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The pernicious role of asymmetric history in negotiations

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ABSTRACT

The role of history in negotiations is a double-edged sword. Although parties can develop trust over time, there are also countless examples of protracted feuds that developed as a result of conflicting interpretations and invocations of history. We propose that, due to biased invocations of the past, history is likely to play a pernicious role in negotiations – particularly when given an asymmetric history in which one party benefited at the expense of the other. We test this prediction in two, two-stage experiments. We find that asymmetric history in a first stage leads to increased impasses in a second stage, but that this effect holds only when the second stage pairs the same two parties who shared the asymmetric history in the first.

1. Introduction

Negotiating parties with a shared history are likely to have conflicting perspectives on the significance and interpretation of their histories. Prior research has found that conflicts arising from differing interpretations of common information are more likely in complex situations, which provide opportunity for subjectivity and eventually impede agreement in negotiations (e.g., Babcock et al., 1995, 1996). History, which is complex and subjective, could provide especially fertile ground for biased claims that impede agreement in negotiations.

In this paper we show that a history between people in which one party (the 'winner') previously gained at the expense of the other (the 'loser') increases the chance of impasse in a subsequent negotiation, due to the parties' different perspectives on the issue of compensation. We test the prediction that previous losers will behave as if the past is relevant to the current dispute, and that compensation is appropriate, whereas winners will behave as if the past has no bearing on the present, so that compensation is uncalled for.

We present results from two experiments illustrating the importance of a shared asymmetric history in bargaining impasse. Both show that negotiating dyads sharing an asymmetric history are less likely to settle a subsequent negotiation than are pairs with a symmetric history. We also find that impasses between winners and losers are less likely to occur if the

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negotiation is between a different winner–loser pair from the one that shares an asymmetric history. This is because losers seek compensation only from winners who won at their expense.

In the next section, we summarize literature addressing how and why asymmetries between bargaining partners can lead to inefficiencies, as well as the circumstances in which parties seek, and offer, compensation for inequalities through redistribution in negotiations and allocation decisions. We also discuss how bargaining partners can exploit the existence of multiple fairness views by selecting those that justify their claims. We then, jointly, present the methods of the two experiments and their results. We close with a summary of conclusions and limitations.

2. Asymmetries between bargaining partners

Experiments involving asymmetries between bargainers have examined situations in which, for instance, individuals negotiate over how to divide a joint product to which they have contributed unequally (e.g., Birkeland, 2013), negotiate over how to divide lottery tokens that provide a fixed probability of winning but an amount to be won which differs between the individuals (e.g., Roth and Malouf, 1979; Roth et al., 1981), or a 'shrinking pie' game in which the 'pie' shrinks faster for one party than for the other (e.g., Weg et al., 1990). The complexity associated with such asymmetric situations can support different, opposing, interpretations of fairness (for a review on different interpretations of fairness see Konow (2005), and Cappelen et al. (2007, 2013) for experiments demonstrating the heterogeneity of fairness views). This *fairness dispersion* (Konow, 2005) may result in incompatible claims, leading to inefficiencies such as costly impasses or prolonged time to settle. Additionally, people have a tendency to hold – or at least argue in favor of – concepts of fairness which justifies the most beneficial outcome for themselves (for allocation decisions see Konow (2000), and Messick and Sentis (1979); for ambiguous situations see Dana et al. (2006, 2007), and Haisley and Weber (2010); for contextually rich situations in bargaining see Babcock and Loewenstein (1997), Babcock et al. (1995, 1996), Loewenstein et al. (1993), and Thompson and Loewenstein (1992)).[1]

Birkeland and Tungodden (2014) incorporate fairness into a theoretical model of bargaining between fair-minded and self-interested partners. This model posits that if partners assign sufficient weight to fairness views that are incompatible, they may end up in an impasse solely out of principle. In this paper we examine a situation in which parties who share an asymmetric history have to agree how to divide a joint product. We predicted that an asymmetric history,[2] in which one party benefited at the expense of the other, would result in incompatible views on how to settle a current negotiation. Hence, we expected that negotiators would be more likely to reach agreement if they either shared a symmetric history (i.e., neither party benefited at the expense of the other) or when they both experienced asymmetric histories which were not shared.

When parties are in symmetric situations, an equal split is typically the focal settlement (e.g., Nydegger and Owen, 1974). But as soon as there is asymmetry between parties, multiple views on how to divide resources are likely to arise, even under conditions of full information, which can lead to impasse. In "shrinking pie game" studies by Weg et al. (1990), for example, paired subjects took turns offering divisions of a cash amount that shrank every time the offer was rejected. Settlement rates were lower – and the ultimate amount shared smaller – when the amount shrank faster for one member of a pair than the other. In other bargaining studies (Roth and Malouf, 1979; Roth et al., 1981), paired individuals bargained over relative chances of winning a pre-assigned prize, and the prize to be won was either the same for both parties or different. When subjects were informed of their partner's prize, disadvantaged individuals (i.e., those with the lower prize in the pair) invoked fairness arguments via messaging to justify their claim for getting a greater than 50% chance to win. They argued that they should be compensated for their disadvantage so as to equalize expected earnings.

Not only what happened in the past matters, but also why it happened. In two experiments, Cappelen et al. (2007, 2013) demonstrate that people are in fact willing to make up losses by redistribution if the individual getting the short end of the stick did so as a result of bad luck and not their own selfish choices. Compensating losses resulting from misfortune seems to be a commonly accepted notion of fairness.

Research in organizational behavior finds that when people experience unjust losses (for instance a pay-cut or differing pay rates for the same work), they may also seek to restore equity. For example, Greenberg (1990) found that company employees whose salaries were temporarily cut engaged in increased inventory theft, apparently seeking compensation for the wage loss. In a follow-up experimental study manipulating relative pay-rates, Greenberg (1993) found that subjects assigned a low pay-rate relative to others were more likely to effectively steal from the experimenter. John et al. (2014) similarly found that people who were randomly assigned to a lower pay rate and who knew of others' higher pay rates were more likely to cheat to increase their pay.

[1] Not every study finds evidence for biased invocation of fairness views. Gächter and Riedl (2005), for instance, did not find any evidence for opportunistically endorsed fairness ideals in a study in which parties bargained over splitting a joint product. Likewise, Cappelen et al. (2007) did not find that stakeholders in a dictator allocation adhered to the fairness view that benefited them the most.

[2] We employ the term "history" in its ordinary usage, not in the way it is often used in game theory. History is related to reputation formation in game theory, summarizing past behavior and signaling the person's type (e.g., Roth and Schoumaker, 1983). It can contain information about the partner's intention and, hence, affect expectations about behavior. For instance, when people who share similar history (e.g., similarly generous in a dictator allocation) negotiate, they are found to be more efficient bargainers than pairs composed of opposing types (e.g., Charness, 2000). In contrast, we only refer to the presence (or absence) of an unfair allocation incident in one's past, which one's current partner may or may not share.

In contrast to these previous experiments, we focus on asymmetry due not to differing inputs or unequal potential payoffs between subjects, but rather to the lopsided allocation of the jointly produced gains from a previous interaction. That is, we focus on a situation in which partners share a history involving the unfair allocation of a joint product, with one party having benefited at the expense of the other.

The prior study dealing most directly with the role of history in negotiations was conducted by Camerer and Loewenstein (1993). Subjects were assigned the role of seller or buyer, and negotiated the sale of an item. Both parties were informed of their own reservation price, but not that of their counterpart. All dyads successfully settled this negotiation, after which their private reservation prices were revealed to the other party. The same partners then negotiated the same case a second time, leading this time to a significant proportion of impasses. To explain the higher level of impasses in the second round, the authors argued that those who profited less in the first round tried to recoup their losses in the second round, while those who did well in the first round viewed that as irrelevant to what they should obtain in the second. We provide much stronger evidence for such an account by experimentally manipulating the history of the two parties.

In the present two-stage experiments we manipulated the nature and the "shared-ness" of players' history in stage one. In all conditions in all studies, pairs of subjects worked on a task (answering trivia questions) and their joint earnings were equal to the sum of correct answers provided by both members of the pair. In the first stage of the asymmetric treatment, the joint earnings were allocated entirely to the person who made the greater contribution (answered more questions correctly), creating a patently unfair allocation. In the symmetric treatment, in contrast, the joint proceeds were split equally between the two parties. We hypothesized that a shared, asymmetric history would increase the likelihood of subsequent bargaining impasse in a second stage of interactions between the pair in which they negotiated the split of a new joint product. We expected that the two members of the pair would have incompatible views on the relevance of the past (i.e., stage one) and would, as a result, propose incompatible divisions. The losers from stage one would seek compensation in the form of a more advantageous distribution in stage two, whereas the winners would not share this view. These incompatible views, we predicted, would lead to costly impasses in the second stage. We anticipated that this compensation seeking would not be present when subjects shared a symmetric history (with no unjust allocation mechanism), nor when the loser was re-paired with someone irrelevant to his/her personal history.

By making a pair's history the result not of a deliberately chosen strategy, but rather a lopsided allocation of contribution determined by chance, we examined a situation in which history provided no information about an individual's 'type'. Hence, there was no scope for reputation formation, nor for negative attributions of the other party – either of which could have had effects, other than those we were interested in, on subsequent negotiations.

3. Experiments

In both studies, two subjects were paired and negotiated over how to divide a sum of money. The basic structure of the two experiments was very similar. So, after separately detailing the methods employed in each, we present the results jointly.

In both experiments, anonymously paired subjects interacted in two consecutive stages. The first stage established the history manipulation and the second involved the actual negotiation of interest. The sole effect of the first stage was to establish an asymmetric or symmetric history between partners based on the allocation employed. A survey concluded both studies. Final earnings were contingent upon performance. There was no show-up fee.

In the first experiment, we manipulated whether history between paired partners created symmetric or asymmetric outcomes, with the prediction that pairs with asymmetric histories would be less likely to settle in the negotiation of the second stage. In the first stage, all subjects completed a trivia quiz and each individual's production was determined based on their quiz performance (i.e., number of correct answers times pay-rate). Next, these individual productions were pooled within each pair. In the symmetric condition, the pooled production was then split evenly between both subjects, but in the asymmetric condition the entire joint production was given to the subject who had scored higher on the trivia quiz, or, in the event of a tie, to the randomly selected winner. In the second stage, both subjects again completed a trivia quiz and then negotiated a division of their joint production from this stage.

In the second experiment, all pairs were in the asymmetric condition. The manipulation was whether they played with the same or a different partner in the second stage, ensuring in all cases that a first-stage loser was paired with a winner. The goal of this experiment was to test whether the impasse observed among asymmetric pairs in the first experiment would be reduced if losers and winners were re-paired, so as to maintain the individuals' relative outcomes in the first stage, but to eliminate the "shared-ness" of the history.

In both experiments, immediately after both quiz submissions, we asked subjects to provide estimates of the minimum and maximum they believed they could have scored in that game, as a view into their own estimated contributions to the joint production.

3.1. Experiment 1

The first experiment was run over the course of five sessions on two consecutive days in the fall of 2011 at Corvinus University in Budapest, Hungary. Subjects ($n = 154$) were recruited via flyers and email lists. Upon arrival, they were randomly assigned to one of two treatments (the 'symmetric' or 'asymmetric' condition), and then were assigned to sit in one of the

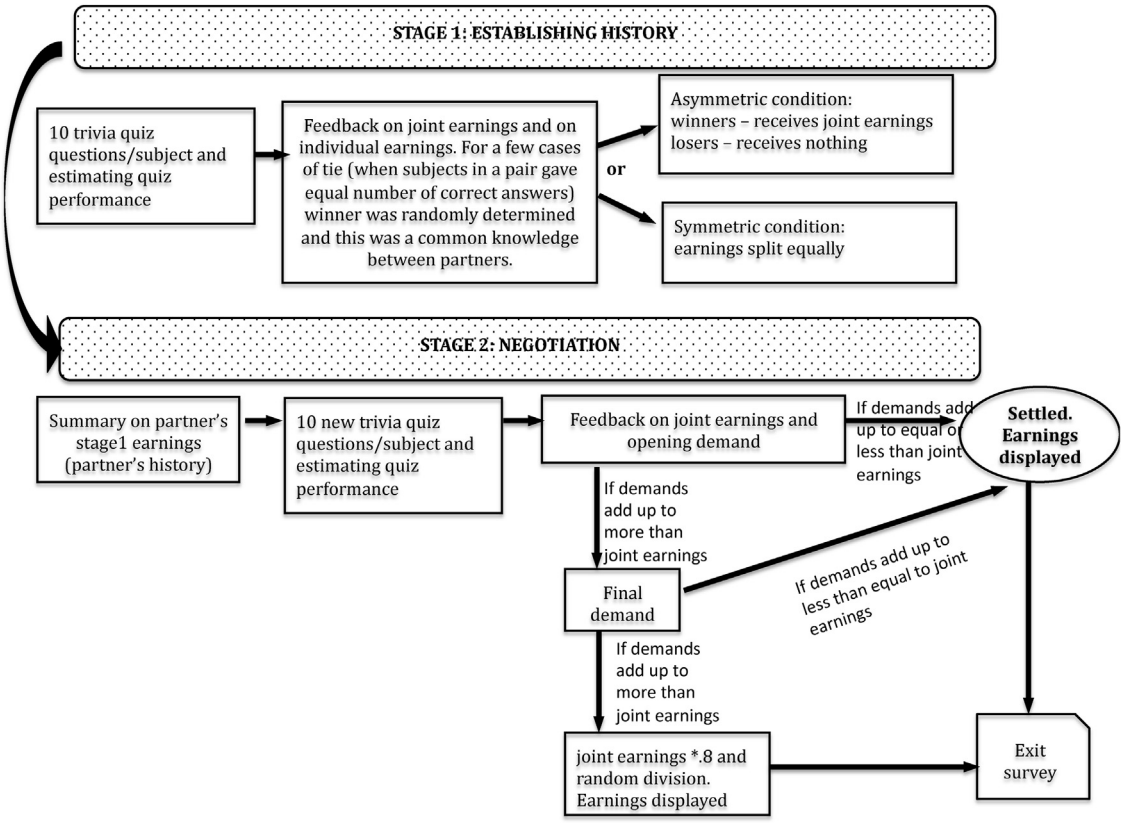

Fig. 1. Basic structure of the two experiments.

two lecture halls, A and B. Equal numbers (roughly half) of the subjects in each lecture hall were assigned to each condition. Subjects received detailed instructions both on printed sheets (translations of original Hungarian experimental materials are reproduced in Appendix B) and also read aloud by the experimenter, and any questions they had were answered individually. When the experiment ended, subjects received their payments in cash. Each experimental session lasted for approximately 30 min.

Pairings were random, each consisting of one subject from hall A and one from hall B. Communication within the pair occurred via paper slips conveyed by experimenters between halls, and was limited to second-stage negotiation demands (in Hungarian Forints or HUF). The top panel of Fig. 1 outlines the experimental flow.

In the first stage, subjects answered a 10-item, binary-response trivia quiz.[3] Each pair was given a random subset of the possible questions, and each member of the pair worked independently on the same ten items. Each correct response resulted in a 90 HUF (then roughly equivalent to $0.45) input to the joint production. After they submitted their answers, subjects estimated the minimum and maximum number of questions they believed they had answered correctly.

In the symmetric condition, a pair's joint earnings were divided equally between the two subjects. In the asymmetric condition, the joint earnings were given *in toto* to only one of the two subjects: either the one who answered more questions correctly or, in the event of a tie (which occurred 10.5% of the time), to one who was randomly chosen.

At this point, subjects knew how much they had jointly produced, and how much of this joint production had been awarded to themselves and to their partners. Importantly, though, and in contrast to previous experiments (e.g., Cappelen et al., 2013; Konow, 2000), subjects were not informed about their individual contribution to the joint earnings (i.e., how many questions they personally had answered correctly). In the few cases of a tie (when the winner was randomly determined), this was disclosed to the subjects, and they were told that the recipient of the full amount had been determined randomly.

The second stage in the experiment (see lower panel of Fig. 1) began with a summary of their and their partner's stage-one history (i.e., both individuals' earnings and how the division was made).[4] The two subjects then independently answered ten new questions and again provided a minimum and maximum estimate of how many questions they had answered correctly.

[3] Sixty percent of the trivia questions were selected from the standard Hungarian high school curriculum and chosen to be easy for the subjects to answer correctly. The other 40% were advanced questions from fields such as math, arts, geography, physics and history, selected to be sufficiently difficult so that performance would be largely a matter of chance. This way being the winner in stage one (in asymmetric conditions) was largely due to chance.

[4] This is when subjects in the different-partner condition first learned of their new partner's results from the first stage. To maintain consistency across conditions, it was also shown in the same-partner conditions, even though the information would not have been new to them.

Joint earnings were calculated and reported as in stage one, but this time with no indication of who (if either) had answered more correctly. The negotiation phase then began.

The negotiation, a double-auction (Myerson and Satterthwaite, 1983; for its use in a behaviorally oriented study see Valley et al. (2002)) was unfolded in two rounds. In a given round, both members of a pair simultaneously submitted their demands. No other communication (e.g., messaging, etc.) was permitted. In the first round, each subject was asked to indicate how much money he wanted for himself from the joint earnings. If the sum of the pair's first round demands was equal to the joint production of the second stage, they settled, and both players' earnings were displayed to them. If the sum was less than the amount to be distributed, then the unclaimed portion was split evenly and added to their respective demands, resulting in settlement as above. If the sum was more than the pie, then they failed to agree and entered the second (and final) round of negotiation. This round proceeded identically to the first except that, in the case of non-agreement, the sum was multiplied by 0.8, and divided randomly between the two (with all divisions equally likely). They were then informed of their own and their partner's stage-two earnings.

Finally, everyone was informed of his or her total earnings in the experiment. An eight-item, post-experimental survey inquired about their views on fairness and fair behavior in the game, their beliefs about whether losers in the first stage should be compensated in the second stage (only in the asymmetric condition, where winners/losers existed), how happy they felt with the results, and how fair they perceived their partners' behavior to have been.

3.2. Experiment 2

The flow of experiment two was almost identical to that of experiment one, although this one was programmed in Flash and administered by computer. Correct trivia answers were worth 100 (instead of 90) HUF. It was conducted in 25 group sessions in spring 2012 at computer facilities at the Corvinus University. Each group session lasted approximately 20 min. All subjects in a group sat in the same room, in front of a computer, and were paired with an unknown person in the same room. In this experiment, a slightly higher proportion ended up with tied scores in the first game (13.5% in total, comprising 15.5% of subjects in the different-partner condition and 11.5% of those in the same-partner condition).

4. Results

Combining the data from the two experiments, there were altogether 392 subjects (196 pairs) in three pair-level treatments,[5] broken down as follows: there were 78 subjects (39 pairs) in the symmetric history (with same-partners) condition from the first experiment. Pooling the identical conditions from both experiments yielded 198 subjects (99 pairs) in the asymmetric history, same-partner treatment. Finally, there were 116 subjects (58 pairs) in the asymmetric history, different-partner treatment from the second experiment.

Key demographics did not differ across treatments. Ninety-six percent of the subjects were currently enrolled in higher education, and 57% were males. The median income level was within the second-lowest quartile of the Hungarian population, and the mean age in years was 21 (3.03). For detailed demographics see Table A1 in Appendix A.

Our key prediction was that pairs in the asymmetric same-partner condition would be more likely to reach an impasse than those in the symmetric and asymmetric different-partner conditions. Consistent with this prediction, 27.7% of asymmetric-same pairs reached impasse – roughly three times more than the 7.7% and 8.6% observed in the symmetric and asymmetric-different conditions, respectively. Table 1 presents a logistic regression which shows that these differences are significant, with odds ratios of 0.18 and 0.32 after controlling for experiment wave (since the asymmetric same-partner condition was collected in two different experiments).

Next, we investigate individual behavior, to gain insight into the etiology of impasses. In the asymmetric conditions, there were four individual-level cells formed by crossing the stage-one outcome (won/lost) with stage-two pairing scheme (same/different partner).[6] In the symmetric condition there were no losers or winners, so both parties' results are included within a single column.

Table 2 presents first and second round demands by individuals in different experimental conditions, as well as statistical tests of the differences between key comparison groups. It provides partial support for the idea that losers and winners had different views on how to divide the joint earnings, and that this depended on whether they bargained with the same or a different partner.[7] Note that five same-partner losers and two same-partner winners claimed the whole production in their opening demand, as did three same-partner losers in their final demands.[8]

[5] We distinguish between pair- and individual-level factors. This is necessary, since within asymmetric pairs we always had two antagonistically manipulated individuals (i.e., losers and winners).

[6] Although subjects were not, strictly speaking, randomized to stage one outcome, we argue that assignment was practically random due to the choice of trivia questions on which performance should have been effectively random.

[7] To compare individuals' demands (in HUF) with their estimated and actual performance (in number correct) across the two experiments (where payments differed slightly) while accounting for the total size of the joint production, we treat all demands and estimated contributions as proportions of the amounts to be divided. Differences between the two studies were, in fact, minuscule.

[8] Stage-two mean number trivia correct was about ½ question higher among the symmetric cell (7.1) than the rest, the latter of which did not significantly differ from each other (their pooled mean is 6.6). First- and second-stage individual numbers trivia correct were uncorrelated, with Pearson's $r = 0.04$.

Table 1
Logistic regression of impasse by treatment and experimental wave. Pair-level analysis. Compared to the asymmetric same-partner reference, both symmetric same-partner and asymmetric different-partner conditions have significantly lower incidence of impasse. Experimental wave has no effect.

Constant	−1.21***
	(0.30)
Symmetric	−1.71**
	(0.70)
Different-partner	−1.15**
	(0.56)
Experiment 2	0.44
	(0.46)
χ^2	12.51***
df	3
N (pairs)	196

Standard errors in parentheses.
**$p \leq 0.05$, ***$p \leq 0.01$.
Note: Coefficients are presented on the log odds scale.

Same-partner losers' opening demands (row one in top panel) did differ from those of different-partner losers and symmetric subjects, but not from same-partner winners. By the second and final round, and conditional on first-round disagreement,[9] same-partner losers' final demand did exceed each of these other groups' (first row in the lower panel). This means that same-partner losers asked for more than same-partner winners, different-partner losers and symmetric subjects in their final demands. In addition, from the last row of this table we see that same-partner losers were more likely to 'hold out' (i.e., demand the same amount in the second round after a first-round disagreement) than were same-partner winners or symmetric subjects, but not significantly more than different-partner losers (although the direction is as predicted; 13% more same-partner losers insisted on their demands than different-partner losers).[10] This, we speculate, is an indication that same-partner losers viewed their initial demand as fair, rather than as strategic.

It may be revealing to compare actual demands with maximum and minimum estimated contributions (numbers of questions answered correctly on the quizzes). However, since the elicitation of these beliefs was not incentivized, their veracity is uncertain. Therefore, we present these analyses, as well as analyses of the subjective survey questions, in Appendix A.

5. Discussion and conclusions

Our goal was to demonstrate that a dyadic relationship featuring a mutual, asymmetric history provides more fertile ground for impasse than one in which the parties either arrive at the negotiation with symmetric histories (in which neither previously had the upper hand), or with asymmetric histories that are not linked with one another. Pairs who had a previous production which was awarded entirely to one of them at the expense of the other were less likely to agree on how to divide a new joint production – even at the cost of losing 20% of the pie and being subject to a random division. It was not their individual history that had this effect; there was no excess of impasse when winners and losers were paired with different losers and winners (respectively), but only when they were re-paired with the same ones. These results demonstrate that the unfortunate party's wish for compensation is often unrequited by the fortunate one, leading to costly impasses.

In our study we analyzed average demands and looked at subjects' opening and final demands and their insistence upon them.[11] When it came to demands, and especially final demands, same-partner losers asked for a significantly greater share of the joint production than their winner partners, different-partner losers and symmetric players. In addition, same-partner losers were more insistent upon their demands than same-partner winners or symmetric subjects (but did not differ in this regard from different-partner losers, although the latter did not reach impasse as often by virtue of making more modest opening demands). Same-partner losers' failed claims for compensation from the party with whom they shared history suggest that impasse arose from incompatible notions about the appropriateness of restitution. This pattern is consistent with previous literature on equity-restoration (e.g., Greenberg, 1993, 1990), which finds that, after experiencing an unjust financial loss (such as a wage-cut), people want to restore equity. It is also consistent with Cappelen et al. (2007, 2013), in which spectators and some stakeholders were willing to redistribute losses if the lopsided contribution was due to a lower assigned return rate on investments, or just being unlucky in investment decisions. In our study, we suspect that

[9] This is a necessary distinction, since reaching this round may, e.g., select for more inherently intransigent individuals. Even if that is the case, individual intransigence should be distributed the same across conditions, and so any difference observed between conditions should still be indicative of treatment effects conditional on first round impasse. Since we will only compare final demand based on effectively randomized attributes, no endogeneity is introduced.
[10] To verify that these findings are not driven solely by the randomly chosen winners/losers (i.e. where performance was equal), we compared opening/final demands and holding-out percentage between the random and non-random subsets of the conditions compared here. With the borderline exception of final demand, no significant differences were detected (see Table A2 in Appendix A).
[11] Analyzing demands is a similar approach to Gächter and Riedl (2005).

Table 2
Opening, final demands and holding out proportions for each group.

	Same-partner loser $N = 99$	**Same-partner winner $N = 99$**	**Different-partner loser $N = 58$**	**Different-partner winner $N = 58$**	**Symmetric $N = 78$**	**Same-partner loser vs same-partner winner**	**Same-partner loser vs different-partner loser**	**Same-partner loser vs symmetric**
Opening demand mean (SD)	0.55 (0.16)	0.54 (0.11)	0.51 (0.10)	0.52 (0.07)	0.51 (0.07)	$t(172) = 0.74$	$t(155) = 2.01^{**}$	$t(166) = 2.35^{**}$
Those who failed to settle in first round								
	Same-partner loser $N = 59$	**Same-partner winner $N = 59$**	**Different-partner loser $N = 29$**	**Different-partner winner $N = 29$**	**Symmetric $N = 28$**	**Same-partner loser vs same-partner winner**	**Same-partner loser vs different-partner loser**	**Same-partner loser vs symmetric**
Final demand mean (SD)	0.55 (0.15)	0.47 (0.10)	0.49 (0.06)	0.49 (0.08)	0.49 (0.07)	$t(116) = 3.30^{***}$	$t(84) = 2.48^{**}$	$t(85) = 2.10^{**}$
Holding out	41%	14%	28%	24%	18%	$\chi^2(1) = 10.98^{***}$	$\chi^2(1) = 1.44$	$\chi^2(1) = 4.45^{**}$

Degrees of freedom account for whether tests assume equal or unequal variances.
$^{**}p \leq 0.05$, $^{***}p \leq 0.01$.

compensation seeking was a form of redistribution request for an unjust loss, since the loser was not responsible for receiving none of his stage-one share. However, unlike Cappelen et al. (2007, 2013), or Konow (2000), we are unable to determine whether claims were supported by any fairness view and, if so, whether subjects opportunistically endorsed the fairness ideal that was most advantageous to them.

Finally, we consider the comparison of actual demands with believed minimum and maximum contributions. As noted, elicitation of these beliefs was not incentivized, leading to some uncertainty about what they truly reflect. With these qualifications in mind, however (and as detailed in Appendix A), it is perhaps still interesting that same-partner losers asked for their maximum estimated contributions while individuals in all other roles and conditions asked for less than their maximum estimated contribution.

5.1. Limitations

Although we suspect that the increased prevalence of bargaining impasse among pairs with shared, asymmetric, history is due to the interplay between history and self-serving bias, further research could provide more definitive tests of whether demands were justified by fairness views – perhaps by permitting, and examining the content of, messaging between partners. Another approach would be to elicit incentivized beliefs from each partner just before the negotiation, about how they think a neutral third party would split their joint earnings. This would allow us to ascertain their true beliefs about fair compensation for the first round outcomes, and to assess the extent to which these differ between roles and experimental conditions.

Another design choice and potential limitation of our studies is that, unlike in other works on dividing joint products (e.g., Cappelen et al., 2007; Konow, 2000), we did not inform subjects about their exact contribution to the joint earnings. In many if not most situations (e.g., workplace collaborations), this is probably realistic; people are often not aware of how much they contribute to a joint product; yet there are certainly situations, such as investments, in which different investors contribute different (known) amounts, where different individuals' contributions are common knowledge.

Finally, throughout the negotiation, subjects were never informed about their partner's demands, but only about whether they had made a deal. This feature is different from many negotiations in which parties exchange specific offers, even if they rarely reveal their reservation prices.

In sum, our results support the idea that bargaining impasse is more likely to happen between people with an imbalanced history, in which one party gained at the expense of the other. The current research helps to explain both why such disputes are so common in the world and why invocations of the past seem so common within them.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.jebo.2015.05.016.

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