68 percent of the groups are coded for main category 8. This percentage, however, does not mean that main category 8 is the most important one. Subjects used to discuss acceptance or rejection according to the decision sheet which displayed possible allocations in an ascending order. Most often, subjects start discussing motivations for rejecting an advantageous offer at a certain division of the pie. They in general do not repeat their arguments later on, but just state rejection. Therefore, if it was not possible to trace the correct category, rejection was coded in main category 8. It never occurred, however, that only this category was coded for a group (c.f. Table 5).

RESULT 2: There is evidence in the data for social concern to be the main motivation for turning down advantageous offers. Other reasons like group-specific rules and unlikeliness of high offers are important as well. Even though reciprocity avoidance was not coded, some discussions point to uneasiness with high offers.

4.4 Analysis of non-monotone strategies and treatments

We finally deal with the question whether our previous findings can be related to strategy types in non-monotone sessions and to treatments.

Indicators for unsystematic behavior

We first investigate whether certain main categories/motivations are indicators for unsystematic behavior. Table 5 shows the main categories mentioned in systematic and unsystematic non-monotone groups. In the following analysis we omit group 2.06 because participants made a mistake when rejecting an advantageous offer.

It has been argued advantageous offer rejections to indicate that groups do not understand the game. We have seen above that this line of reasoning does not hold in general because groups

state reasonable motivations for rejecting offers higher than the equal split. We found, however, that groups who use or interpret the rules in a specific way tend to create unsystematic behavior (Fisher exact test, $p=0.05$). Apparently, unsystematic groups either do not understand the rules of the game or they intentionally use own rules being aware that they might lose money.¹⁹

Table 5: Main categories 1 –8 in systematic and unsystematic non-monotone groups

Main cat.	1.01	1.03	1.05	1.06	1.07	1.10	1.11	2.02	2.03	2.04	2.05	2.06	2.07	2.10	3.01	3.03	3.04	3.05	3.06
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
unsys.	X			X	X		X	X	X							X			

unsys.: unsystematic session s

Treatment effects

We next analyze whether asymmetry influences strategy types. We do not find any significant treatment effect as to monotonicity, however (FISHER exact test, $p > 0.30$).

Table 6: Importance of main categories in T1, T2, T3

Main categories	Percentage in treatment ¹⁾		
	T1	T2	T3
1. Social concern	86	43	40
2. Group-specific rules	71	43	40
3. Unlikelihood of high offer	57	14	60
4. Emotional, ethical, moral reasons	29	0	20
5. Unpleasant numbers	14	0	20
6. Error	0	14	0
7. Reciprocity avoidance	0	0	0
8. No reasoning	100	57	40
Not classifiable	14	0	0

¹⁾ percentage of non-monotone responder groups in each treatment

Finally, we investigate possible treatment effects with regard to the importance of main categories. We again do not find significant differences between treatments. Yet, table 6 shows that social concern scores twice as high in T1 as in T2 and T3. These finding seems to indicate that main category 1 plays a minor role in the asymmetric settings.

¹⁹ Moreover, groups who score for emotional, ethical, moral reasons also score for unpleasant numbers (FISHER exact test, $p=0.02$).

RESULT 3: Group specific rules are indicators for unsystematic behavior. Treatments do not differ as to strategy types, yet social concern tends to become less important in asymmetric treatments.

5. Discussion and conclusion

Our study showed that rejecting advantageous offers is quite common not only in Chinese responder groups but also with individual responders. Content analyzing the group discussions of our video experiment revealed a variety of motives that induce responders to refuse offers higher than the equal split. The most important motive is social concern which captures basic aspects of social preferences.²⁰ Other motives turn out important as well. Among these are beliefs about sender behavior, in particular non-expectancy of high offers, but also emotional, ethical, and moral reasons, special decision rules employed in some groups and aversion against unpleasant numbers. Even though reciprocity avoidance was not coded, some discussions point to uneasiness with high offers.

It has been argued that advantageous offers in our video setting are rejected because subjects play in groups, are observed and do not want to appear greedy by accepting the larger part of the pie. There are two major objections against this critique. First, the observation effect can be ruled out if we run an individual experiment where subjects are not observed and still reject advantageous offers. Second, if monotone and sender groups discuss non-monotone strategies as well, this seems a strong indicator for non-monotone strategies to be a common behavioral pattern in our subject pool.

To exclude the observation effect, we run a repetition of the present experiment with Chinese individuals acting independently and anonymously (GENG et al. 2004). 12 percent of the 90 senders offered amounts higher than the equal split. 47 percent of the responders, i.e. 38 out of 89 subjects, rejected advantageous offers. The same rejection pattern was shown by Chinese attendants of a workshop on “Experimental Economics” (professors, post docs and graduate students). In addition, researchers affiliated to a University in the east of China behaved similarly in a ‘classroom’ experiment where senders could only chose between two advantageous allocations. Our studies show that non-monotone strategies are a robust behavioral pattern in China.

As to the second objection, Figure 4 shows the importance of the main categories in proposer and monotone responder groups. About 50 percent of each player type discussed rejections of advantageous offers. As with non-monotone groups, social concern and unlikeliness of high offer are the most important main categories. Overall, 28 responders – monotone and non-monotone groups – and 19 senders argue about refusing high offers, i.e. 65 percent of all 72 groups participating in the experiment. We therefore conclude that rejecting advantageous offers is a phenomenon taken into account by a vast majority of participants in our experiment and thus cannot be dismissed as anomalous or irregular.

²⁰ Social concern was also found to induce rejections of high offers in a video UG experiment run in Germany (c.f. SADRIEH and OSTERHOLT 1998).

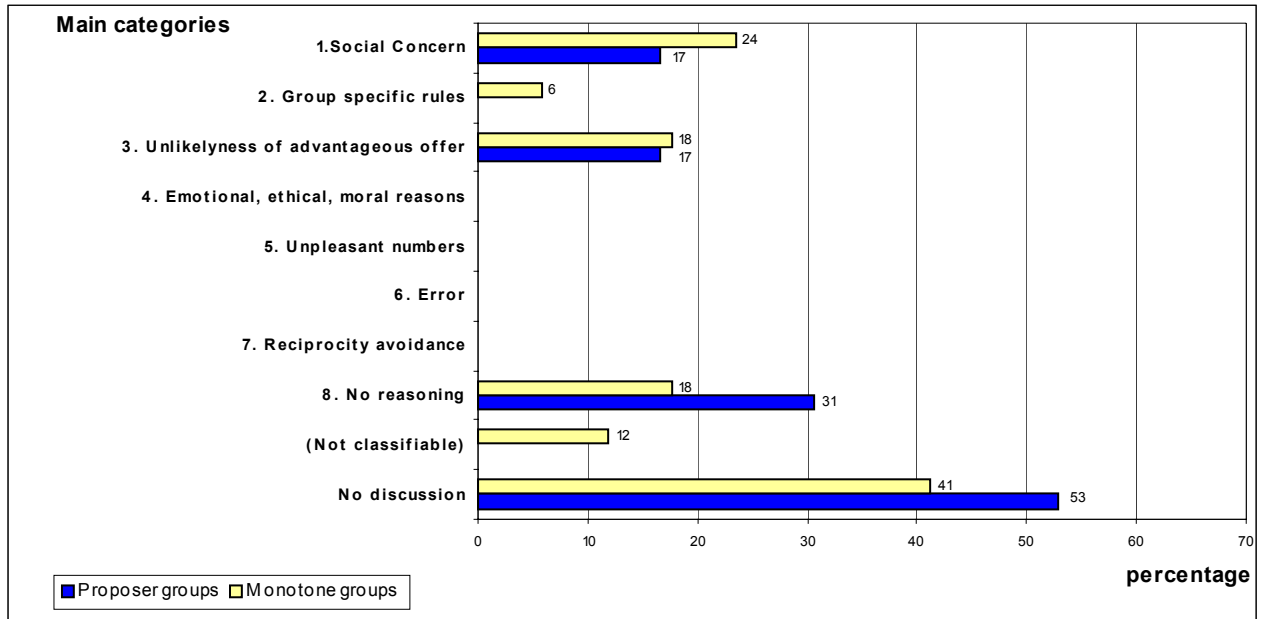


Figure 4: Importance of main categories in proposer and monotone responder groups

Our study provides new insights since the verbal data on discussions allows the investigation of motives expressed by the subjects themselves. Combining video recording and strategy method enables us to directly analyze decision motives instead of indirectly inferring motives from choices. Our analysis is based on discussions within groups. It can be argued that individuals playing in groups behave differently than individuals playing on their own. Our control treatment showed, however, that the percentage of individuals stating non-monotone strategies corresponds to the group video experiment. We therefore assume that motivations revealed during group discussions in the UG pertain to individuals as well.

We found social concern to be the main motivation for non-monotone strategies. In that respect, models of social preference, in particular models of inequity aversion, capture an important behavioral aspect in ultimatum bargaining (c.f. BOLTON and OCKENFELS 2000, FEHR and SCHMIDT 1999). On the other hand, advantageous offer rejections cannot be handled by these models due to restrictions on the parameter space. The ERC model by BOLTON and OCKENFELS does allow for declining advantageous offers but assumes a rejection threshold not higher than the equal split. In the FEHR/SCHMIDT model, the specification of model parameters rules out rejections of advantageous offers. The empirical findings on high offer rejections in the present paper and in the studies surveyed in section 2 speaks to a reconsideration of the assumptions on rejection behavior.

Our study also showed other important motives to induce non-monotone behavior. There are other forms of social concern in addition to aversion against advantageous inequality. Moreover, responders form beliefs about senders' behavior not expecting offers higher than the equal split.

Most experimental studies that report rejections of advantageous offers use the strategy method. It could be argued that subjects reject in *hypothetical* situations. When they are confronted with *actual* advantageous offers, however, they will rather accept than reject. Some

studies, nonetheless, document rejections of high offers also in hot²¹ situations (c.f. BORNSTEIN and YANIV 1998, HENRICH et al. 2001, ROTH et al. 1991). This phenomenon needs to be investigated more systematically. Creating an adequate experimental environment is a task for future research.

Appendix A: Strategies

²¹ Hot refers to a situation where subjects react to actual offers in contrast to “cold” situations where they have to state strategies (c.f. BRANDTS and CHARNESS 2000).

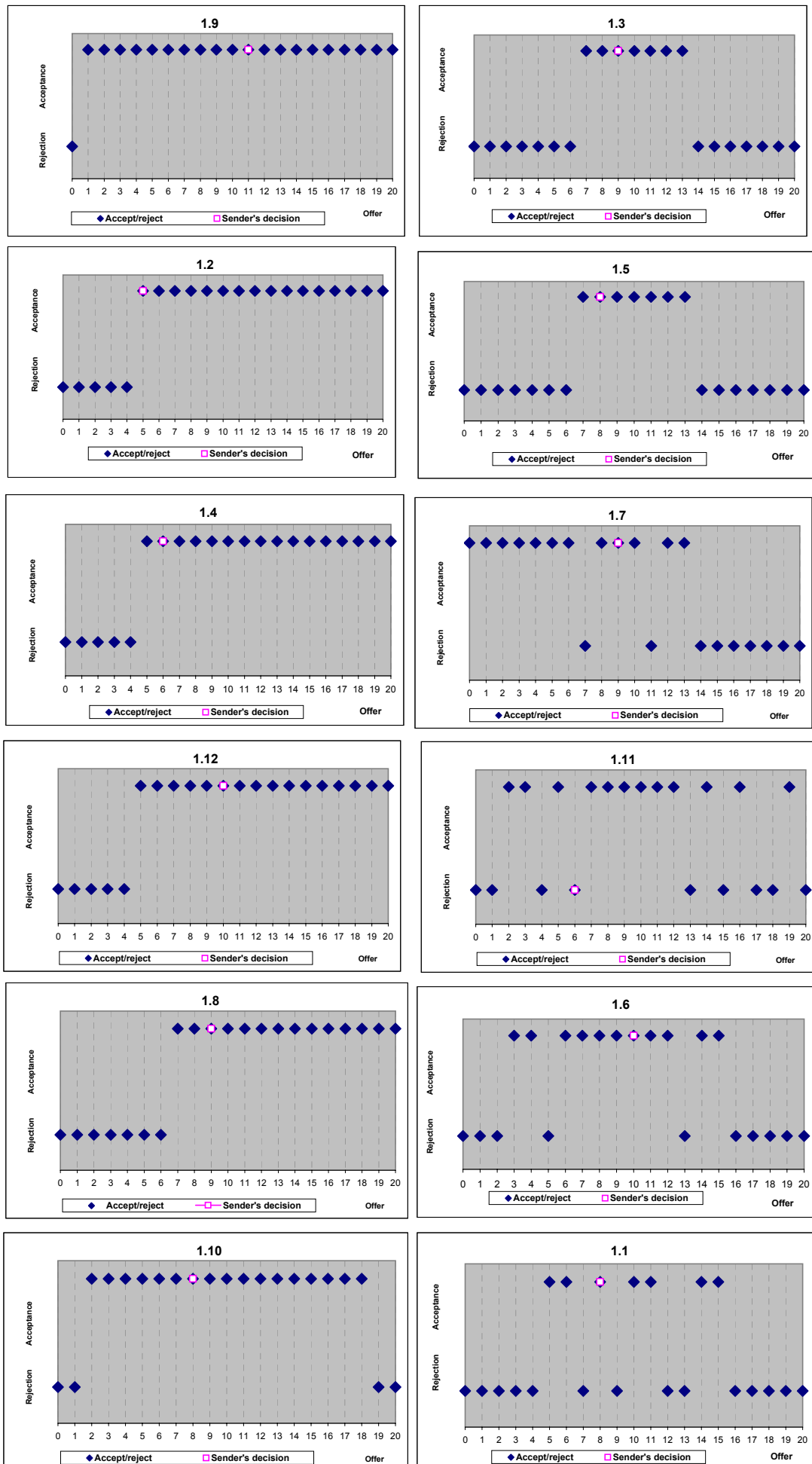


Figure A1: Offers, acceptance and rejection in T1

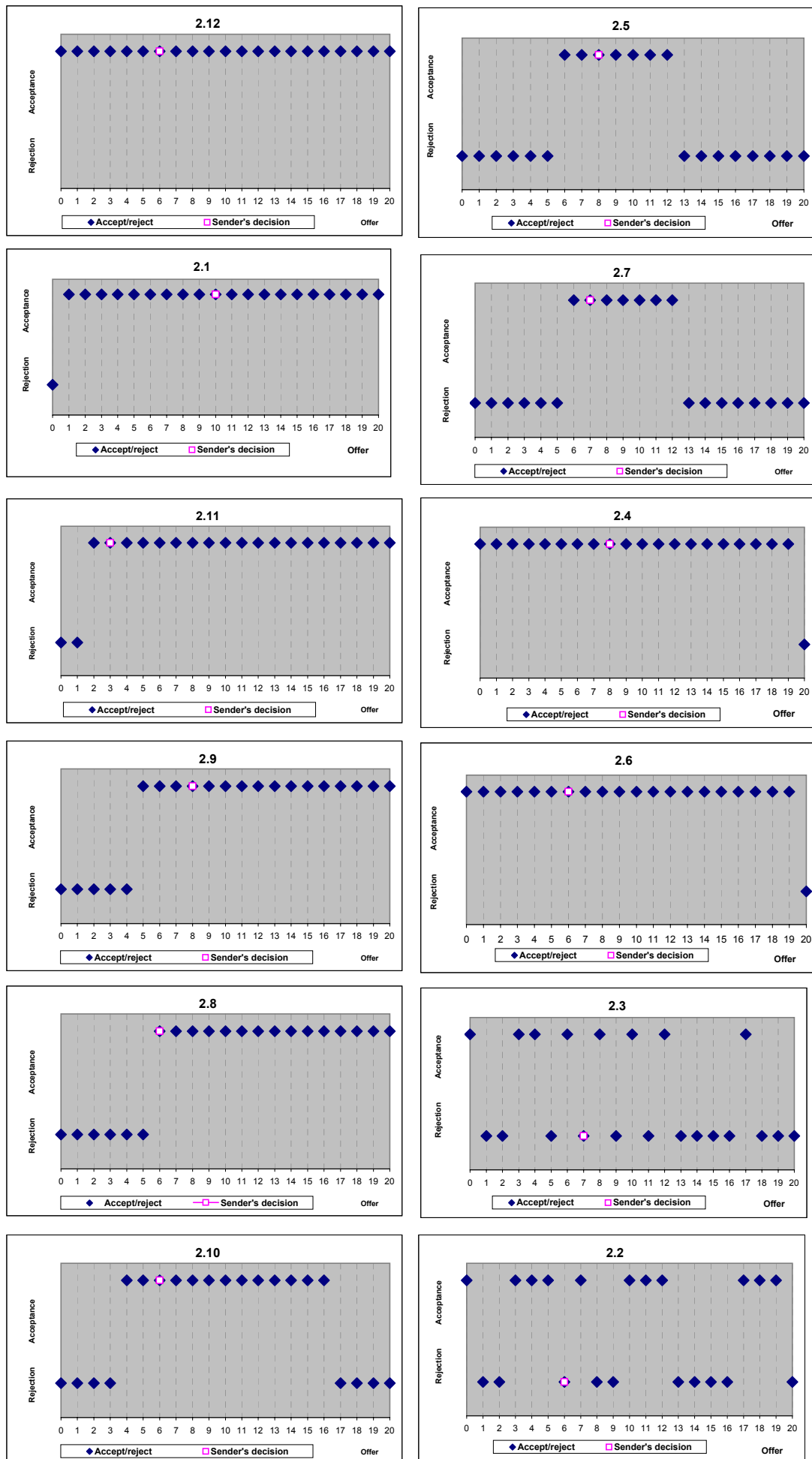


Figure A2: Offers, acceptance and rejection in T2

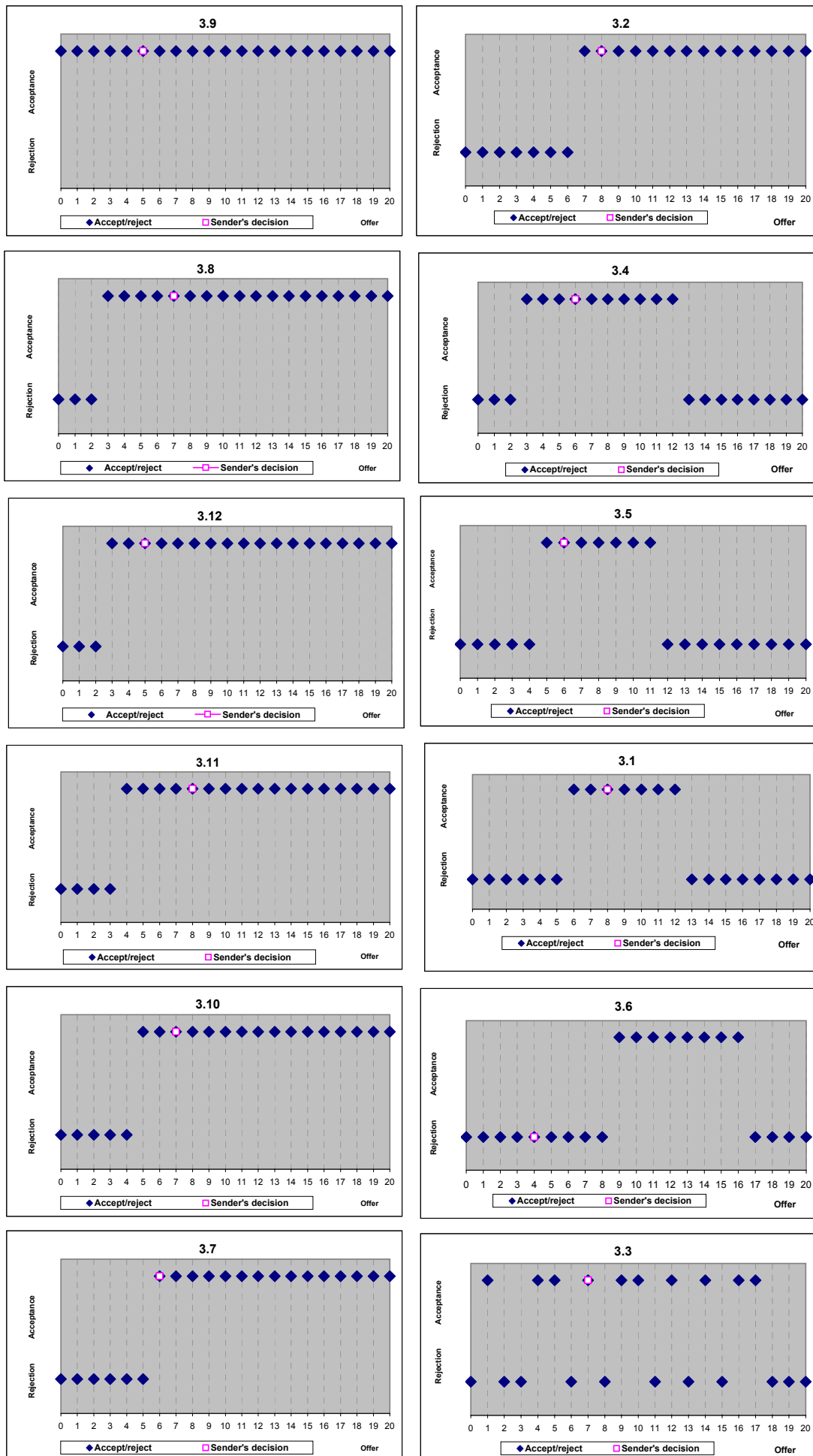


Figure A3: Offers, acceptance and rejection in T3

Appendix B

Table B1 – Classification system, Cohen's Kappa K and average coding frequencies

Catego- ries	Classification system	Cohen's Kappa K	Average coding frequency
<i>1</i>	<i>Social concern</i>		<i>31.5</i>
1a	Mutually unacceptable allocations	0.70	11.0
1b	Injuring bilateral fairness	1.00	1.00
1c	Allocations to the disadvantage of either player are unlikely	0.85	3.50
1d	Rejecting all but middle (balanced) alloca- tions	1.00	5.00
1e	Extensive responder's profit	0.80	11.00
<i>2</i>	<i>Group-specific rules</i>		<i>13.00</i>
2a	Reinterpretation of the experimental rules	0.66	1.50
2b	Going for risk	1.00	1.00
2c	Group specific systems, methods for accep- tance or rejection	0.92	6.50
2d	Point matching of advantageous offer and accepted allocation	1.00	4.00
<i>3</i>	<i>Unlikeliness of high offer</i>	<i>0.74</i>	<i>21.5</i>
<i>4</i>	<i>Emotional, ethical, moral reasons</i>		
4a	Shame avoidance	0.00	0.05
4b	Face damage	1.00	1.00
4c	Refusal due to emotional, ethical, moral rea- sons other than 4a and 4b	0.56	3.50
4d	Refusal due to particular Chinese ways of thinking and norms other than 4a – 4c	1.00	0.00
<i>5</i>	<i>Unpleasant numbers</i>	<i>0.66</i>	<i>3.00</i>
<i>6</i>	<i>Error (mistakenly stating rejection)</i>	<i>1.00</i>	<i>1.00</i>
<i>7</i>	<i>Reciprocity avoidance</i>	<i>1.00</i>	<i>0.00</i>
<i>8</i>	<i>No reasoning</i>	<i>0.87</i>	<i>32.0</i>

B2: Quotations from the text protocols

(Numbers 1 – 3 stand for group members)

CATEGORY 1a: *Mutually Unacceptable Allocations* (Group 7, Treatment 1)

2 因为如果处于极端的话可能没有谁愿意。 Nobody wants to accept the extremes.

CATEGORY 1b: *Injuring Bilateral Fairness* (Group 3, Treatment 1)

1 现在就是说，再往上我们根本就不去考虑对方是怎么考虑的，而应该本着一个比较公平的原则去按照这个判断来判断下来。比如说，6比14和14比6。[...] Then let's decide according to the principle of fairness. 6, 14 and 14, 6 are unacceptable and stay unacceptable. [...]

CATEGORY 1c: *Allocations to the disadvantage of either player are unlikely* (Group 10, Treatment 1)

2 这0到20和20到0都不选。 They won't choose 0, 20 and 20, 0
1 哎，这两头又绝对不能出现。 Both ends will certainly not come out.
2 那就叉掉这两个呗。 Let's simply reject.

CATEGORY 1d: *Rejecting All but the Middle (balanced) Allocations* (Group 1, Treatment 3)

3 我就同意中间这3项，4项，好了，其它的我都不同意。 I am only in favour of the middle 3 or 4 options.
That's it. I object to all others.

CATEGORY 1e: *Extensive Responder's Profit* (Group 7, Treatment 1)

- | | | |
|-----|--------------------------------|---|
| 2 | 发送组接收的点数19。发送组得到的点数为1。 | The responder receives 19. The proposer gets 1. |
| ... | ... | ... |
| 2 | 不同意这个。 | Reject. |
| 1 | 不同意？ | Reject? |
| 2 | 这是他们发送的，他们得1点的话，他们分的好少，我们分的好多。 | This is what they send. They get only 1. This is such a small amount for them and so much for us. |
| 3 | 不同意，不同意。 | Reject. |

CATEGORY 2b: *Going for risk* (Group 7, Treatment 1)

- | | | |
|-----|---|--|
| 2 | 发送组分给接收组的点数为11点。发送组得到的点数为9点，这个可以同意，因为是他们发送出来的嘛。 [...] | Sender gives responder 11. Sender keeps 9. We can accept. If they send it... [...] |
| 1 | 但是如果他们的话拒绝怎么办？ | What if we reject? |
| ... | ... | ... |
| 2 | 同意还是拒绝？ | Accept or reject?? |
| 3 | 拒绝吧。 | I am in favor of rejection. |
| 1 | 我赞成拒绝。 | Me too |
| 3 | 拒绝。 | Then let's reject. |
| 2 | 好。 | O.k. |
| 1 | 我觉得可以博一下，是这么想的。 | We can risk something. |

CATEGORY 2c: *Group specific systems, methods for acceptance or rejection*. Group 3, Treatment 3 uses the random decision mechanism “rock, paper, scissors”.

CATEGORY 2d: *Point matching of advantageous offer and accepted allocation* (Group 5, Treatment 2)

- | | | |
|---|---------------------------------------|--|
| 2 | 我们接收，那就是我们不一致嘛，不一致那我们就不得分，他们得到8点，对不对？ | If we accept we don't match. We won't receive anything and they get 8 points, right? |
| 1 | 对。如果我们一致的话，那我们就得20点，对不对？ | Yes. If we match we will receive 20 points? |
| 2 | 对。 | Yes. |
| 1 | 那我们打叉算了。 | Then let's reject. |

MAIN CATEGORY 3: *Unlikelihood of High Offer* (Group 7, Treatment 2)

- | | | |
|---|------------------------------------|--|
| 3 | 但是下面还可以考虑一下。他们肯定不会给我们啊，肯定不会给我们这么多。 | We also have to think about offers down here [i.e. advantageous offers]. They certainly won't give us that much. |
|---|------------------------------------|--|

CATEGORY 4b: *Face damage* and CATEGORY 4c: *Refusal due to other emotional, ethical, moral reasons* (Group 6, Treatment 1)

- | | | |
|---|--------------------------------|--|
| 2 | 如果你真的给我20分之19，我会不会接受？ | If you actually gave me 19 out of 20, would I accept? |
| 1 | 他给我那么多，反而让我感到有点内疚，与其这么内疚。..... | Too much for me gives me a bad conscience. I would prefer ... [2c] |
| 3 | 很注意形象。 | Face damage? [2b] |
| 1 | 好象损失比我得到19还大。 | The loss is even larger than losing 19. |
| 2 | 反正我觉得我不能接受这一个。 | I can't accept. |
| 1 | 我也不能。 | Me neither. |
| 2 | 3的意思呢？ | What about you? |
| 3 | 我也不能接受。 | I cant' accept either. |

MAIN CATEGORY 5: *Unpleasant numbers* (Group 6, Treatment 3)

- | | | |
|---|---------------|---|
| 3 | 划叉，划叉，我看著不舒服。 | Reject, reject. I feel uncomfortable when looking at it [the number]. |
|---|---------------|---|

Even though uneasy feeling vis-à-vis an advantageous offer is not a category in our coding system we provide a quotation of the corresponding argument (Group 6, Treatment 1)

- | | | |
|-----|-------------------|---|
| 2 | 其实那样，天上掉馅饼，肯定是陷阱。 | A piece of cake falling from heaven can be nothing like a ploy. |
| 2 | 这个，我觉得肯定也是拒绝。 | Yes, reject. |
| 3 | 他是先给我们一点小恩小惠。 | First they give us a small gift... |
| ... | ... | ... |
| 3 | 还是有一点陷阱的味道。 | It smacks of trickery. |

Appendix C

Instructions (*Original in Chinese*)

You take part in an interactive **decision experiment** between **two groups of students** in which you can **earn money** according to the decisions you take. The amount of money you earned will be **paid** to you **in cash** at the end of the experiment.

In this experiment **2 types of players** are involved: **Senders and Responders**.

You have been randomly chosen to be a **Sender / Responder**.

The role of either player group will be explained in a minute.

Each Sending group is endowed with an amount of **20 tokens**.

The Sending group has to **decide how to split these 20 tokens** between their group and the receiving group.

The decision must be an **integer between 0 and 20**.

The Sending group's decision has to be written down and **marked in the corresponding box on the decision sheet** for the **sender** (see sheet attached). The decision has to be taken **unanimously**. All group members have to confirm the entry by his/her signature.

The **receiving group can accept or reject** the decision.

At the same time the receiving group has to **indicate for any number of Tokens** that the sending group may allocate to them whether they accept or reject the decision. This has to be done by **marking the corresponding boxes on the decision sheet** for the **receiving group** (see sheet attached).

In case of rejection

* **both player groups receive nothing. (Treatment 1)**

[* *The sending group receives 8 (8) Tokens. (Treatments 2 and 3)*]

[* *The receiving group receives 0 (2) Tokens. (Treatments 2 and 3)*]

In case of acceptance

* **both player groups receive the amounts as they have been allocated by the sender.**

For every Token your group earned **each group member** will be paid **2 RMB**.

Independently of the amount of money you earned during the experiment you will be given a **show up fee of 10 RMB**.

The other group receives the **same information** as you do and knows that you also get this information.

I will now handle the decision sheet over to you. For your information I show you *a sample* of the **decision sheet** for the **sending/receiving group**.

You have up to **15 minutes** to make your decision.

Do you have **any questions**?

Decision Forms (*Original in Chinese*)

Session:

Date:

Decision Sheet for SENDERS

Endowment of SENDER	SENDER allocates to RESPONDER	SENDER receives	MARK decision
20	0	20	
20	1	19	
20	2	18	
20	3	17	
20	4	16	
20	5	15	
20	6	14	
20	7	13	
20	8	12	
20	9	11	
20	10	10	
20	11	9	
20	12	8	
20	13	7	
20	14	6	
20	15	5	
20	16	4	
20	17	3	
20	18	2	
20	19	1	
20	20	0	

We allocate to the receiving group Tokens.

We as the sending group receive Tokens.

.....
Signature

.....
Signature

.....
Signature

Session:

Date:

Decision Sheet for RESPONDERS

Endowment of SENDER	SENDER allocates to RESPONDER	SENDER receives	Mark here to ACCEPT	Mark here to REJECT
20	0	20		
20	1	19		
20	2	18		
20	3	17		
20	4	16		
20	5	15		
20	6	14		
20	7	13		
20	8	12		
20	9	11		
20	10	10		
20	11	9		
20	12	8		
20	13	7		
20	14	6		
20	15	5		
20	16	4		
20	17	3		
20	18	2		
20	19	1		
20	20	0		

.....
Signature

.....
Signature

.....
Signature

References

- BAHRY, D. and R. WILSON (forthcoming): Confusion or Fairness in the Field? Rejections in the Ultimatum Game under the Strategy Method. *Journal of Economic Behavior and Organization*.
- BAKEMAN, R. (2000): Behavioral Observation and Coding, in: REIS, H.T. and Ch. M JUDD (eds.) *Handbook of Research Methods in Social and Personality Psychology*. Cambridge University Press, Cambridge, UK., 138-159.
- BARTHOLOMEW, K., A.J.Z. HENDERSON and J.A. MARCIA (2000): Content Analysis and Narrative Analysis, in H.T. REIS and Charles M JUDD (eds.), *Handbook of Research Methods in Social and Personality Psychology*. Cambridge University Press, Cambridge, UK, 286-312.
- BELLEMARE, CH. and S. KRÖGER (2004): Actions and Beliefs – Estimating Distribution- Based Preferences Using a Large Scale Experiment with Probability Questions on Expectations, paper presented at the 2004 North American Meeting of the Economic Science Association, Tucson, Nov. 4 – 7.
- BEWLEY, T. (1999): *Why Wages Don't Fall During a Recession*. Harvard University Press, Cambridge.
- BOLTON, G. and A. OCKENFELS (2000): A Theory of Equity, Reciprocity and Competition. *American Economic Review*, 90, 166 - 193.
- BOLTON, G., BRANDTS, J. and A. OCKENFELS (2004): Fair Procedures - Evidence from Games Involving Lotteries, Working Paper, Penn State University.
- BOND, M. H. (1996): Chinese Values, in: BOND, M. H. (ed.) *Handbook of Chinese Psychology*. Oxford University Press, Oxford, New York, 208-226.
- BOND, M. H. and K.-K. HWANG (1986): The Social Psychology of Chinese People. In: Bond, Michael Harris (ed.): *The Psychology of Chinese People*, Oxford University Press, Oxford, 211-266.
- BORNSTEIN, G. and I. YANIV (1998): "Individual and Group Behavior in the Ultimatum Game: Are Groups More Rational Players?" *Experimental Economics*, 1, 101-108.
- BOSMAN, R., H. HENNIG-SCHMIDT, and F. VAN WINDEN (2004): Exploring Group Decision Making in a Power-to-Take Experiment, Revision of *Bonn Graduate School of Economics, University of Bonn, Discussion Paper No. 7-2002/2004*
- BRANDTS, J. and G. CHARNESS (2000): Hot vs. Cold: Sequential Responses and Preference Stability in Experimental Games, *Experimental Economics*, 227-228.
- BROSIG, J., J. WEIMANN, C.-L. YANG (2003): The Hot Versus Cold Effect in a Simple Bargaining Experiment, *Experimental Economics* 6, 75-90.
- BROSIG, J., M. KOCHER AND M. SUTTER (2004): Group Decision Making and Communication. Paper presented at the Annual Meeting of the German Association for Experimental Economics (GEW), Prague, October 14-16, 2004.
- BUCHAN, N. R., R.T.A. CROSON, and E.J. JOHNSON (forthcoming): "When Do Fairness Beliefs Influence Bargaining Behavior: Experimental Evidence from Japan and the United States" *Journal of Consumer Research*.
- CAMERER, C. (2003): *Behavioral Game Theory*, Princeton, Princeton University Press.
- CARDENAS J. C. (2003): Bringing the Lab to the Field: More than Changing Subjects, Working Paper Universidad Javeriana, Bogota, Colombia.
- CASON, T.N. and V.-L- MUI (1998): Social Influence in the Sequential Dictator Game, *Journal of Mathematical Psychology*, 42, 248-265.
- CHINESE CULTURE CONNECTION (1987): Chinese Values and the Search for Culture-free Dimensions of Culture. *Journal of Cross-Cultural Psychology*, 18, 143-164.
- CHARNESS, G. and M. DUFWENBERG (2004): Promises & Partnership, Working paper.
- COOPER, David J. and John H. KAGEL (2003): Are Two Heads Better than One? Team versus Individual Play in Signaling Games, Working Paper, Case Western Reserve University and Ohio State University

- ECKEL, C. (2004): Sex in the Lab. Invited lecture given at the 2004 North American Meeting of the Economic Science Association, Tucson, Nov. 4 – 7.
- FALK, A., E. FEHR and U. FISCHBACHER (2003): On the Nature of Fair Behavior, *Economic Inquiry* 41(1), 20-26
- FEHR, E. and K. M. SCHMIDT (1999): A Theory of Fairness, Competition and Cooperation. *Quarterly Journal of Economics*, 114, 815-868.
- FEHR, E. and K. M. SCHMIDT (2003): Theories of Fairness and Reciprocity – Evidence and Economic Applications, in: Dewatripont, M. et. al. (ed.), *Advances in Economic Theory*, Eighth World Congress of the Econometric Society, Vol. 1, Cambridge: Cambridge University Press, 208-257.
- FEHR, E. and S. GÄCHTER (2000): Fairness and Retaliation: The Economics of Reciprocity, *Journal of Economic Perspectives*, 14, 159-181.
- FISCHBACHER, U., S. GÄCHTER and E. FEHR (2001): Are People Conditionally Cooperative? Evidence from a Public Goods Experiment, *Economics Letters* 71, 397–404.
- GENG, H., H. HENNIG-SCHMIDT and G. WALKOWITZ (2004): Fairness and Emotions in Ultimatum Bargaining, University of Bonn, mimeo.
- GÜTH, W. (2001): How Ultimatum Offers Emerge A Study in Bounded Rationality, *Homo Oeconomicus*, XVIII (1/2), 91-110.
- GÜTH, W. and St. HUCK (1997): From Ultimatum Bargaining to Dictatorship – An Experimental Study of Four Games Varying in Veto Power. *Metroeconomica*, 48, 262-279.
- GÜTH, W., C. SCHMIDT, and M. SUTTER (2003): Fairness in the Mail and Opportunism in the Internet - A Newspaper Experiment on Ultimatum Bargaining, *German Economic Review*, 4, 243–265.
- GÜTH, W., R. SCHMITTBERGER, and B. SCHWARZE, B. (1982): An Experimental Analysis of Ultimatum Bargaining, *Journal of Economic Behavior and Organization*, 3, 367-388.
- GÜTH, W., St. HUCK, and W. MÜLLER (2001): The Relevance of Equal Splits in Ultimatum Games, *Games and Economic Behavior*, 37, 161-169.
- HANNIG, J. (1986): Ars donandi. Zur Ökonomie des Schenkens im früheren Mittelalter, in: *Geschichte in Wissenschaft und Unterricht* 3, S. 149-162.
- HENNIG-SCHMIDT, H. (1999): *Bargaining in a Video Experiment - Determinants of Boundedly Rational Behavior*. Lecture Notes in Economics and Mathematical Systems, Vol. 467, Berlin et al., Springer.
- HENNIG-SCHMIDT, H. (2002): The Impact of Fairness on Decision Making –An Analysis of Different Video Experiments, in: F. ANDERSSON and H. HOLM (eds.), *Experimental Economics: Financial Markets, Auctions, and Decision Making. Interviews and Contributions from the 20th Arne Ryde Symposium*, Kluwer Academic Publishers, Boston, Dordrecht, London, 185-210.
- HENNIG-SCHMIDT, H. and KOHNZ, S. (2004): Asymmetric Outside Options in Ultimatum Games, An Experimental Study, University of Bonn, mimeo.
- HENRICH, J., R. BOYD, S. BOWLES, C. CAMERER, E. FEHR, H. GINTIS, R. McELREATH, (2001): In Search of Homo Economicus: Behavioral Experiments in 15 Small-Scale Societies. *American Economic Review, Papers and Proceedings*, 91, 73-78.
- HENRICH, J., R. BOYD, S. BOWLES, C. CAMERER, E. FEHR, H. GINTIS (eds.) (2004): *Foundations of Human Sociality. Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*, Oxford University Press.
- HUCK, St. (1999): Responder Behavior in Ultimatum Offer Games with Incomplete Information, *Journal of Economic Psychology* 20, 183-206.
- KNEZ, M.J. and C.F. CAMERER (1995): Outside Options and Social Comparison in Three-Player Ultimatum Game Experiments, *Games and Economic Behavior*, 10, 65-94.
- KRIPPENDORF, K. (1980): *Content Analysis*, Sage Publications, Beverly Hills, London.

- LOOMES, G. (1999): Some Lessons from Past Experiments and Some Challenges for the Future, *The Economic Journal*, 109, F35-F45.
- MERTEN, K. (1995): *Inhaltsanalyse*, 2nd edition, Westdeutscher Verlag, Opladen.
- MITZKEWITZ, M. and R. NAGEL (1991): Envy, Greed, and Anticipation in Ultimatum Games with Incomplete Information: An Experimental Study, *Sonderforschungsbereich 303, University of Bonn, Discussion Paper*, B-181.
- MITZKEWITZ, M. and R. NAGEL (1993): Experimental Results on Ultimatum Games with Incomplete Information, *International Journal of Game Theory*, 22, 171-198.
- OSTMANN, A. (2002): Das freundliche Lächeln beim Schenken - Strategien der Beziehungsgestaltung. *Zeitschrift für Sozialmanagement*, 1, 81-103.
- OXOBY, R.J. and K.N. MCLEISH (2004): Sequential Decision and Strategy Vector Methods in Ultimatum Bargaining: Evidence on the Strength of Other-Regarding Behavior, *Economics Letters*, 84, 300-405.
- ROTH, A.E., PRASNIKAR, V., OKUNO-FUJIWARA, M. and Sh. ZAMIR (1991): Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study. *American Economic Review*, 81, 1068-1095.
- SADRIEH, A. and S. OSTERHOLT (1998): Gruppen- und Einzelentscheidungen in einem Videoexperiment zum Ultimatumspiel - Textprotokolle. *Sonderforschungsbereich 303, University of Bonn, Experimental Data Documentation Series No. 4.98*.
- SELTEN, R. (1967): Die Strategiemethode zur Erforschung des eingeschränkt rationalen Verhaltens im Rahmen eines Oligopolexperimentes, in: SAUERMAN, H. (ed.), *Beiträge zur experimentellen Wirtschaftsforschung*, Tübingen: J.C.B. MOHR (Paul SIEBECK), 136-168.
- SIEGEL, S. and N. J. Castellan, JR. (1988): *Nonparametric Statistics for the Behavioral Sciences*, 2nd edition, MCGRAW-HILL, New York, Toronto. (284ff)
- SMITH, Charles P. (2000): Content Analysis and Narrative Analysis, in H.T. REIS and CHARLES M JUDD (eds.), *Handbook of Research Methods in Social and Personality Psychology*. Cambridge University Press, Cambridge, UK, 313-335.
- TRACER, D.P. (2004): Market Integration, Reciprocity and Fairness in Rural Papua New Guinea – Results from a Two-Village Ultimatum Game Experiment. In: HENRICH, J., R. BOYD, S. BOWLES, C. CAMERER, E. FEHR, H. GINTIS (eds.): *Foundations of Human Sociality. Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*, Oxford University Press, 232 - 259.