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Moral Entitlements and Aspiration Formation in Asymmetric Bargaining: Experimental Evidence from Germany and China

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Abstract: Using a unique experimental data set, we investigate how asymmetric legal rights shape bargainers' aspiration levels through moral entitlements derived from equity norms and number prominence. Aspiration formation is typically hard to observe in real life. Our study involves 15 negotiations from Germany and China. Over the course of the negotiation, bargainers discuss the distribution of an amount of money by alternating offers until they consent or break off. Legal rights are randomly assigned by asymmetric outside options. We videotape and code the in-group discussions. In total, verbal data from 30 groups, 1100 pages of transcripts, and 65 h of discussions are content-analyzed. Our main finding is that strong groups derive and defend moral entitlements from equity concerns with regard to their outside options. They strive for equitable but unequal distributions (e.g., proportional split and split the difference). Moral entitlements materialize in the recorded aspiration levels and final payoffs, which exceed the equal split. By contrast, weak groups aim at equality. Over the course of the negotiation, equity tends to lose, while the prominence of round numbers gains importance. Similarities between the subject pools are found in that equity and prominence are both decisive for the formation of aspiration levels. Chinese negotiations are characterized by long periods of stagnation, only minimal concessions, and the communication of false goals. By contrast, Germans steadily reduce their goals and make concessions.

1. Introduction

In many bargaining situations, bargainers bring justifiable entitlements to the negotiation table. Entitlements are subjectively perceived rights that go beyond abstract legal rights and go along with a motivational disposition to defend them [1]. They are often derived from the bargainers' outside options, the status quo, historical claims, or custom. Generally, entitlements impact business relations, arbitration, wage setting, corporate mergers, nuptial breakups, peace treaties, and many other situations (e.g., [2,3]). More specifically, they influence associated bargaining processes and the bargaining outcomes: As, for instance, Gächter and Riedl [3] have shown, opening offers correlate with entitlements. Moreover, tensions in entitlements extend negotiations and are one reason for the often observed "deadline effect" of last-minute agreements [4]. Entitlements also shape the concessions necessary to reach an agreement and highly correlate with agreement outcomes. Previous evidence

suggests that entitlements are so influential because they constitute so-called "moral property rights" in bargaining situations, which exist independently of legal (i.e., enforceable) property rights [3].

In this paper, we experimentally study how asymmetric legal property rights—in the form of randomly assigned asymmetric outside options—shape bargainers' moral entitlements and thereby directly affect their aspiration levels. In the context of our study, we understand a moral entitlement as an entitlement that bargainers subjectively derive from their outside option and that concerns their share of the pie at stake. This entitlement typically goes beyond their legal right (i.e., outside option). Aspiration levels, i.e., the distributive goals the negotiators want to achieve in the negotiation [5], together with the claims, expressed via proposals in the negotiation, can be seen as manifestations of moral entitlements. This is because they operationalize the negotiators' subjectively derived entitlements about the specific part of the pie they feel morally entitled to and are willing to defend.

Our experimental setup is based on Selten's [6] structured non-cooperative model of characteristic-function bargaining where negotiators make alternating offers. Formally, the model is an infinite-recursive game with perfect information. Bargaining models are powerful tools to capture the dynamic nature of negotiations between economic actors with non-identical interests who try to reach an agreement. These models have been applied in several research areas such as resource allocation problems or seller–buyer relationships.[1]

Using the strategic approach to bargaining, Selten ([6], p. 138) fixes a set of exogenous simple procedural rules how to regulate the negotiation process—in particular, which player starts the negotiation, who is the next negotiator to make a proposal, and when the negotiation ends. Thus, the solution to the bargaining problem is a function not only of the possible agreements but also of the procedural rules. In contrast to Rubinstein [9], no bargaining costs are involved. Moreover, interaction is anonymous, i.e., there is no communication between the bargaining parties, and all players are fully informed about the bargaining process. Selten [6] points out that these rules are necessary when the model is to be tested by experiments in order to study how actual players negotiate and to learn about bargainers' true aspirations, which are typically hard to observe in real negotiations.

In our experiment, we consider two negotiation parties who bargain on the distribution of a given amount of money by alternating offers until they consent or break off. Legal rights are implemented via exogenously and randomly assigned outside options (cf. Section 2 for a detailed description of the experimental design and negotiation procedure). The outside options are conflict payoffs the negotiators receive in case they do not reach an agreement. In our study, the outside option of one negotiation party is larger than the outside option of the other party. We are interested in spontaneous aspiration formulation. Therefore, we observe groups of experimental subjects during their decision-making by videotaping their discussions. In that direction, our approach differs from other studies asking subjects to state their aspiration levels [16,17] or fairness perceptions (e.g., [2,3,18]).

Asymmetric bargaining power is frequent in many real-life negotiations, because the bargaining partners often have different opportunities beyond the present negotiation in case the deal is not settled. For example, they might have different financial endowments with which they enter the negotiation, alternative offers from other potential partners, or other strategic options which enhance their bargaining power. Asymmetry not only renders the negotiation more realistic, but is also likely to influence the size of the claims (e.g., [19–21]), the duration of the bargaining process (e.g., [22]), or the likelihood of non-agreement (e.g., [21,23–25]).

Closely associated with asymmetry in the negotiators' outside options is the existence of focal points that involve equal and unequal distributions of the pie [26]. These focal points can emerge from the application of equity norms, which capture the idea of distributing the negotiated amount in such a way that each party is treated equally according to a certain standard [27,28]. The distribution norms

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[1]　Early theoretical and empirical approaches are, e.g., Ståhl [7], Krelle [8], Rubinstein [9], Roth [10], Fudenberg et al. [11], Binmore et al. [12], and Asheim [13]. See also recent studies by Tsiropoulou et al. [14,15].

predominantly researched with regard to equity are proportionality and strict equality (e.g., [26,29–34]). Taking the perspective of equity-related focal points, in many situations there are good reasons for an uneven split of the pie, e.g., when the negotiators have provided different amounts of effort to create the pie. Only in very special cases does the application of equity norms give rise to equal divisions. Focal points based on equity concerns have been shown to influence the resolution of economic distribution conflicts in real-life situations like international business negotiations (e.g., [35]), international trade negotiations (e.g., [36]), and international negotiations on resource allocations (e.g., [37]), but also in lab experiments (e.g., [21,33]). A common finding in these studies is that an agreement becomes more difficult if each partner is biased towards the focal point that favors him or her (see also [38]). In the context of our study, a central research interest concerns the question of how asymmetric legal rights shape moral entitlements through the application of equity norms and the thus induced focal points and how aspirations and claims are accordingly affected.

Our study adds to the existing literature in several important aspects: First, in contrast to, e.g., [32] or [39], but in line with [3], we are concerned with the bargaining process whereas the former studies focus on bargaining outcomes. We analyze how equity-based moral entitlements relate to aspiration levels and how these evolve over time in repeated group interaction. Our setup allows us to study how goals are formulated and adapted throughout the negotiation. In contrast to [3], however, and in line with many realistic bargaining situations, claims are feasible in our experiment (i.e., they are not "sunk"), and emerging moral entitlements are not based on previous efforts, but on randomly assigned asymmetric outside options. It is therefore important to investigate whether moral entitlements and aspirations follow similar principles as in Gächter and Riedl [3]. Because the legal rights in our experiment are not based on the bargaining parties' previous efforts, e.g., performance in a preceding task (see, e.g., [3,32,40]), one would expect equality in entitlements, aspirations, and outcomes when the subjects follow the "accountability principle". It states that fair rewards are to be distributed proportionally to the contributions to the task the individuals can control (e.g., effort, like in [32]). Clark [41] puts it this way: equality appears to be the standard when initial incomes are random, but proportionality can matter when incomes are earned. However, as the legal rights are important for the bargaining process—because they are enforced in case of disagreement—one might conjecture that exogenously implemented legal rights also shape moral entitlements and aspirations (see [21]). Our design allows us to examine how the high and low outside options influence the conversion of the status quo of the bargaining situation into moral entitlements and aspiration levels.

Second, beyond equity-based arguments, we also study the potential impact of another principle, which is likely to influence entitlements and aspirations: prominence. Prominence in the decimal system captures the normative power of focal points [26,29] as expressed by round numbers [28,42]. A focal point is a solution to a problem people will tend to use, for instance, in tacit bargaining, i.e., in the absence of communication. They are particularly useful when bargainers have conflicting interests. Focal points provide some clue for coordinating behavior for "each person's expectation of what the other expects him to expect to be expected to do" ([26], p. 21). Moreover, prominent (round) numbers convey information on bargaining claims more reliably and will be understood more easily by the negotiation partner than non-round numbers. Equity and prominence are closely linked. The specific influence of goal adaptation through prominence can hardly be monitored either in real-life negotiations. Therefore, observing the experimental subjects in this regard also is an important contribution of our investigation.

Third, we also study whether fairness is an issue when groups discuss distributive goals, in particular when equity is involved. In the literature, equity is very often equated with fairness and justice (for an overview, see [33]). It is taken for granted that equitable allocations are proposed and agreed upon, because they are perceived as "fair" or "just". Our observational design allows us to check whether this is indeed the case.

Finally, we analyze the protocols of open bargaining processes at two locations: one in Germany and one in China. These two countries are far apart in distance and in their cultural and philosophical

backgrounds [43]. We deliberately chose China, as the Chinese society has been deeply influenced by Confucianism for more than two thousand years. It requires a pronounced hierarchical order characterized by strong inequalities in status and income [44]. Despite the political changes in the last decades, China is to a great extent still shaped by the Confucian value system [45]. If moral entitlements and aspiration formation were guided by equity and fairness considerations—and other related principles like, for instance prominence—both in Germany and China, this would make a strong case for the cross-cultural validity of these principles in negotiations. More generally, our process-oriented approach allows us to study negotiation practices in both countries. Our records of within-group decision processes provide valuable insights into the determinants of German and Chinese negotiations. Possible differences between our subject pools might also point to conflict potential in direct intercultural interactions.

To the best of our knowledge, our study is the first to show that moral entitlements, derived from outside options and based on the equity principle, strongly influence aspiration levels over the whole negotiation process. Our data reveal remarkable consistencies between our German and Chinese subjects in the formation of aspirations and in bargaining outcomes. In line with findings on one-shot interactions, aspiration formation is strongly influenced by equity-based moral entitlements. Strong negotiators feel entitled to strive for equitable but unequal distributions which exceed their outside option. By contrast, weak bargainers do not feel obliged to agree to the strong negotiators' proposals and pursue equality in distributions. However, equity loses significance during aspiration adaptation in the course of the bargaining process. Instead, prominence gains importance such that the bargainers in both countries show a preference for round-number outcomes. Fairness in general, as well as fairness-related aspiration levels, mainly corresponds to the equity principle, but are not made an issue in all groups. We also find strong subject-pool discrepancies with regard to the level of resistance against downward aspiration adaptation. German subjects show a tendency to reduce their goals steadily, whereas Chinese display long periods of stagnation or minimal concessions. Part of these Chinese delay strategies imply the signaling of false goals meant to convey false information about the true aspiration level. Yet, these strategies do not result in active break-offs—in contrast to the German negotiations. Our data suggest that direct negotiations between our German and Chinese participants are susceptible to conflict because of the different bargaining practices.

The remainder of the paper is structured as follows: Section 2 describes the methods, design and procedure of our bargaining experiment including the content analysis approach that transforms our qualitative verbal material into quantitative data. Section 3 states our results. Section 4 comprises a discussion of our results and concluding remarks.

2. Experimental Methods

2.1. Experimental Design

Our experiment is based on Selten's [6] non-cooperative bargaining model with anonymous interaction and no between-group communication described above in Section 1. Two players bargain on the distribution of a given sum of money, the pie P, by alternating offers. No bargaining costs are involved. In each round, the players have four decision options. They can (i) make a proposal, (ii) shift the initiative to the opposite player, (iii) accept the proposal of the opposite player, (iv) break off the negotiation. If players settle on an allocation of the pie, they receive the amounts agreed upon. If they do not reach an agreement, they receive guaranteed payoffs, i.e., their outside options s and w with $s > w$, and $s + w = P/2$. For convenience, we will refer to the player guaranteed $s(w)$ as the "strong" ("weak") player $s(w)$. In our experiment, $P = 320$ points, $s = 128$ points, and $w = 32$ points, i.e., $s/w = 4/1$.

The players are represented by a group of three participants. Within each group, a joint decision on the distribution of the pie has to be taken by face-to-face discussions, which are videotaped. As in Selten's [6] model, groups bargain anonymously with each other. After the group that has been randomly drawn to make the first proposal has reached a decision, the experimenter transmits this

decision to the opposite group. This procedure applies until an agreement is reached or break-off is announced.

2.2. Procedure

Our experiment was run in the Laboratory for Experimental Economics at Bonn University, Germany, and at Sichuan University, Chengdu, China. About 10 days before the experiment started, subjects were invited via campus advertisements to participate in a decision experiment. They registered in Bonn and Chengdu at the locations mentioned in the respective announcements. In order to register, subjects appeared whenever it was convenient for them during the registration period and chose an available slot from a session that fitted their schedule. This procedure guaranteed the random allocation of students to sessions. They did not know beforehand that they would participate in a bargaining task.

In total, 30 groups, comprising 89 undergraduate students (Bonn: 35, 77% males; Chengdu: 54, 62% males) from different majors took part in the experiment. In Bonn, twelve groups participated in six sessions, including six groups as strong and six groups as weak players, respectively (treatment "GER"). In Chengdu, 18 groups participated in nine sessions, including nine groups as strong and nine groups as weak players (treatment "CHI"). Each group consisted of three players (see Table 1 for an overview).[2] Subjects were paid for showing up to the experiment and received additional payment according to their performance in the experimental task.

We used the same organizational procedures in both countries. Upon arrival and before the experiment started, subjects were informed that they would be videotaped. They signed an agreement that the tapes were being used for scientific purposes. Participants from different groups were assigned to different rooms. This procedure guaranteed full anonymity between the interacting groups. Groups were randomly assigned the role of a strong (*S*) or a weak (*W*) player. Subjects were provided with a written description of the experiment and a separate bargaining protocol for the negotiation—both in their respective native languages German or Chinese.[3] The description was read aloud by the experimenter. Afterwards, participants were requested to read it again carefully and to ask questions which were then answered. After the introduction, the experimenter switched on the video camera and left the room for instructing the other group in exactly the same way. Then, the negotiation started. The experimenter was not present during the discussions. When a decision (i, ii, iii, or iv) had been made, the groups had to record it on the bargaining protocol. Each group member had to sign a statement to the effect that he or she agreed with this decision. Then, the experimenter was informed and she transmitted the decision to the other group. In case of acceptance, break-off, or reaching the time limit,[4] the other group was informed and the subjects were paid accordingly. Videotaping was stopped after the payment.

Table 1. Experimental treatments and subjects.

Treatment	GER		CHI		
Strong/Weak Group	**G_S**	**G_W**	**C_S**	**C_W**	**Total**
Subjects	18	17	27	27	89
Groups	6	6	9	9	30
Sessions	6	6	9	9	15

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[2]   Due to a no-show, one German weak group consisted of only two participants.

[3]   See the English translations in Appendix A.

[4]   Because of the extensive negotiations between the Chinese groups (the first session lasted for nearly four hours) and organizational requirements (some sessions had to be run in the evening and the buildings closed at 11 p.m.), the experiment in China had to be changed with regard to the time limit. After 2.5 h of bargaining—the longest time period of bargaining in the German experiment—the Chinese participants were informed that they would be paid the outside options if they did not come to an agreement within the next 20 min. Initially, no time limit was announced beforehand.

When running experiments in different cultures, issues like experimenter interactions, language, and stakes are very important (cf. [46–48]) as they can affect cross-cultural comparability. We took these effects into account by having different local experimenters in order to avoid an experimenter demand effect. The main experimenter[5] was present at both locations, but remained in the background in Chengdu. Preparing the instructions, we applied the back translation procedure [49]. Participants' payments were calculated based on the hourly wage in a typical student job, which generates about 10 Euro in Germany and 35–45 RMB (Chinese Yuan) in China. For each point retained by his or her group, each group member was paid an amount of 0.05 Euro in Germany and 0.3 Yuan in China. In case of break-offs, the low outside option would pay a meal at a student restaurant of the respective universities. On average, subjects earned 6.83 Euro in Germany and 42.67 RMB (5.42 Euro) in China.[6]

2.3. Videotaping

Our research concerns the bargaining process with regard to proposals and aspiration formation based on moral entitlements and legal rights. As aspiration levels are typically not observable, a technology is required that allows one to obtain the desired information from the decision-making process, but does not direct participants to the research goal. To this end, we chose to observe the experimental subjects in a group setting during the negotiation. Groups consist of three participants who make a joint decision. The discussions of the group members are videotaped. Afterward, the discussions are transcribed word by word into text protocols by native graduate students especially trained for this task. The resulting transcripts of the group discussions are used for subsequent content analysis.[7] Observing the experimental subjects during decision-making has pros and cons.[8] The most important advantages are an authentic insight into the decision-making process, spontaneous argumentations and the revelation of motives of the experimental subjects. This important information is often not available or not noticeable by other methods [51]. Video experiments have potential shortcomings as well. First, subjects might behave differently because they know that they are observed and/or have to play in groups. In fact, evidence on the behavioral effect is mixed (see [52] for a discussion), but seems negligible in our experiment[9]. Second, the number of observations in group experiments is usually lower than in individual experiments. One reason stems from the necessity of paying more subjects (in our case, three times as many participants are needed). Another reason for confining the number of observations is that the ex-post analyzing of verbal protocols requires an extensive body of verbal data to be handled. In sum, we analyzed about 1100 pages of transcripts from 65 h of videotapes after the experiment stemming from 30 group discussions. Despite the potential drawbacks, the advantages of video experiments prevail in our opinion. The rich and unique verbal data set allows valuable insights that are difficult or impossible to obtain by other methods. Video experiments are well suited for cross-cultural research (see [53,54]).

2.4. Data Coding and Categories

We use content analysis to extract the desired information from the verbal transcripts of the experiment. The desired information are the reasons and motivations behind subjects' aspiration levels, i.e., the payoff a group member is willing to accept as the final payoff of the negotiation for at least one round.[10] We extract this information by coding the verbal protocols. Coding denotes the process

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5　Hennig-Schmidt.
6　Average payoffs may be considered as low. Note, however, that the averages include the payoffs from four negotiations (i.e., eight groups) without agreement. In these cases, the subjects earned their outside option only.
7　For our analyses, Chinese transcripts were translated into German.
8　For an extensive discussion, see Hennig-Schmidt et al. [50].
9　Participants seem to feel relaxed and to forget the camera after several minutes. They talk about private matters, and sometimes they even comment negatively on their university teachers.
10　Sessions are divided into negotiation rounds. Each negotiation round comprises a discussion, a decision (i, ii, iii, iii, or iv) and a subsequent discussion until the next decision of the opponent is transmitted.

of assigning categories—designed to capture specific motives underlying the expressed aspiration levels—to text segments. Creating the categories was based on equity- and prominence-related hypotheses derived from the literature.[11]

The first set of categories refers to the equity principle, which is likely to influence the emergence of moral entitlements and associated aspiration levels in the present situation. Selten ([27,28]) has given a general definition of the equity principle, implying that the amount in question is distributed such that each party is treated equally according to a certain standard. Consider a group of n members 1, 2, ..., n and an amount r of money to be divided among these members. We call r_i the share of member i and w_i the weight of member i, with $i = 1, ..., n$. The equity principle requires the following relation to hold:

$$\frac{r_1}{w_1} = \frac{r_2}{w_2} = ... \frac{r_n}{w_n} \tag{1}$$

Allocations consistent with the equity principle are: equal split (ES, equal distribution of the pie), split the difference (SD, equal distribution of the amount that is left when the outside options are subtracted from the pie), proportional split (PS, distribution according to the relation of the outside options), middle between split the difference and equal split (MSDES), middle between Proposals (MP), and middle between aspiration levels (MAL). All these allocations are mentioned as motives underlying aspiration levels.

Our category system also accounts for the phenomenon that round numbers attract specific attention and are often preferred over non-round numbers. Albers and Albers [42] established a theory of Prominence in the decimal system dealing with the perception of the roundness of numbers (see also [28]). We also found combinations between prominence and the other motives—equity in particular. This is in line with Selten [28] who emphasizes that, even when the results are based on equity considerations, deviations due to prominence can occur.

Categories based on other characteristics of the discussions are the following: Some participants are willing to accept the opponent's proposal (AO, Accept Offer), and in many cases, subjects state an aspiration level without giving an underlying motive (NR, No reasoning).

For the coding of the text protocols, undergraduate native raters were extensively trained. First, two coders from each country independently screened the transcripts to check whether aspiration levels were discussed during the negotiation. This created the general pool of aspiration levels. Then, the coders independently classified the discussed aspiration level according to our classification system. For this task, the coders were provided with a detailed coding manual. Coding was made very restrictive in order to rule out the raters' own interpretations as far as possible. Only when the respective category characteristic defined in the coding manual was explicitly mentioned during a discussion was this text segment assigned to a category.

In general, data are reliable only if the inter-coder agreement on category assignments is high. A widely 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 [55].[12] K can take values between +1.00 (complete agreement above chance) and −1.00 (complete disagreement). 0 means no agreement above chance. $K \geq 0.80$ indicates satisfactory inter-rater reliability [54,56,57], which applies to all categories of our coding system (see Table A1 in Appendix C).

Coder disagreement has to be resolved to get as many data as possible. We followed a procedure suggested by Bartholomew et al. [58]: if two coders disagree on a categorical assignment, a third and fourth rater are added, and the classification agreed upon by two of these raters becomes the final rating. With this procedure, all but one disagreement in the German experiment could be resolved.[13]

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[11] For a detailed description of the categories, see Appendix B.
[12] 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), thus $K = [P(A) − P(E)]/[(1 − P(E)]$.
[13] We exclude this case from the following analysis.

3. Results

We first set the stage and report descriptive statistics on negotiated outcomes, proposals, aspiration levels, and agreements. We then focus on the bargaining process: we analyze how equity- and prominence-based moral entitlements emerge and relate to aspiration levels. We also examine how aspirations evolve over time, i.e., how they are formulated and adapted throughout the negotiation. After that, we screen the transcripts for fairness-related arguments. Finally, we compare the two subject pools concerning the principles that guide aspiration formation, as well as regarding negotiation behavior in general.

At each step, we first formulate an observation, which summarizes our subsequent findings. Further, throughout the paper, we will adopt the convention of expressing all allocations and aspiration levels in the strong player's shares, i.e., the share of the total pie of 320 points that goes to the strong player (regardless of whether this proposed allocation was made by a strong or a weak player). Negotiations in Bonn (Chengdu) are denoted as treatment GER (CHI). We also abbreviate strong/weak groups in GER (CHI) as G_S/G_W, (C_S/C_W). All statistical tests are applied two-sided.

3.1. Descriptive Results of the Negotiations

Observation 1. *In case of an agreement, nearly all strong groups negotiate a final payoff exceeding the equal split. They are able to enforce an aspiration level derived from their higher outside options. Significant discrepancies exist between the opening proposals of strong and weak groups as well as between their initial aspiration levels. German weak and Chinese strong and weak groups allow for a tactical reserve providing scope for concessions without the necessity to reduce the aspiration levels. In the final negotiation stage, proposals and final aspiration levels are rather aligned except for the German strong groups. Significant concessions are necessary to reach an agreement. Four of the 15 negotiations end by non-agreement.*

Average negotiated outcomes for strong groups are higher than for weak groups in both locations (see Table 2 for average results and Table 3 for group data). This finding already points to the fact that in case of an agreement all (but one) strong groups succeed in negotiating a final payoff higher than ES. It also indicates that the strong groups are able to enforce a moral entitlement derived from their higher outside option.[14] We will discuss this issue in greater detail in the next Section 3.2.

We find significant discrepancies between the opening proposals of strong and weak groups, as well as between their initial aspiration levels.[15] This requires the negotiators to close rather substantial gaps during the negotiation process if they want to reach a final agreement. Initial aspiration levels of strong (weak) groups are significantly lower (higher) than their respective first proposals in both locations.[16] This indicates a strategic behavior, which provides a tactical reserve [16], leaving room for concessions without cutting down own moral entitlements.[17] It also suggests that G_W, C_S, and C_W try to conceal their true initial bargaining goals.

When the negotiations approach the final stage, final proposals and final aspiration levels are rather close in the Chinese, but more apart in the German groups. We test separately for strong and weak groups in each subject pool whether tactical reserves still exist and find that G_W, C_S and C_W make proposals that are not significantly different from their final aspiration levels.[18] G_S' proposals

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[14] Recall that each player's outside option amounts to less than 50% of the pie.

[15] Opening proposals: both $p \leq 0.004$; initial aspiration levels: both $p \leq 0.013$, Mann–Whitney U test, (denoted as MWU in the following).

[16] Except for GS ($p = 0.500$), these differences are statistically significant (all $p \leq 0.031$, Wilcoxon matched pairs sign test, denoted as WM in the following).

[17] See also Kuon and Uhlich [59] and Hennig-Schmidt and Walkowitz [60].

[18] All $p \geq 0.250$, WM.

are higher, however.[19] Factoring in a tactical reserve at the end of the negotiation seems not to be an advisable strategy, because two German negotiations result in break-off.

Coming to an agreement requires concessions as both parties opened the negotiation with proposals far apart from each other. In line with this logic, we find the final proposals to be significantly lower (higher) than the opening proposals.[20]

Finally, two negotiations ended by non-agreement in GER in that the weak group chose to break off the negotiation. In China, two negotiations ended only after the time limit was announced after 2.5 h of previous bargaining (see footnote 4). Here, we observe the "deadline effect" of last-minute agreements just before the time limit ended. Another two negotiations ended by not accepting the counterpart's proposal within the time limit.

Table 2. Descriptive statistics of the negotiations.

Treatment	GER		CHI	
Variable/Player Type	G_S	G_W	C_S	C_W
Negotiated outcome	159.17	107.5	171.56	112.89
Opening proposal	247.33	130.00	262.00	130.11
Final proposal	198.17	177.17	190.33	185.00
Concession	49.16	47.17	71.67	54.89
Initial aspiration level	228.00	165.00	221.56	174.22
Final aspiration level	189.67	184.50	191.11	182.56
Adaptation of aspiration level	38.33	19.50	30.44	8.33
Number (%) agreements	4 (66.67)		7 (77.78)	

Note: The table shows averages for negotiated outcomes, opening and last proposals, concessions, initial and final aspiration levels, and the change in the aspiration level. The average negotiated outcome includes agreement and conflict payoffs. The average final proposal comprises the final proposal of each party before agreement or breakoff. The average concession depicts the average difference between the opening and the final proposal. Adaptation of aspiration level shows the average differences between the initial and the final aspiration level.

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[19] $p = 0.063$, WM.
[20] All $p \leq 0.062$, WM.

Table 3. Proposals, aspiration levels, and outcomes.

Country	Group	Opening Proposal	Initial AL		Aspiration Adaptation	Last Proposal	Final AL		Negotiated Outcome	
		Points	Points	Category [&]	Category [&]	Points	Points	Category [&]	Points [$]	Final Decision [*]
Germany	G1$_S$	256	256	PS	ES, P, SD, PC(SD), MP	168	167	AP	167	A
	G2$_S$	208	208	SD	ES	208	200	PC(SD)	128	B
	G3$_S$	280	280	P	PS, SD	250	240	P	128	B
	G4$_S$	264	208	SD	PC(SD), P, MP, O	200	172	AP	172	A
	G5$_S$	256	256	PS	ES, SD	188	184	MSDES	185	A
	G6$_S$	220	160	ES	P, PC(ES), O	175	175	NR	175	A
	G1$_W$	140	160	ES	P, PC(ES)	167	167	NR	153	A
	G2$_W$	140	160	ES	PC(ES), P	165	180	MP	32	B
	G3$_W$	130	160	ES	PC(ES), P	200	200	O	32	B
	G4$_W$	80	160	ES	MP	172	200	O	148	A
	G5$_W$	160	190	O	SD, P	185	185	AP	135	A
	G6$_W$	130	160	ES	O, P, MP, MAL	174	175	PC(MAL)	145	A
China	C1$_S$	256	256	PS	PC(SD), NR, P	210	208	SD	208	A
	C2$_S$	280	256	PS	O, P(O), SD, MP	185	200	PC(SD)	185	A
	C3$_S$	300	200	P	P, SD, NR, PC(SD), MP	195	194	AP	195	A
	C4$_S$	208	208	SD	ES	160	160	ES	160	A
	C5$_S$	285	252	NR	P, PC(PS)	210	210	P	128	NT
	C6$_S$	306	256	PS	ES, P,	195	190	AP	190	AT
	C7$_S$	278	208	SD	P	208	208	SD	128	NT
	C8$_S$	285	198	O	SD, PS, PC(SD), NR	190	190	P	190	AT
	C9$_S$	160	160	ES	ES	160	160	ES	160	A
	C1$_W$	168	208	SD	P, PC(SD), NR	208	208	SD	112	A
	C2$_W$	160	160	ES	SD, O, PC(SD)	180	185	MP	135	A
	C3$_W$	70	160	ES	SD, O, PC(ES), MP	194	195	P	125	A
	C4$_W$	128	200	P	PS, AP, P, PC(ES)	150	160	ES	160	A
	C5$_W$	80	160	ES	P	200	195	P	32	NT
	C6$_W$	110	160	ES	P(ES), P, MP, O	190	190	P	130	AT
	C7$_W$	135	160	ES	ES	192	160	ES	32	NT
	C8$_W$	160	200	P	P	191	190	P	130	AT
	C9$_W$	160	160	ES	ES	160	160	ES	160	A

Notes: AL = aspiration level. [&] *Equity principle* ES: Equal Split; SD: Split the Difference; PS: Proportional Split; MP: Middle between proposals; MAL: Middle between aspiration levels; MSDES: Middle between SD and ES; *Prominence* P: Prominence; PC: Prominence in combination with other categories; *Additional Categories* AP: Accept proposal of negotiation partner; NR: No reasoning, O: Other; [$] Outcomes are shown in player S's (W's) respective payoffs; [*] A = agreement, B = break-off, AT = agreement within time limit, NT = no agreement within time limit.

3.2. Motives in Aspiration Formation

Observation 2. *Aspiration formation, especially at the beginning of the negotiation, is strongly influenced by equity concerns. Strong groups strive for equitable but unequal distributions whereas weak groups aim at equality. Comparing initial and final aspiration levels, equity tends to lose while prominence tends to gain importance.*

In this subsection, we focus on the motives that underlie the formation and adaptation of the aspiration levels. To this end, we first look at the motives revealed during the group discussion when the initial aspiration level was stated and throughout the negotiation process until the last-round aspiration level was expressed, i.e., before the final decision was taken (agreement, break-off or impasse). We study whether and, if so, how equity-based moral entitlements, derived from the randomly assigned outside options, relate to the aspiration levels, and how these evolve until the end of the negotiation. Our content analysis-based investigation sheds light on the question whether negotiation parties strive for equality because the outside options are randomly assigned [32,41], or whether legal rights shape the moral entitlements, because the former are not sunk, but rather enforced in case of disagreement.

Table 3 provides group data on initial and final aspiration levels. It also shows the categories the expressed aspiration levels are associated with (see also Table A2 in Appendix D). We focus on equity- and prominence-related arguments, because these motives turn out to be most important for the formation and adaptation of aspirations.[21]

3.2.1. Initial Aspiration Levels

Table 3 conveys that initial aspiration levels are strongly influenced by equity concerns, characterized by the different equity norms PS, SD, and ES. In Germany, 83.33% of the groups (both G_S and G_W), as well as 66.67% of C_S and 77.78% of C_W, form their initial aspiration level accordingly. Strong groups tend to be motivated by PS, SD, and ES. G_S form weakly significantly more often an aspiration level according to PS and SD than G_W, while we find no such significant difference for the Chinese groups.[22] By contrast, weak groups are mainly motivated by ES. They weakly significantly more often form an aspiration level according to ES in both countries.[23] This suggests that weak groups behave according to the accountability principle saying that assigned legal rights do not constitute moral entitlements that exceed an equal outcome. In contrast, strong groups seem to insist that the randomly assigned legal rights justify aspiration levels derived from these rights. Prominence (P), i.e., when an aspiration level is divisible by 100 or 10, has a minor influence in the initial negotiation stage. Only 13.33% of the initial aspiration levels in all groups are formed accordingly (8.33% in Germany and 16.67% in China).

3.2.2. Adaption of Aspiration Levels

Throughout the bargaining process, groups have to make concessions and account for their opponents' legal rights and moral entitlements, operationalized by the opponents' respective proposals. Therefore, the groups have to adjust their proposals, and possibly their own aspiration levels, if they want to prevent the risk of a break-off and did not factor in sufficient tactical reserves from the outset. During bargaining, we find that other equity norms are discussed in addition to PS, SD, and ES. These norms account for equality of concessions at a later stage of the negotiation where the current negotiation area is given by boundaries perceived or previously signaled by the two negotiators

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[21]　Other, less relevant, categories are "Time is money" and "Golden split", which we subsume under the category "O: Other". See Section 2.4. for the procedure and Appendix B for the detailed definition and explanation of the categories.

[22]　GER: $p = 0.061$, CHI: $p = 0.131$, Fisher's Exact Test (in the following denoted as FET).

[23]　GER: $p = 0.08$, CHI: $p = 0.05$, FET.

(cf. [3]). The negotiation areas we found are delineated by former equity norms, by aspiration levels or by standing proposals. Examples from our study are the arithmetical midpoint between SD and ES (MSDES = 184) or the arithmetical midpoint between proposals and aspiration levels. Equity and prominence are combined when the negotiators express a prominent aspiration level derived from an equity norm, like 200 or 210 stemming from SD (208) or 180 stemming from MSDES (184).

Table 3 shows how categories of aspiration levels are adapted during the entire negotiation. We find patterns of aspiration adaptation demonstrating how important equity norms throughout the negotiation are. Groups keep their aspired equity norm or adapt their aspiration level to a different, usually lower, equity norm. For strong groups, these allocations are PS, SD, or ES. For weak groups, they mainly consist of ES and SD. Further equitable aspiration levels are MP, MAL, and MSDES. Moreover, aspiration levels are also changed to a prominent number divisible by ten, and in later bargaining phases, divisible by five. Finally, groups combine equity and prominence by deriving a prominent aspiration level from an equitable one like ES, SD, PS, or MAL. During the whole negotiation process, all 12 German groups and 15 of the 18 Chinese groups, i.e., 90%, formulate an aspiration level motivated by equity at least once; 14 Chinese (77.78%) and nine German groups (75%) mention an aspiration level motivated by prominence at least once.

3.2.3. Final Aspiration Levels

Just before the negotiation ends, the observed underlying motives for the final aspiration levels are not as consistent as for the initial aspiration levels. This is plausible, because initial aspiration levels are formed at the very beginning of the bargaining process and are not yet influenced by the opponent's behavior. Testing the point values of initial and final aspiration levels, aspiration levels appear to be rather stable during the course of the negotiation. We find that final aspiration levels are not significantly lower than initial aspiration levels for G_S, G_W, and C_W[24], even though the groups do have to make some concessions (see Tables 2 and 3). C_S reduce their aspirations significantly.[25]

When focusing on categories underlying the final aspiration levels, equity is still the most frequently mentioned motive (see Table 3); yet, prominence gained importance. On face value, the number of final aspiration levels motivated by equity (prominence) is lower (higher) compared to initial aspiration levels; yet, these differences are not statistically significant.[26] Overall, 33.33% of all final aspiration levels are based on the equity norms mentioned above. 23.33% are based on prominence, and 13.33% on both. It is noticeable that equity and prominence are focal in our Chinese subject pool. All but two groups in CHI adapt their final aspiration levels accordingly against seven in GER. This difference between the subject pools is highly significant.[27] When analyzing equity only, G_S and G_W only slightly focus on equity norms (16.67% each)[28], whereas C_S and C_W do much more (44.44% and 55.56%, respectively).[29] This difference is weakly significant.[30]

When the negotiations approach the final stage, strong and weak groups in each subject pool also converge in aspiration levels measured in points.[31] Counting whether categories (both equity and prominence) match between paired strong and weak negotiators, this is weakly significantly more the case in the Chinese subject pool[32] with 55.55% of all Chinese against 16.67 of all German groups (Table 3).

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[24]　All $p \geq 0.219$, WM.
[25]　$p = 0.016$, WM.
[26]　Exact McNemar significance probability, all $p \geq 0.45$.
[27]　$p = 0.009$, FET.
[28]　G_S: MSDES, P and PC(SD): 16.67% each, Other—including AP and NR: 50.00%. G_W: MP and PC(MAL): 16.67% each, Other—including AP and NR: 66.67%.
[29]　C_S: ES, SD and P: 22.22% each, PC(SD): 11.11%, Other—including AP and NR:22.22%. C_W: ES: 33.33% each, SD and MP: 11.11% each, P: 44.44%.
[30]　$p = 0.067$, FET.
[31]　All $p \geq 0.261$, FET.
[32]　$p = 0.058$, FET.

3.3. Fairness-Related Aspiration Levels

Observation 3. *Generally, aspiration levels are not linked to fairness in all groups. Specifically, at the beginning of the negotiations, only very few groups link aspiration levels to fairness. Fairness-related aspiration levels mainly connect to the equity principle. We find player-specific biased fairness perceptions in both subject pools. More German than Chinese groups discuss fairness-related moral entitlements.*

Next, we study whether "fairness" becomes an issue in general during the negotiation and in particular, when groups discuss aspiration levels. In the literature, equity is often equated with fairness and justice (e.g., [61,62]) and it is taken for granted that equitable allocations are proposed and agreed upon, because they are perceived as "fair" or "just". This claim seems to be the basis for a justification of demands, particularly in Western cultures. With the data obtained from our observational design, we can shed light on whether this is indeed the case, and if so, whether this applies to both subject pools. To check for fairness discussions as such, as well as for fairness-related aspiration levels, the transcripts were additionally screened for the terms "(un)fairness", "(un)fair", "(un)just", "(in)justice"[33] in GER and "(不)公平 (bù) gōng píng", "(不)合理 (bù) hé lǐ" in CHI.[34]

We find that fairness as such is not made an issue in all groups. In total, 26 (86.67%) groups refer to "fairness", both five (83.33%) G_S and G_W, nine (100.00%) C_S, and seven (77.78%) C_W. Aspiration levels are connected to fairness by only 58.33% of the German groups (five G_S and two G_W) and by only 27.78% of the Chinese groups (four C_S and one C_W). Hence, fairness-related aspiration levels appear to be more important among the German than among the Chinese groups.[35]

As for aspiration levels in general, equity is connected to fairness with regard to aspiration levels also, and plays a major role in both countries. Fairness-related aspiration levels mainly connect to the equity principle. The most important categories are SD (GER: 41.67%, CHI: 8.33%), ES (GER: 8.33%, CHI: 5.56%), PS (CHI: 11.11%), and prominence in combination with equity (GER: 8.33%, CHI: 5.56%).[36] No C_S group (three C_W groups) labels an aspiration level according to ES as fair compared to two groups both in G_S and G_W. On the other hand, no C_W group (three C_S groups) terms an aspiration level according to SD as fair compared to one (four) group(s) in G_W (G_S). Hence, there seem to be player-type specific differences with regard to fairness arguments, even though these are not significant. When forming their initial aspiration level, fairness matters only for three of the 30 groups (one G_S, G_W, and C_S each), even though initial aspiration levels are strongly influenced by equity concerns (see Table 3). And again, fairness relates to the equity principle, with SD for the strong groups and ES for the weak group.

3.4. Subject Pool Comparison

Observation 4. *Similarities between the German and the Chinese subject pools are found in that equity is decisive for the formation of aspirations and prominence becomes more important during the course of the negotiation. As to the level of resistance against downward aspiration adaptation, Germans show a tendency to reduce their goals steadily. Chinese bargaining processes, in contrast, are characterized by long periods of stagnation and only minimal concessions. These delay strategies also comprise deliberately signaling false goals. While fairness as such appears to be similarly important in both subject pools, fairness in reference to aspiration levels seems more important in Germany than in China.*

In this Subsection, we will identify similarities and differences between our German and Chinese subjects concerning the principles that guide aspiration formation, as well as regarding negotiation

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[33] In German: (Un)Fairness, (un)fair, (Un)Gerechtigkeit, (un)gerecht.
[34] The coding process was the same as described in Section 2.4.
[35] This difference is weakly significant (*p* = 0.079, FET).
[36] Other categories rarely mentioned are "Middle between proposals" and "Other".

behavior in general. As our approach allows us to study the whole negotiation process, our records provide valuable additional insights that are difficult to obtain by other methods.

3.4.1. Equity

Our findings reveal remarkable similarities in both subject pools. Initial aspiration levels of G_S are only slightly higher than those of C_S; those of G_W are lower than those of C_W, but not significantly. Aspiration formation in the opening phase of a negotiation is strongly influenced by equity concerns at both locations. Most strong groups strive for equitable but unequal allocations (83.33% in GER, 66.67% in CHIN, see Table 3). These comprise PS and SD. Only one strong group in each subject pool strives for equality. Most weak groups aim at equality of payoffs (83.33% in GER, 66.67% in CHIN), with one group of the latter formulating an aspiration level according to SD. A payoff larger than ES is conceded by 16.67% of G_W and by 33.33% of C_W.

At the end of the negotiation, equity still plays a role in both subject pools, but less importantly compared to when the negotiations start. In German strong and weak groups, 33.33% of the final aspiration levels are motivated by equity, whereas this is the case in 55.56% of both C_S and C_W. Prominence gains in importance, in particular in C_W (44.44%).

To summarize, equity is particularly important for building aspiration levels in both subject pools when the negotiation starts. Prominence becomes a focal principle at the end of the negotiation. Equity still has some impact, and its influence is higher in the Chinese than in the German groups (this difference is not significant, however). All (but one) German (Chinese) strong groups, derive aspiration levels larger than ES from their assigned (higher) outside option. Most weak groups in both subject pools strive for equality in the beginning, but some concede higher payoffs to the strong groups right from the outset, forming their aspirations similarly to the strong groups. At the end of the negotiation, all G_W reduce their final aspiration level below the Equal Split, whereas 33.33% of C_W still strive for equality with one of the three groups facing impasse.

3.4.2. Negotiation Characteristics

Chinese groups on average negotiate higher outcomes than German groups. Yet, negotiated outcomes are not statistically different across countries.[37] We do find differences between both countries with regard to the bargaining process as such. Negotiations in CHI last weakly significantly longer than in GER. The average number of proposal rounds is 32 in Germany and 85 in China. On average, Germans bargain for 94.83 min, Chinese negotiate for 147.55 min. Both differences are weakly significant.[38]

To reach an agreement, groups have to make concessions if their opening offers are as far apart as in nearly all of our negotiations. One possibility to depict the concessions is to compute absolute concessions (see Table 2). Based on this index, Chinese make higher concessions compared to Germans. Another index that better captures the perception of the negotiators regarding the opponents' willingness to cooperate is based on an idea by Gächter and Riedl [3]. According to their index, the same absolute concession can be perceived as small when the standing proposals are far apart, or as generous when the standing proposals are close to each other. Therefore, absolute concessions can be normalized by the current bargaining area, which is given by the difference between the standing proposals of both negotiation partners. The summary statistic "average positive relative concession" (APRC) of a negotiator is the average of all his relative positive concessions made during the bargaining

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[37] All $p \geq 0.340$, MWU, strong and weak German groups vs. the respective Chinese groups. No significant differences in outcomes across countries have been found either, for instance, between Austria and Japan by [63] in Coalition Formation Ultimatum Games nor by [64] between the Netherlands, Spain, the US, and Japan in public-goods games.

[38] $p = 0.052$ for proposal rounds, $p = 0.064$ for minutes, MWU.

process.[39] We find that G_S make significantly higher average positive relative concessions than C_S (10 vs. 5%-points). APCRs of G_W are higher than those of C_W (9 vs. 4%-points), but this difference is not significant.[40]

Our above finding on concession behavior and bargaining duration relates to a large difference between the German and the Chinese subject pool with regard to the level of resistance against downward adaptation of aspirations (see Figures A1 and A2 in Appendix E). Germans show a tendency to reduce their aspirations steadily. This does not exclude attempts to defend certain goals by resisting a lowering of their aspiration levels. Most often this strategy materializes in repeating a proposal several times. Yet, in GER, groups do not reiterate the same proposal more than seven times in a row (12 times including threats). Those two G_S groups that carry impediment too far (G2, G3) are finally confronted with their opponents actively breaking off the negotiation.

Negotiation processes of Chinese groups look quite different. We find very long periods of stagnation (at most 30 repetitions) and only incremental concessions. These delay strategies also imply deliberately signaling false goals to induce the opponents perceiving the false level as the true goal. These strategies are used by both opponents. They are never mentioned by German groups. The difference in resistance to aspiration reduction between the two subject pools is also reflected in the frequency of aspiration levels being discussed during the bargaining process. In particular, Chinese strong groups discuss aspiration levels significantly more often than German strong groups.[41] In CHI, however, extensive delays do not result in active break-offs as in German groups. The two Chinese sessions not ending in agreement (C5, C7) are characterized by participants passing the time limit without accepting the opponent's proposal.

Our analysis has shown that fairness as such appears to be similarly important in both subject pools, whereas fairness in reference to aspiration levels seems more important in Germany than in China. This result is in line with findings in the literature that the perception of fairness is dependent on culture [65]. Bian and Keller [66] find that Americans and Chinese have similar fairness perceptions. Yet, the Chinese do not make decisions consistent with their fairness perceptions, whereas the Americans do.

4. Discussion

The aim of this study was to explore experimentally how asymmetric bargaining power shapes bargainers' aspiration levels through moral entitlements derived from the equity principle and prominence. For this purpose, we videotaped and coded the discussions of negotiating groups in Germany and China. Bargaining power was randomly assigned via asymmetric legal rights, i.e., outside options that materialize for each negotiator in case of negotiation break off. Contrary to former studies, the legal rights are not previously earned and are not sunk. Therefore, if the accountability principle were applied, we should observe that outside options do not create moral entitlements, which differ between strong and weak parties (i.e., they both strive for equal shares). We do find, however, that strong groups use their higher outside options to derive moral entitlements that materialize in aspiration levels and negotiate final payoffs exceeding the equal split. Aspiration formation, especially at the beginning of the negotiation, is significantly influenced by equity concerns: strong groups strive for equitable but unequal distributions; weak groups aim at equality. Over the course of the negotiation, equity tends to lose, while prominence tends to gain importance. Not all groups discuss fairness. If they do, fairness is mainly attributed to equity- and prominence-based aspiration levels. Similarities between the subject pools are found in that equity, as well as prominence, is decisive for the formation of aspirations. Yet, we also detect differences in the negotiation styles: Germans

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[39] By this definition, we neglect threats negotiators sometimes make by reducing their current proposal relative to the previous one.
[40] Strong groups: $p = 0.026$, weak groups: $p = 0.285$, both MWU.
[41] Strong groups: $p = 0.025$; weak groups: $p = 0.120$, MWU.

steadily reduce their goals. Chinese negotiations are characterized by long periods of stagnation, only minimal concessions, and the communication of false goals. In sum, our results convey that the formation of aspirations seems to follow similar principles as described in Gächter and Riedl [3]. Randomly assigned (i.e., not earned) asymmetric outside options have normative power and shape the negotiation process. Strong negotiators (self-servingly) derive moral entitlements from their randomly assigned outside option and rely upon equity concerns (i.e., proportionality with regard to the relation of the outside options). By contrast, weak negotiators do not express an obligation to comply with the strong party's demands—they request equality.

Beside proportionality and equality as predominant norms in our negotiations, we find splitting the difference to play an important normative role. To the best of our knowledge, split the difference has not been discussed in the recent fairness-related literature (see, e.g., [3,32,33,61]; cf., however, [21,60,67]). The reason might be that other experimental designs entail a "blind spot", because they do not allow calculation of this norm. Splitting the difference, however, has the feature that it renders an acceptable (and practical) compromise for both negotiators (see [60]). This lies in the fact that the surplus above the sum of the outside options is divided equally. This characteristic combines the strong group's request for getting more than half of the pie with the weak group's aim of equality by splitting the surplus equally. This holds for both subject pools. Moreover, SD satisfies the German groups' request to provide an argument about an allocation's "fair nature" that has often been expressed during the negotiations.

Our results provide supportive evidence on the normative force of equitable distributions. Equity concerns shape the process and the outcome of negotiations by impacting on the negotiation parties' aspiration levels. Bargainers do not seem to rely on equilibrium solutions (see, e.g., [6] for our experiment, or [9], for bargaining with delay costs). Instead, they form aspirations and tie them to focal points that are easy to calculate and to justify.

The importance of equity preferences for behavior has been shown in other distribution games as well, where subjects can derive an entitlement, for instance, from the outcome of a preceding production phase (e.g., [20,39,68–72]). The range of equity norms in these studies is lower, however, than in our experiment, as these results were derived mostly from behavioral data and not from observational data as in our study. Moreover, the differences in aspiration levels among strong and weak groups fits evidence from previous research on the self-serving use of fairness and social norms (e.g., [21,24,38,73,74]).

Our study adds to the bargaining literature in that we provide evidence on how the involved parties in a structured, rather formalized, bargaining situation approach the task. We thus contribute to closing the gap between theoretical models of bargaining and actual bargaining behavior. Moreover, in contrast to most experimental studies, our findings are based on authentic observational data having subjects "speak for themselves". Having to rely on behavioral data alone might be misleading if subjects display false goals like in our Chinese subject pools.[42]

One might argue that students' bargaining decisions, taken in a controlled even though artificial environment, may not generalize to more realistic contexts outside of the laboratory. We are convinced, however, that the task had external validity, because the negotiation the students entered was bilateral and real—the bargaining partner, the information they got, and the consequences of their decisions were real. The task was financially incentivized to ensure that participants perceived their behavior as relevant, experienced real emotions, and took decisions with real economic consequences (e.g. [75]).[43]

We think that it is quite remarkable that bargaining behavior in both subject pools is guided by the same principles: moral entitlements and aspiration formation are tied to equity considerations

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[42] See, e.g., Kuon and Uhlich [59], who arrive at quite different results even though their experimental study is based on the same game and the same parameters as ours. For instance, the authors have to infer initial aspiration levels from first offers, which—as we have seen—may include tactical reserves.

[43] See also Falk et al. [76] for evidence on very similar behavioral patterns among students and non-students.

and the prominence principle. This finding makes a strong case for the cross-cultural validity of these principles in negotiations, and it might help negotiators to better understand the common ground on which an agreement can be achieved. The difficulty, however, lies in the multiplicity of equity norms. Negotiators need to estimate realistically the norm the bargaining partner is aiming at and design appropriate strategies to cope with the most likely conflicting interests.

The cross-cultural validity of equity norms is the more notable, because it is the traditional Confucian ethics of benevolence, humanism, and righteousness and rites that still form the core of social relations in China [77]. Face and favor are influential for negotiations and for conflict management; but the employment of power is also a very important "albeit latent, motif in the delicate, sometimes seemingly contradictory, world of Chinese interpersonal 'games' (p. 250; see also [78,79], for the use of stratagems). Other important conceptions are collectivism, filial piety and its influence on authoritarian hierarchies, and guanxi. Many of these values and conceptions are in contrast to the Western value system; see, for instance, Hennig-Schmidt and Walkowitz [60] for a discussion on the importance of fairness, face, guanxi, and harmony in negotiations.

We did also find subject pool differences in bargaining behavior, which relate to the bargaining style and which might point to conflict potential in direct intercultural interactions. Our findings comply with the existing cross-cultural negotiation literature. Faure [80], for instance, argues that Chinese have an apparent capacity to mask their real intention. Therefore, foreign negotiators in China often have a feeling that an indirect game is played. Moreover, Chinese basic rules of politeness, implying that one should not openly show any impatience in the negotiation (cf. [81]), extend the duration of the bargaining process. An additional explanation lies in different perceptions and use of time in both cultures. Westerners want to get down to business quickly ("time is money") and are suspicious about delay tactics, whereas Easterners, whose goal is to create a relationship rather than just signing a contract, may become distrustful on attempts to shorten the negotiation time [82].

A potential shortcoming of our study is the limited number of independent observations in our experiment. For some of our statistical tests, we find only weakly significant results. The primary goal of our study was to investigate whether, and, if so, how aspiration levels are shaped by moral entitlements, and which norms guide this process. To reach this goal, we put an enormous effort into the collection of the data. We believe that our body of verbal data from 30 group discussions, comprising about 1100 pages of transcripts from 65 h of videotapes, is a very good basis for providing the insights that we were aiming at.

Finally, our experiment permitted no interactions between German and Chinese negotiation groups. Yet, taking into account the differences in bargaining behavior discussed in Section 3.4, one could conjecture that many sessions would not have ended in agreement had groups from both countries directly negotiated with each other. The text protocols clearly convey that neither strong nor weak German groups are willing to tolerate delay strategies without steady concessions.

Author Contributions: Conceived and designed the experiments: H.H.-S.; Performed the experiments: H.H.-S.; Analyzed the data: H.H.-S. and G.W.; Contributed materials and analysis tools: H.H.-S.; Wrote the paper: H.H.-S. and G.W.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

English translation of the instructions

Introduction into the experiment

You participate in a bargaining experiment where two groups negotiate with each other. To evaluate the communication process within the groups the experiment is recorded on video. The goal of the game is to maximize your own profit while bargaining on a coalition value. The game ends if one group accepts the proposed division of the other group, or if one group breaks off the negotiation. If there is an agreement, each member of the group receives the payoff the group agreed upon. If there is a break-off of negotiations, each member of the group receives the guaranteed payoff for his/her group (the outside option). I will now explain the negotiation process from the bargaining protocol. The other group received an identical bargaining protocol. You have been randomly chosen to make the first (second) proposal. A money payoff, called the coalition value, amounts to 320 points. If there is a break-off of the negotiation, the guaranteed payoff for group 1 is 128 points and the guaranteed payoff for group 2 is 32 points. Please discuss which of the following four decision alternatives the group is going to choose, and please discuss also the reasons why the group is going to choose just this decision: (1) You make a proposal on the division of the coalition value to your opponent group. The proposal has to be non-negative and integer-valued. (2) You shift, i.e., the initiative to make a proposal passes to the other group without your making a proposal. (3) You accept the proposal of the other group. (4) You break off the negotiation.

Agree upon one of the four possibilities. Write down the result of your discussion into the column of the protocol that is provided for your group. Each member of the group has to confirm this entry by his/her signature. Your proposed allocation will then be transmitted to the other group. Following each bargaining round please fill in one copy of the questionnaire. It will be collected afterwards. After having finished the experiment, each member of the group will be paid either the accepted share of the coalition value or the guaranteed payoff for his/her group. The point to cash rate is 1/0.05 Euro [1/0.3 Yuan]. Try to maximize your own profit! There is no time constraint.

Are there any questions?

Bargaining Protocol			Date Starting time End			Session No. Group No. Page 1		
	Actual Proposal					**Payoffs**		
	Proposal	Group 1	Group 2	Signatures		Coalition	Alternative	
No.	made by group no.	receives	receives			value	Group 1	Group 2
1	1					320	128	32
2	2							
3	1							
4	2							
5	1							
6	2							
7	1							
8	2							
9	1							
10	2							
…								

Appendix B

Definition of categories

NOTE: Final payoffs of the strong (weak) groups are denoted as *Payoff S* (*Payoff W*) and are calculated in points. *AL S* (*AL*) denotes an aspiration level of the strong (weak) group.

Appendix B.1. Equity Principle

Equal Split (ES)

The pie P is divided into two absolutely equal amounts.

$$Payoff\ S = Payoff\ W = 1/2\ P = 320/2 = 160 \tag{A1}$$

Split the Difference (SD)

The difference between the pie P and the sum of outside options s and w is split equally, and is added to the outside options.

$$Payoff\ S = s + \frac{1}{2}\{P - (s + w)\} = 128 + \frac{1}{2}(320 - 160) = 208 \tag{A2}$$

And

$$Payoff\ W = w + \frac{1}{2}\{P - (s + w)\} = 32 + \frac{1}{2}(320 - 160) = 112 \tag{A3}$$

Proportional Split (PS)

The pie P is divided proportionally to the outside options.

$$Payoff\ S = P\{\frac{s}{(s + w)}\} = 320\,(\frac{128}{160}) = 256 \tag{A4}$$

And

$$Payoff\ W = P\{\frac{w}{(s + w)}\} = 320\,(\frac{32}{160}) = 64 \tag{A5}$$

Or, since in our experiment

$$s + w = \frac{1}{2}\,P \tag{A6}$$

$$Payoff\ S = 2s = 256 \tag{A7}$$

And

$$Payoff\ W = 2w = 64 \tag{A8}$$

Middle between Split the Difference and Equal Split (MSDES)

The pie P is divided according to the middle between Split the Difference and Equal Split.

$$Payoff\ S = 1/2\{\frac{1}{2}P + s + \frac{1}{2}(P - (s + w))\} = \frac{1}{2}s + \frac{3}{8}P = 64 + 120 = 184 \tag{A9}$$

and

$$Payoff\ W = \frac{1}{2}[\frac{1}{2}P + w + \frac{1}{2}(P - (s + w))] = \frac{1}{2}w + \frac{3}{8}P = 16 + 120 = 136 \tag{A10}$$

Middle between proposals (MP) (except for MSDES)

The allocation of payoffs corresponds to the middle between the current proposals of both groups.

$$Payoff\ S = \frac{(proposal\ S + proposal\ W)}{2} \tag{A11}$$

and

$$Payoff\ W = \frac{\{(P - proposal\ S) + (P - proposal\ W)\}}{2} = \frac{\{2P - (proposal\ S + proposal\ W)\}}{2} \tag{A12}$$

In case proposals correspond to Split the Difference and Equal Split, we do not code category MD, but MSDES.

Middle between aspiration levels (MAL) (except for MSDES)

The allocation of payoffs corresponds to the middle between the last own aspiration level and the estimated current aspiration level of the opponent group.

$$Payoff\ S\ =\ \frac{(AL\ S\ +\ AL\ W)}{2} \tag{A13}$$

And

$$Payoff\ W\ =\ \frac{\{(P\ -\ AL\ S)\ +\ (P\ -\ AL\ W)\}}{2}=\frac{\{2P\ -\ (AL\ S\ +\ AL\ W)\}}{2} \tag{A14}$$

In case aspiration levels correspond to Split the Difference and Equal Split, we do not code category MAL, but MSDES.

Appendix B.2. Prominence

Prominence (P)

Given the literature on prominence we assume subjects to perceive a number as round if it is divisible by 5 even if the terms prominence or round number are not mentioned.[44] The allocation is measured in points or in money units (Euro in GER and Yuan in CHI). An aspiration level is coded in this category only if it does not belong to any other categories except for "No reasoning".

Prominence in combination with other categories (PC)

If a division of the coalition value referring to another category is discussed and the goal is adapted to a round number near that allocation afterwards, this is regarded as a combination between prominence and the other principle. The adapted aspiration level is classified into category *PC*.

Appendix B.3. Additional Categories

Time is money (T)

For Westerners, time is conceived as a commodity that has a cost and should be used with parsimony. In contrast, time is rather viewed as an unlimited resource in the East. Chinese may be insensitive to time, procedures, schedules and deadlines. If participants in our experiment refer to efficiency relative to time spent and formulate their goals with regard to the negotiation time, such discussions are coded here.

Alternative of the strong group (AS)

The power asymmetry between bargaining partners represented as different outside options in our experiment influences the bargaining decisions not only when applying the equity principle. Sometimes, aspiration levels are directly connected to the alternatives. This category describes the decision motive depending purely on the outside options. The aspiration level of the weak group corresponds to the alternative of the strong group, i.e., 128. *Payoff S = P − s* = 192 and *Payoff W = s* = 128.

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[44] Note that 19 of the 34 different aspiration levels comprise allocations divisible by 5.

Golden split (GS)

The pie P is divided according to the golden ratio $\varphi = (\sqrt{5} + 1)/2 \approx 1.618$, i.e.,

$$Payoff\ S\ =\ \frac{P}{\varphi}\ \approx\ 198 \tag{A15}$$

and

$$Payoff\ W\ =\ P - \frac{P}{\varphi}\ =\ P\left(1 - \frac{1}{\varphi}\right) \approx\ 122 \tag{A16}$$

Accept offer of opponent group (AO)

A group member is willing to accept a proposal of the opponent. This demonstrates that his/her current aspiration level corresponds to the present proposal. An aspiration level is coded in this category only if this allocation was not formulated as an aspiration level before in the respective group.

Other (O)

If motives are found that do not correspond to any of the above categories they are classified in this category.

No reasoning (NR)

If an aspiration level is formulated without giving an underlying motive, it is coded in this category.

Appendix C

Table A1. Values of Kappa in GER and CHI.

Category	Kappa in GER	Kappa in CHI
Equal Split (ES)	1.000	1.000
Split the Difference (SD)	0.949	0.987
Proportional Split (PS)	1.000	1.000
Middle between Proposals (MP)	0.844	0.856
Prominence (P)	0.825	0.936
Middle between Split the Difference and Equal Split (MSDES)	1.000	-
Middle between aspiration levels (MAL)	1.000	-
Prominence in combination with other categories (PC)	0.930	0.894
Accept proposal of opponent group (AP)	1.000	0.961
No reasoning (NR)	0.854	1.000

Appendix D

Table A2. Percentages of groups that formulate an aspiration level according to the respective category at least once.

Category/Group	GS	GW	CS	CW
ES	50.00		33.33	33.33
SD	50.00	16.67	55.56	33.33
PS	16.67		11.11	11.11
MP	33.33	50.00	22.22	33.33
MSDES	16.67			
MAL		16.67		
P	66.67	83.33	66.67	66.67
PC(ES)	16.67	50.00		33.33
PC(SD)	50.00		44.44	22.22
PC(PS)	16.67			
PC(MAL)		16.67		

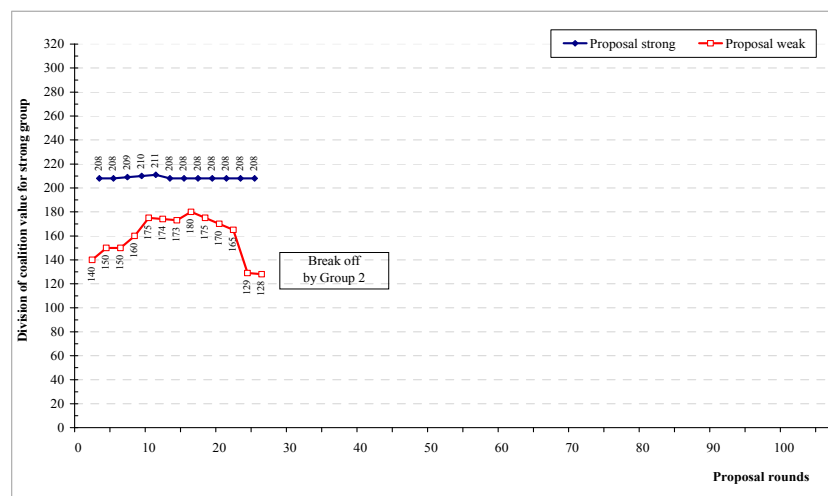**Appendix E**

Examples for bargaining processes

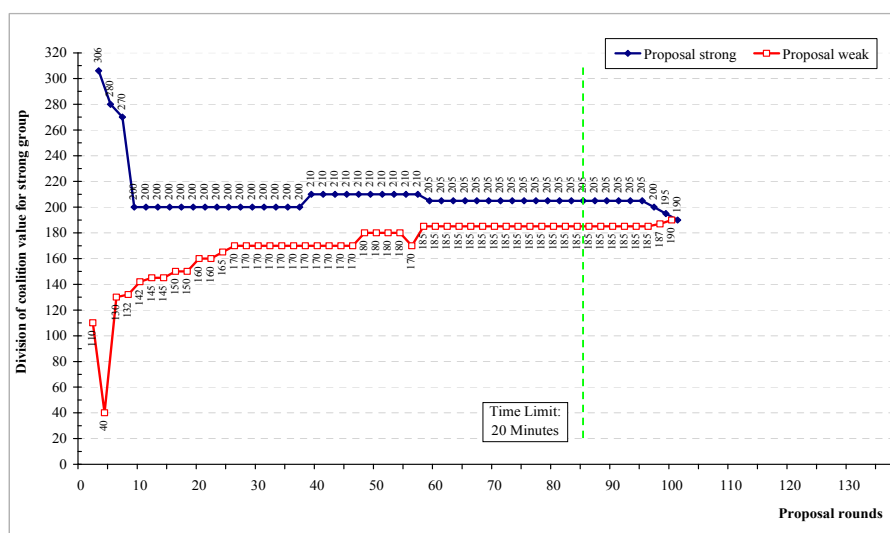**Figure A1.** Session 5 in GER.

Figure A2. Session 6 in CHI.

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