

# The Myth of the Male Negotiator: Gender's Effect on Negotiation Strategies and Outcomes

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November 30, 2020

## Abstract

Conventional wisdom holds that women are worse negotiators than men. However, in an incentivized negotiation with explicit verbal communication, we find that women perform equally well compared to men, contrary to a control game without communication where men perform better. This is driven by men's performance against male partners, and more specifically their performance when they *know* their partner is male. Using chat transcripts to classify the negotiation approaches used, we show that men over-use aggressive negotiation strategies against known male partners, increasing mis-match and reducing their payoffs. Due to this, male-male pairs under-perform every other pair type. In contrast, female negotiators create joint gains without reducing their individual payoffs. Our findings suggest that verbal communication may trigger "toxic masculinity" that undoes men's advantage in one-shot non-communication games.

**Keywords:** gender differences, negotiations, experimental economics

**JEL Classifications:** C91, J16

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# 1 Introduction

Conventional wisdom holds that men outperform women in negotiations. However, this popular tale has surprisingly little empirical support. We know that women negotiate *less* than men (Leibbrandt and List, 2015; Small et al., 2007; Exley, Niederle and Vesterlund, 2016). We also know that outside observers rate their performance worse (Bowles, Babcock and Lai, 2007; Tinsley et al., 2009; Bowles, 2012; Bowles and Babcock, 2013; Amanatullah and Tinsley, 2013). But do they actually get less at the negotiating table?

Apparent evidence for this gender gap in negotiation performance actually comes from either one-shot bargaining games (i.e., ultimatum or dictator games) that explicitly do not have a communication feature (Eckel and Grossman, 2001; Solnick, 2001; Sutter et al., 2009; Ridgon, 2012; Demiral and Mollerstrom, 2017; Eckel, De Oliveira and Grossman, 2008) or alternating bargaining with numeric offers only (Dittrich, Knabe and Leipold, 2012; Andersen et al., 2015; Hernandez-Arenaz and Iribarri, 2016, 2018). However, outside the laboratory setting, rarely do negotiations occur in a setting without verbal or written communication. If verbal communication is the essence of negotiation in practice, we lack incentivized evidence of relative performance in this crucial domain.<sup>1</sup>

In this paper, we fill this gap by measuring relative outcomes in an incentivized verbal negotiation. We might expect that the presence of verbal communication would exacerbate the differences found in the no-communication bargaining literature, since men might exploit women's gender to target them with more aggressive communication strategies, mirroring the finding in non-communication games where men play more "hawkishly" toward female partners, anticipating a more "dovish" response (Eckel and Grossman, 2001; Holm, 2000; Ben-Ner et al., 2004; Houser and Schunk, 2009).<sup>2</sup> What we find is precisely the opposite: the presence of verbal communication appears to "undo" men's advantage in the control game, where we replicate the literature's findings.

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<sup>1</sup>There is evidence from other fields that examines performance in scenarios with no monetary incentives, such as classroom negotiation exercises (Bowles, Babcock and McGinn, 2005; Kray, Galinsky and Thompson, 2002; Kray, Thompson and Galinsky, 2001; Walters, Stuhlmacher and Meyer, 1998; Stuhlmacher and Walters, 1999; Mazei et al., 2015).

<sup>2</sup>Moreover, the fact that women have been shown to be more generous, community-minded, and inequality-averse in experimental games (Bolton and Katok, 1995; Eckel and Grossman, 1998; Andreoni and Vesterlund, 2001; Heinz, Juranek and Rau, 2012; Croson and Gneezy, 2009a) provides further evidence that targeting them with more hawkish behavior could pay off.

The negotiation we implement involves participants bargaining verbally, via computer chat, over \$20. The money can be split with \$15 for one party and \$5 for the other, or vice versa, but if no agreement is reached both participants receive \$0. Thus, in this negotiation there is scope for both value creation, by ensuring an agreement is made, and distributive bargaining, in deciding how that agreement should split the pie. The negotiation game was designed such that the payoffs mirror a Battle of the Sexes game, thus we can also implement a control game that aligns with existing literature on the role of gender information.

In the control version, men perform better than women on average, in line with one-shot bargaining literature without communication. But, the presence of verbal communication more than reverses this advantage, resulting in statistically equal payoffs in the negotiation game. By varying whether partner gender is known (via a partner information sheet), we can determine that this is driven by men's contrasting approaches with and without communication when they know their partner's gender. Without verbal communication, men use gender information to optimally tailor their strategy, in line with the literature, behaving more "hawkishly" toward women and more "dovishly" toward other men. In the negotiation game, however, men appear to amp up aggressiveness against other men, choosing \$15 more frequently.

By analyzing the natural language data created by the negotiation chat transcripts, we can show this contrasting approach appears in the choice of negotiation strategy. We find that with gender information, men choose a starkly more aggressive negotiation style toward men than women, issuing ultimatums a stunning 121% more frequently to (known) male partners than to female partners. This leads to male-male pairs significantly underperforming all other pair types, taking home more than a dollar less in the negotiation. This is driven by the failure to reach an agreement, or mismatch: a more measured negotiation strategy will result in the lower payoff if one fails to secure \$15, but still some monetary gain. A failed ultimatum, on the other hand, may result in a game of chicken where neither party swerves, resulting in \$0. Because of this, male-male partners underperform all other pair types by \$2 (having at least one woman in the negotiation improves negotiation efficiency (the percent of the possible joint payoff captured) by 17%). And, if you knew you were facing a male opponent, you would be better off sending a female partner.

As this behavior only appears when men *know* they are facing other men, it appears

behavioral, rather than payoff maximizing. In fact, the negotiation outcomes indicate that men’s use of aggressive and yielding strategies appear mis-paired with whom they are most effective against. The use of ultimatums, used much more with men, reduces payoffs against male, but not female, partners. Similarly, a friendly approach, used far more frequently against women, increases payoffs against male, but not female partners.

The apparent sub-optimality of these strategies suggests men may derive some social or other non-pecuniary benefit from using aggressive communication against men—a manifestation of “toxic masculinity.” One possibility is that the setting of negotiating against other men directly triggers men’s preferences for competition, and tendency to “over-compete” as in [Niederle and Vesterlund \(2007\)](#). Such behavior could be evolutionary, aligning with the need to compete to reproduce (e.g., the evolution of over-sized antlers in bull elk [Frank \(2011\)](#)). However, behavior from a winner-take-all setting may be maladaptive in a setting with a range of monetary payoffs, and thus men could be financially worse off in settings that activate these instincts.

Our experiment thus shows that situations with communication may be fundamentally different than games with no interaction. This finding highlights that gendered results from one-shot and alternating bargaining games without communication may be limited in their external validity as “negotiation” experiments, since most negotiations involve at least some communication.<sup>3</sup> Our findings *with* verbal communication show men unable to tamp down on instincts to compete aggressively against other men, resulting in more failed negotiations and lower payoffs, calling into question the myth of the great male negotiator.

The remainder of the paper proceeds as follows: Section 2 presents the experimental design, Section 3 describes our results, and Section 4 concludes.

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<sup>3</sup>The few examples in the literature with actual verbal communication use designated bargaining scripts, and thus are more like audit studies of the target’s gender biases. Even then, results are mixed, with women achieving better outcomes in some circumstances. [Castillo et al. \(2013\)](#) shows women get lower quotes from taxis, and [Busse, Israeli and Zettelmeyer \(2017\)](#) shows that while women who signal they are uninformed get higher quotes than men, women are more likely to be offered price concessions. [Andersen et al. \(2015\)](#) also contains an audit element, and finds that patrilocal versus matrilocal traditions affect response to male versus female bargainers. [Exley, Niederle and Vesterlund \(2016\)](#) also uses verbal communication and find no gender differences in communication strategy; however, partner gender information is not revealed in their experiment, as such gendered social norms may not be at play.

## 2 Experimental Design

Our experiment investigates the role of gender in negotiations using an incentive compatible negotiation game with a neutral frame.<sup>4</sup> Participants are matched in pairs in a given round and negotiate how to divide \$20. At the conclusion of the negotiation, each participant can choose either \$15 for themselves or \$5 for themselves. If they agree, meaning one chooses \$15 while one chooses \$5, the split is implemented and participants receive their respective shares as earnings. If they fail to agree, that is, both choose \$15 or \$5, then they both get \$0. Notice, these payoffs mirror those from a standard Battle of the Sexes game:

		Participant 2	
		A	B
		A	(15, 5) (0,0)
Participant 1	A	(15, 5) (0,0)	
	B	(0, 0) (5, 15)	

In the negotiation game, partners were allowed to communicate via unstructured chat for two and a half minutes. After the expiration of the chat period, participants simultaneously made their choices without further communication. All participants also played a control game without communication, where participants play the same game but simply make their choices simultaneously. This allows us to separately identify the effect of verbal communication and compare it to outcomes in one-shot bargaining literature.

We randomized whether participants were informed or not of their partner’s gender at the session level. To inform participants of their partner’s gender without making it overly salient (and cuing this as a gender study), *all* negotiating pairs were shown a partner information sheet with five plausibly relevant, but actually substantively meaningless, partner characteristics prior to making their choices.<sup>5</sup> In the “informed” condition, an additional line containing their partner’s gender was simply inserted as the first characteristic (see Appendix B Figure B2).

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<sup>4</sup>The experiment was conducted using z-Tree (Fischbacher, 2007).

<sup>5</sup>The five characteristics revealed in the partner information sheet were: if their partner (1) is left- or right-handed; (2) is an only child; (3) their month of birth; (4) could roll their tongue; and (5) had hitchhiker thumbs. Appendix Table A1 show these characteristics are not different for men and women.

In total, we have four conditions: (1) an informed negotiation game, (2) an uninformed negotiation game, (3) an informed control (non-communication) game, and (4) an uninformed control (non-communication) game.<sup>6</sup>

The informed negotiation game can be thought of as the closest stand-in for real negotiations, since, in practice, individuals rarely negotiate without actual communication or are able to hide their gender. While the control game serves as a baseline on behavior that mirrors the literature, the uninformed negotiation game serves to isolate the role of gender information in creating the dynamics observed.

In the control game, there are two pure strategy equilibria of (\$15, \$5) or (\$5, \$15). There is also a mixed strategy equilibrium, where each participant chooses \$15 for themselves 75% of the time, leading to an expected payoff of \$3.75, which is a lower payoff than one would achieve choosing randomly.

Like a typical negotiation, payoffs in our game are set up such that both participants prefer an agreement to their outside option of \$0, but there is disagreement over whom the agreement favors (that is, who will choose \$15 for themselves). As there is no theoretical prediction for which one of the pure strategy equilibria will be selected, there is scope for the ultimate outcome to depend on the effectiveness of each party's communication.

## 2.1 Experimental Procedure

A total of 232 subjects participated in the experiment, 122 in the informed condition and 110 in the uninformed condition, with equal gender split, yielding over 1800 observations.<sup>7</sup> The “informed” condition was varied at the session level so instructions could be read out loud. Subjects in the informed and uninformed conditions are balanced on all characteristics with the exception of being a US citizen.<sup>8</sup>

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<sup>6</sup>See Appendix B for experimental sequence.

<sup>7</sup>Participants are students from the University of Pennsylvania across a wide range of disciplines. They participated in 1 of 21 sessions at the Wharton Behavioral Lab in October 2016. We restricted only an equal number of women and men to play the game, in order to have sufficient observations for male-female pairs. If there were additional women or men in the session, these extra subjects were diverted to a separate game, and excluded from our sample. The WBL subject pool skews female, and thus these exclusions were entirely female (and randomly selected). We exclude data from three sessions that had only one male participant.

<sup>8</sup>See Appendix Table A2. Our results are robust to controlling for a number of individual controls, including being a US citizen, and session controls.

In each session, subjects played a total of eight rounds with their partner randomly assigned in each round. First, subjects answer a pre-survey to populate the partner information sheet. Then participants played four rounds of the control game, followed by four rounds of the negotiation game, thus the subject pool in both games is identical. No information about the outcomes of each round was revealed until the end to limit learning effects.<sup>9</sup> After all eight rounds, subjects also answered a post-survey, then one round is randomly selected and subjects received their earnings from that round (in addition to a show-up fee). Average earnings were over \$17 including a show up fee of \$10 upon completion of the study.

Our design embeds Battle of the Sexes payoffs in a game with and without a negotiation setting with explicit verbal communication. While all participants played the control game first, we note that all participant played two rounds against a computer to practice and gain experience with the payoff structure. As such, participants should already know how the game is played in the control and negotiation game. In addition, as shown in Section 3, we replicate the standard Battle of the Sexes game results in our control game with and without gender information.<sup>10</sup>

## 2.2 Qualitative Coding

The 464 negotiation conversations from the experiment provide a rich dataset to understand specific communication strategies and styles used. To analyze the negotiation transcripts, we used 310 Amazon Mechanical Turk (MTurk) workers to classify chat transcripts according to definitions we provided.<sup>11</sup> MTurk workers were blind to the gender of participants, whether participants were informed of their partner’s gender, and the overall objective of the study. On average, five different MTurk workers classified each negotiation transcript. We use the average score given by the MTurk workers for each communication measure in each negotiation.

Our key metric of endogenous negotiation strategy was the choice to issue an *ultimatum*.

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<sup>9</sup>Prior to the eight game rounds, subjects played two practice rounds of the control game with the same payoffs against a computer to understand the game, this also minimizes in-game learning (and we control for order effects).

<sup>10</sup>Additionally, the key result is that the introduction of communication affects men and women differently, which is unlikely to stem from an order effect.

<sup>11</sup>See Appendix C for negotiation transcript coding protocol.

This is defined as one negotiating party intransigently insisting they are choosing \$15, and refusing to entertain any discussion to the contrary.<sup>12</sup> If credible, this makes the other party’s best response to choose \$5, or face mismatch and thus \$0, essentially turning two-way communication into one-way communication.<sup>13</sup> Of course, ultimatums are not always effective. They can be met with countervailing “commitment” from the other partner, or may destroy goodwill in the negotiation and result in mismatch.

On the other side of the communication strategy spectrum are negotiators who choose a non-aggressive, or “friendly” approach. We defined being *friendly* as a negotiator who is trying to build up-front rapport, and acts friendly towards their negotiating partner.<sup>14</sup> A friendly negotiator aims to ingratiate themselves with their partner without automatically giving up and taking the lower payoff. The MTurk workers additionally coded several other pre-defined metrics to examine mechanisms and test the robustness of our results. Definitions and usage rates for these secondary measures can be found in Appendix Table A5.

### 3 Results

Results are from 232 subjects — 122 in the informed condition and 110 in the uninformed condition, with equal gender distribution — yielding over 1800 individual-level observations. Figure 1 summarizes the payoffs in all treatments by treatment and gender-pair type. The payoff split between male and female partners is shown in mixed-gender pairs.

Table 1 shows a summary of results for all treatments and gender pairings. Panel A

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<sup>12</sup>Some participants described this trade-off explicitly to their partners, saying, “I’m choosing 15 no matter what. So if you want anything you only have one option.” The definition of *ultimatum* provided to MTurk workers is as follows: using an *ultimatum* is “when a person starts the conversation (not including saying ‘hi’ or other pleasantries) stating that they will pick \$15 for themselves regardless of what the other person is choosing. They have set their mind to this outcome and will not change.” Also see Appendix C.

<sup>13</sup>Previous work on coordination games has shown that while one-way communication can be very effective, two-way communication can sometimes fail to resolve the issue, and becomes, in a sense, no communication. In the presence of one-way communication, if one side communicates their move, the other side has a clear best response to choose the coordinating move. However, with two-way communication, a tussle can develop over who receives their preferred outcome (Cooper et al., 1989).

<sup>14</sup>The definition of *friendly negotiator* provided to MTurk workers is as follows: being a *Friendly Negotiator* is “when the person tries to be friendly and build a relationship with the other person in order to gain their trust. We provided each person some information about the other person (e.g., birthday month, can they roll their tongue, do they have hitchhiker thumbs, etc.), many times, the person will comment on one of these traits.” Also see Appendix C.

presents the rates of choosing \$15 for oneself, Panel B presents rates of “agreement” on either split at the pair-level, and Panel C presents the resulting payoffs.

TABLE 1: PAYOFF, AGREEMENT, AND CHOOSING \$15

Panel A: Choosing \$15				
Game:	Control		Negotiation	
Gender Info:	No	Yes	No	Yes
Men playing men	0.75	0.67	0.59	0.61
Men playing women	0.68	0.76	0.54	0.53
Women playing men	0.67	0.52	0.54	0.54
Women playing women	0.63	0.71	0.58	0.54
Panel B: Agreement				
Game:	Control		Negotiation	
Gender Info:	No	Yes	No	Yes
Men playing men	0.43	0.48	0.82	0.78
Men playing women	0.38	0.52	0.90	0.91
Women playing men	"	"	"	"
Women playing women	0.43	0.41	0.84	0.92
Panel C: Payoff				
Game:	Control		Negotiation	
Gender Info:	No	Yes	No	Yes
Men playing men	4.31	4.82	8.24	7.80
Men playing women	3.86	6.36	8.98	9.06
Women playing men	3.77	3.94	8.98	9.13
Women playing women	4.31	4.11	8.43	9.20

*Notes:* Table 1 reports the average rate of choosing \$15 for themselves, agreement rate, and resulting payoffs by gender-pair and treatment.

Our results without communication replicate the one-shot game literature where gender information acts as a focal point, increasing coordination and joint payoff, but primarily benefiting men (e.g., Holm, 2000). In the control game without communication, results are close to the mixed strategy equilibrium.<sup>15</sup> When informed about gender, men play more

<sup>15</sup>The mixed strategy equilibrium is to choose \$15 75% of the time, enough to eliminate the advantage to the other person of choosing \$15 100% of the time, but ironically producing a smaller payoff than both

hawkishly against female partners, who also play more dovishly, which increases rates of agreement and payoff for these pairings. Men also gain slightly against male partners by reducing their rate of choosing \$15.

As expected, communication reduces rates of choosing \$15, increases reaching an agreement, and increases joint payoffs regardless of gender information. There are also no notable gender asymmetries with communication without gender information. Men and women receive similar payoffs, and in mixed gender pairs, “split the pot” exactly equally. These results create doubt as to the inherent superiority of male negotiators, since in this incentivized negotiation, women perform equally well. The effects of introducing gender information in the negotiation game are starkly different compared to the control game. Introducing gender information does not change the payoff allocation between male and female partners in mixed gender pairs. Moreover, when informed about gender, men playing men have notably lower agreement rates and lower payoffs than other pair types.

Figure 1 illustrates the payoff to each pair and its split visually. One can observe that while men have a significant advantage in male-female pairs with no communication (see Panel (B)), they have no advantage in the negotiation game (see Panel (D)). Moreover, male-male pairs significantly under-perform in this game. Figure A1 shows the frequency of reaching each possible outcome, \$5, \$15, or \$0, by each gender and partner type. We explore these contrasts more formally in the following section.

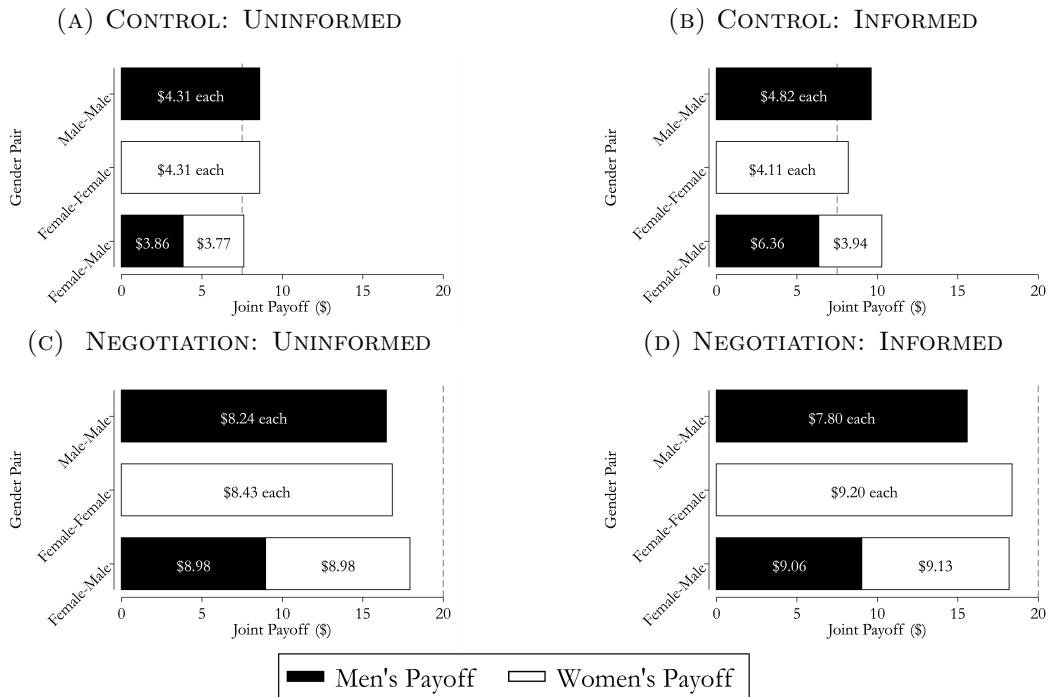
### 3.1 Impact of Gender and Communication on Payoffs

If men were especially skilled negotiators, one might think that the presence of verbal communication in the game would serve as an advantage to them. To examine this, we test the impact of gender interacted with the negotiation treatment, using the following specification:

$$Payoff_i = \beta_0 + \beta_1 male_i \times negotiation_i + \beta_2 male_i + \beta_3 negotiation_i + \beta_4 X_i + \epsilon_i,$$

where  $negotiation_i$  represents the communication treatment;  $male_i$  reflects whether the subject is male, and  $X_i$  reflects controls for session timing, round order, and subject choosing randomly.

FIGURE 1: PAYOFFS BY TREATMENT AND GENDER-PAIR TYPE



*Notes:* Payoff by treatment and gender-pair type. The payoff split between male and female partners is shown in mixed-gender pairs. Panel A presents results from the uninformed control game, Panel B presents results for the informed control game, Panel C shows results from the uninformed negotiation game, and Panels D show the results from the informed negotiation game.

characteristics, added in even columns.

TABLE 2: PAYOFF BY TREATMENT AND GENDER

	Dependent variable: Payoff							
	All		Informed		Uninformed		All	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Male	0.884** (0.397)	1.080*** (0.396)	1.639*** (0.561)	1.964*** (0.531)	0.0455 (0.542)	0.177 (0.539)	0.0455 (0.541)	0.166 (0.555)
Male × Negotiation	-1.250** (0.527)	-1.304** (0.527)	-2.254*** (0.697)	-2.361*** (0.697)	-0.136 (0.784)	-0.136 (0.789)	-0.136 (0.783)	-0.136 (0.785)
Male × Negotiation × Informed							-2.118** (1.047)	-2.224** (1.048)
Male × Informed							1.594** (0.779)	1.740** (0.772)
Negotiation × Informed							0.439 (0.681)	0.545 (0.680)
Informed							-0.00633 (0.519)	0.0676 (0.561)
Negotiation	4.935*** (0.340)	5.271*** (0.614)	5.143*** (0.466)	5.655*** (0.877)	4.705*** (0.498)	4.850*** (0.860)	4.705*** (0.497)	4.986*** (0.695)
Constant	4.019*** (0.260)	5.769*** (1.156)	4.016*** (0.373)	5.362*** (1.559)	4.023*** (0.363)	6.533*** (1.781)	4.023*** (0.362)	5.305*** (1.235)
Ind. Clusters	232	231	122	121	110	110	232	231
Controls		YES		YES		YES		YES
Observations	1856	1848	976	968	880	880	1856	1848
R-Squared	0.122	0.131	0.114	0.138	0.138	0.144	0.127	0.136

*Notes:* Robust standard errors clustered at the individual level are in parentheses. Session controls include day of the week, within day trend, and game round. Individual controls include subject's age, being nonwhite, begin politically liberal, being a US citizen, being a native English speaker, employment status, and the number of sessions completed. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 2, columns (1) and (2), show that men perform worse relative to women in the negotiation game compared to the control game, pooling the informed and uninformed condition. Column (1) shows that men earn \$0.88 more than women in the control game, but in the negotiation game, this effect is more than reversed: their relative payoff is reduced by \$1.25, making their payoffs directionally smaller than women's, although the difference is not significant. Thus, the presence of verbal communication disadvantages men.

Regressions (3) and (4) show results under the informed treatment whereas regressions (5) and (6) restrict to the uninformed treatment. This analysis demonstrates that the effect is entirely driven by the public gender information setting. When informed of gender,

men outperform women in the control game, earning on average \$1.64 more (a substantial effect when average payoffs are around \$4). Relative to this, men earn \$2.25 *less* in the negotiation game. Meanwhile, the uninformed treatment shows that in both games men have no inherent edge over women—both genders perform equally well in terms of payoff.

Regressions (7) and (8) use all the data and interacts the two games and information conditions to confirm that the difference between the informed and uninformed treatments is statistically significant. Viewing the effects this way is informative: The ability to verbally communicate is no advantage to men without gender information, and a disadvantage with gender information. And, the presence of gender information is an advantage without communication, but actually presents a handicap to men when they can communicate.

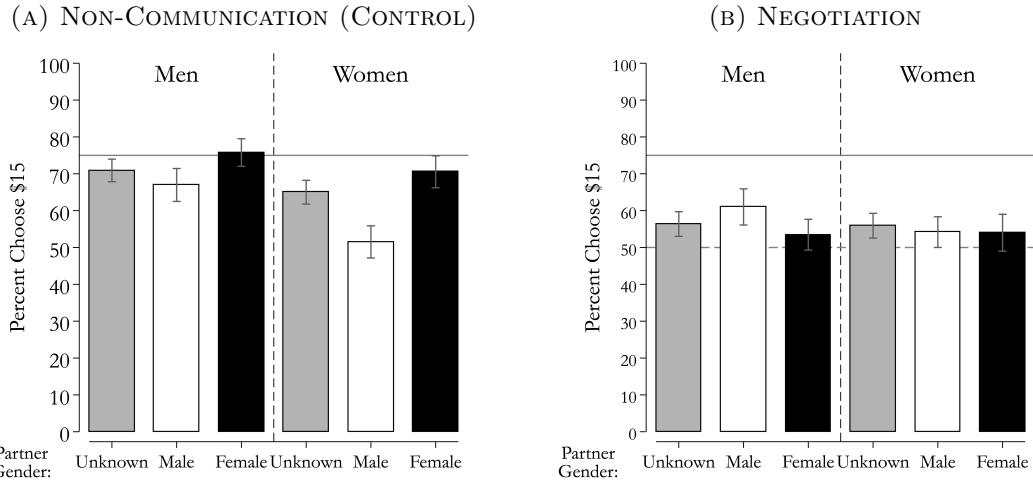
The differing results from a game with the same payoff structure with and without verbal communication demonstrate that non-communication bargaining games may be limited in their external validity as a proxy for “real-world” negotiations, which involve direct communication. Indeed, in this incentivized negotiation with verbal communication, men do not outperform women, and gender information appears to be a hindrance, rather than a benefit to men. The next section explores this effect further.

### 3.2 The Role of Partner Gender

One would think that gender information would allow men to more optimally tailor their strategy toward the partner type that they are facing, as shown in the literature on non-communication games (e.g., [Holm, 2000](#)). Indeed, in the non-communication game, when men are informed of gender, they play more hawkishly against known female partners, choosing \$15 for themselves more often, matching women’s more dovish play, as shown in Figure 2, Panel (A). This results in men’s higher payoff in the control game when partner gender is known. However, in the communication game, shown in Figure 2, Panel (B), this tailoring approach is actually *reversed*, with men actually choosing \$15 more often against known male partners. This inversion of “choice” tailoring with the introduction of communication is statistically significant, shown in Appendix Table A3. Women, by contrast, show no tailoring in choice strategy in the communication game, and rather only a decreased propensity of choosing \$15, given the ability for advance coordination. In the negotiation game, we can also examine tailoring in negotiation strategy, using the chat

transcripts.

FIGURE 2: CHOOSING \$15 BY TREATMENT AND GENDER-PAIR



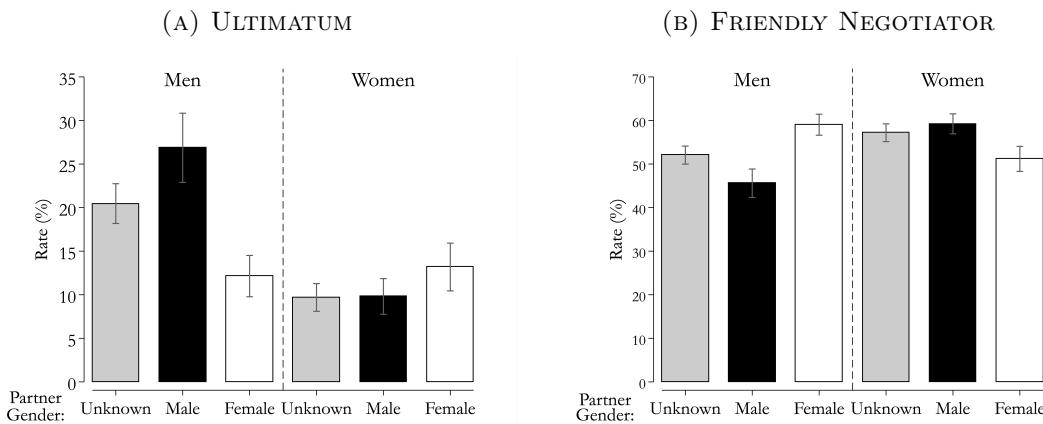
*Notes:* Figure 2 shows the average rate of choosing \$15 for themselves by communication, information condition, and gender pair-type. The gray bars are for subjects who are uninformed of their partner's gender, the white bars are for subjects who are informed that their partner's gender is male, and the black bars are for subjects who are informed that their partner's gender is female. The solid horizontal gray line marks the theoretical mixed strategy equilibrium which is picking \$15 for themselves (\$5 for their partner) 75 percent of the time. The dashed horizontal gray line marks 50 percent probability which denotes equal split and full coordination. Standard errors bars are shown around each mean.

### *Endogenous Negotiation Strategy*

As described in Section 2.2, we coded up how often men and women used different verbal communication strategies against different partners. Figure 3, Panel A shows that men are 121% more likely to use ultimatums against known male partners compared to known female partners. This more than doubling of the rate of issuing *ultimatums* shows a substantial response to gender information. That is, men are endogenously choosing to be considerably more aggressive against male, rather than female, partners when gender information is known. Appendix Table 3 shows that these results are statistically significant at the 1% level in a regression framework.<sup>16</sup>

<sup>16</sup>Interestingly, when men play against known women, they behave similarly to women on average. One could view this as a cooperation spillover from female negotiators.

FIGURE 3: COMMUNICATION STRATEGIES  
BY TREATMENT AND GENDER-PAIR  
NEGOTIATION GAME ONLY



*Notes:* Figure 3 shows the average rate that men and women use aggressive and yielding communication measures by information condition and gender pair-types. The gray bars are for subjects who are uninformed of their partner's gender, the white bars are for subjects who are informed that their partner's gender is male, and the black bars are for subjects who are informed that their partner's gender is female. Standard errors bars are shown around each mean.

To check that this is not specific to *ultimatums* only, we show results for the opposite communication strategy—choosing to strike a *friendly* and collaborative tone in the negotiation. Figure 3, Panel B shows that men use this strategy substantially more against female partners: men are 13.4 percentage points more likely to be *friendly* against known female partners compared to male partners (that is, a 30% increase). Appendix Table 3 shows that these results are statistically significant at the 1% level in a regression framework.

We can demonstrate that this difference in men’s approach to male versus female partners is not simply a joint product of men’s and women’s behavior in the negotiation, but rather an endogenous reaction to the provision of gender information, in Table 3. Focusing on participants in the uninformed treatment, in panel B, we find there is no significant tailoring of men’s strategies. Furthermore, men’s use of *ultimatums* and being *friendly* by partner gender is significantly different when informed versus uninformed (See Appendix Table A4). Our results are also robust to limiting to those who issue ultimatums as a first action, further ruling out that it is a response to the other player’s behavior.

These findings are also supported by a subjective rating of negotiator aggressiveness by MTurk workers (men are rated as much more aggressive toward other men than women) as well as alternative measures of aggressiveness and friendliness, shown in Appendix Table A5. Moreover, men issuing ultimatums against male partners is not merely cheap talk, but rather is highly predictive of ultimately choosing \$15, with a coefficient of 0.563, significant at the 1% level (as shown in Appendix Table A6).

### *Optimal Strategy?*

One explanation for men’s selection of more aggressive negotiation strategies toward known male partners is that it is based on beliefs about who is more receptive to which type of strategy. This would not only run counter to evidence in the literature that women are expected to be more dovish, but also to men’s play in our control game. Moreover, recall the type of game played was varied *within* subject, thus, men’s own actions from the control game indicate they expect more aggressive play by men.

Nonetheless, it is possible that the optimal tailoring approach based on gender could be different in a setting with explicit verbal communication. For example, it might pay to try to “convince” other men aggressively, because the gain in getting the higher payoff

TABLE 3: TAILORING OF COMMUNICATION STRATEGIES BY GENDER AND PARTNER  
 GENDER  
 (INFORMED AND UNINFORMED TREATMENT)

Panel A: Informed Only				
Dependent variable:	Ultimatum		Friendly	
	(1)	(2)	(3)	(4)
Male × Partner Female	-0.181*** (0.055)	-0.184*** (0.056)	0.215*** (0.053)	0.199*** (0.056)
Male	0.171*** (0.060)	0.181*** (0.063)	-0.136*** (0.046)	-0.136*** (0.049)
Partner Female	0.034 (0.029)	0.030 (0.032)	-0.080** (0.034)	-0.067* (0.037)
Constant	0.098*** (0.026)	-0.065 (0.165)	0.592*** (0.027)	0.695*** (0.153)
Ind. Cluster	122	121	122	121
Controls		YES		YES
Observations	488	484	488	484
R-Squared	0	0	0	0

Panel B: Uninformed Only				
Dependent variable:	Ultimatum		Friendly	
	(1)	(2)	(3)	(4)
Male × Partner Female	-0.079 (0.052)	-0.081 (0.051)	0.036 (0.056)	0.043 (0.053)
Male	0.147*** (0.048)	0.127*** (0.046)	-0.070 (0.049)	-0.059 (0.046)
Partner Female	0.039 (0.028)	0.036 (0.031)	-0.006 (0.037)	-0.001 (0.037)
Constant	0.079*** (0.020)	-0.135 (0.252)	0.575*** (0.033)	0.621*** (0.197)
Ind. Cluster	110	110	110	110
Controls		YES		YES
Observations	440	440	440	440
R-Squared	0	0	0	0

*Notes:* Table 3 shows that men's tailoring of negotiation approach also goes in the opposite direction than expected in a regression framework. Men are substantially more likely to use *ultimatums* against male compared to female partners and much more likely to be *friendly* to female compare to male partners when participants are informed of their partner's gender (Panel A). In Panel B, we check that when participants are uninformed there is no significant tailoring of men's strategies. Robust standard errors clustered at the individual level are in parenthesis. Session controls include day of the week, within day trend, and game round. Individual controls include subject's age, being nonwhite, begin politically liberal, being a US citizen, being a native English speaker, employment status, and the number of sessions completed. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

might balance out the loss from lower coordination. Thus we look directly at whether these approaches are optimal given partner responses, although these results are only suggestive given that they are conditioned on endogenously chosen communication strategy.

TABLE 4: PAYOFF BY COMMUNICATION STRATEGIES AND PARTNER GENDER  
(MEN IN NEGOTIATION GAME, INFORMED ARM ONLY)

Communication Strategy:	Dependent variable: Payoff			
	Ultimatum		Friendly	
	(1)	(2)	(3)	(4)
Strategy	-3.029*	-3.384**	3.912*	4.499**
	(1.813)	(1.659)	(2.006)	(1.931)
Strategy × Partner Female	4.753*	5.272*	-5.268**	-5.998**
	(2.692)	(2.916)	(2.401)	(2.415)
Partner Female	0.239	0.185	3.847**	4.218***
	(0.754)	(0.797)	(1.521)	(1.507)
Constant	8.614***	7.975**	6.017***	4.251
	(0.642)	(3.491)	(1.191)	(3.477)
Ind. Cluster	61	61	61	61
Controls		YES		YES
Observations	244	244	244	244
R-Squared	0.033	0.072	0.034	0.074

*Notes:* Table 4 show the payoff for men using *ultimatums* and being *friendly* towards female partners. We find the inverse tailoring observed in the negotiation games is not optimal from a payoff perspective. Robust standard errors clustered at the individual level are in parenthesis. Session controls include day of the week, within day trend, and game round. Individual controls include subject's age, being nonwhite, begin liberal, being a US citizen, being a native English speaker, employment status, and the number of sessions completed.  
Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4 shows the payoff for men using our key communication strategies against female compared to male partners. First, *ultimatums* appears to perform far better against female versus male partners. Regressions (1) and (2) show that men using *ultimatums* against a male partner decreases payoffs by over \$3, while using it against a female partner directionally increases payoffs. This suggests that, when using aggressive negotiation strategies against male partners, the benefit of “forcing” the other party more often does not appear to

outweigh the negative impacts of negotiation breakdown. We can directly see this through the association of issuing ultimatums with mismatching—it dramatically increases mismatch against male partners by more than 50% (coefficient of 0.577, significant at the 1% level, shown in Appendix Table A6, but increases mis-match much less against female partners.

In contrast, we find that being *friendly* performs significantly better against male partners. Table 4 regressions (3) and (4) shows that being *friendly* actually increases payoffs against male partners. Moreover, the interaction coefficient for using it against female partners more than cancels out this effect. That is, against male partners, simply opening with a friendly greeting is correlated with higher payoffs by almost \$4, showing the deep consequences of overly aggressive communication.

Although evidence of communication strategy effectiveness is only suggestive as they may be used by the most effective people, against the most effective targets, the large effect sizes indicate that there should be some marginal people who could benefit monetarily from switching strategies.

### ***Payoff Consequences***

This paradoxical choice of aggressive strategies results in male-male pairs leaving significant value on the table due to negotiation breakdown. Table 5 Panel A shows the payoffs by participants' gender and their partner's gender for all negotiation rounds, both pooled and split into the uninformed and informed conditions. Looking at the pooled sample in columns (1) and (2), men do significantly worse when paired with male partners compared to all other gender pairs, taking home \$0.96 less. This is true even relative to women with a male partner, who are the omitted category in columns (3) and (4). This means that if you knew you were sending a negotiator to face a male partner, you would be better off sending a female, versus male negotiator. The under-performance of men with male partners is driven by the informed condition, where they take home \$1.32 less than other gender pairs. These payoff differences are illustrated in Appendix Figure A2.

These lower payoffs are driven by negotiation breakdown, or mismatch. The problem with issuing ultimatums is that they can result in a game of “chicken,” with both partners committing to choose \$15, and neither “swerving.” A more measured negotiation approach might result in ultimately receiving \$5 if one fails to secure the \$15, whereas an aggressive

TABLE 5: PERFORMANCE OF PAIR TYPES IN NEGOTIATION  
(NEGOTIATION GAME ONLY)

	Panel A: Payoff   Negotiation							
	All				Informed		Uninformed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Men with male partner	-0.961** (0.451)	-0.888* (0.453)	-1.045* (0.540)	-0.941* (0.544)	-1.324** (0.633)	-1.280** (0.644)	-0.581 (0.642)	-0.577 (0.666)
Men with female partner		-0.038 (0.500)	0.099 (0.511)					
Women with female partner			-0.253 (0.476)	-0.324 (0.474)				
Constant	8.981*** (0.205)	11.767*** (1.859)	9.065*** (0.347)	11.918*** (1.907)	9.124*** (0.268)	11.700*** (2.345)	8.817*** (0.316)	12.058*** (3.399)
Pair Clusters	232	231	232	231	122	121	110	110
Controls		YES		YES		YES		YES
Observations	928	924	928	924	488	484	440	440
R-Squared	0.005	0.019	0.005	0.019	0.009	0.027	0.002	0.020

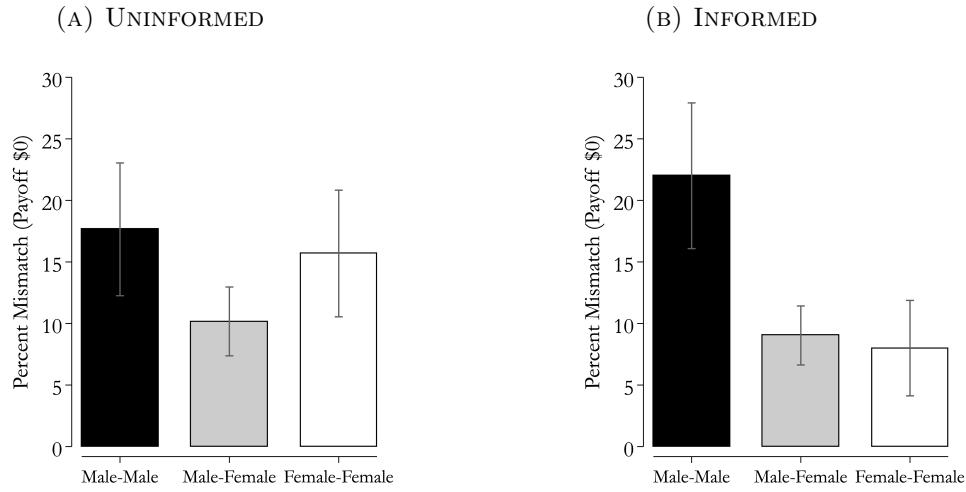
  

	Panel B: Joint Payoff   Negotiation							
	All				Informed		Uninformed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Male-Male Pair	-1.922** (0.856)	-2.134** (0.898)	-2.052** (0.875)	-2.350*** (0.906)	-2.647** (1.245)	-3.478** (1.446)	-1.163 (1.183)	-1.239 (1.211)
Female-Female Pair		-0.468 (0.742)	-0.791 (0.741)					
Constant	17.961*** (0.318)	20.263*** (4.063)	18.092*** (0.364)	20.788*** (4.072)	18.247*** (0.408)	18.129*** (4.745)	17.633*** (0.499)	33.046*** (9.739)
Pair Clusters	464	464	464	464	244	244	220	220
Controls		YES		YES		YES		YES
Observations	464	464	464	464	244	244	220	220
R-Squared	0.015	0.056	0.015	0.059	0.028	0.082	0.005	0.108

*Notes:* Table 5 shows that men in male-male pairs do worst compared to all other pair-types. Having a woman in the negotiation (either on one side or both sides), in the combined sample with both gender information treatments, leads to an approximately \$2 increase in joint payoff. This effect is primarily driven by the public gender information setting. Robust standard errors clustered at the individual level are in parenthesis. Session controls include day of the week, within day trend, and game round. Individual controls include subject's age, being nonwhite, begin liberal, being a US citizen, being a native English speaker, employment status, and the number of sessions completed. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

strategy is more likely to result in \$0. Figure 4 shows that male-male partners receive zero in the negotiation game dramatically more often than other pair types in the informed condition, with twice the rate of mis-matching. In the uninformed condition, both male-male and female-female pairs are somewhat more likely to mismatch than mixed gender pairs.

FIGURE 4: MISMATCH FREQUENCY BY GENDER-PAIR BY INFORMATION CONDITION  
(NEGOTIATION GAME ONLY)



*Notes:* Figure 4 shows the frequency of mismatch (leading to payoff of \$0) by gender-pair and information condition in the negotiation game.

These results are additionally supported by subjective ratings by MTurk workers, showing that men fail to reach a conclusive agreement in the negotiation transcript with known male partners 296% more frequently than against known female partners, shown in Appendix Table A5.

This means that not only do male negotiators destroy value for themselves, but they also decrease the social efficiency of negotiation, seen in the pair-level analysis in Table 5 Panel B. A male-male pair receives a payoff that is \$1.92 lower than any other pair type across the pooled sample, and \$2.65 lower in the informed condition. Another way to think about this is the value of adding a woman to the negotiation: adding at least one woman

into the negotiation increases the joint expected payoff by 17%.

Importantly, the joint gains created by female negotiators do not come at a personal cost: female negotiators perform just as well as or slightly better than male negotiators on average, and significantly better when facing male partners.

### 3.3 Toxic competitiveness?

It seems clear that the choice of aggressive strategies by male partners against known male partners is not a payoff maximizing choice, and thus appears to be driven by non-pecuniary motivations. One possible explanation is that men have a preference against giving men the higher payoff, and for giving female partners the higher payoff. In other words, the negotiation setting created gender-specific altruism. However, gender specific altruism appears inconsistent with men’s behavior in the non-communication game, where they are more dovish toward men and hawkish toward women. If men preferred to “punish” other men and reward women, even at the expense of their own payoffs, we would expect similar behavior in the non-communication game.

Moreover, if men truly had altruistic preferences toward women, and potentially the opposite toward men, then in the presence of communication, they could simply grant the higher payoff to women more often. Instead, we find suggestive evidence that men do try to get the higher payoff for themselves against known female partners, but merely through non-confrontational means. For example, men mention their previous choices more against female versus male partners as a way to get the higher payoff by appealing to a sense of fairness, saying they got \$5 last time, and so should be allowed to take \$15 this time.<sup>17</sup>

If participants are not optimally responding to partner gender information and are not exhibiting gender-specific altruism, what could explain this behavior?<sup>18</sup> The act of negotiating with other men may trigger direct preferences for competition, as shown in Niederle and

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<sup>17</sup>Mentioning previous choices is positively correlated with the strategy of asking for \$15 directly, and negatively correlated with offering \$15 at the outset. Additionally, men are marginally significantly more likely to claim to be alternating their choice as their strategy against female partners, which could be another way to try to get them to agree to go with the lower payoff. See Appendix Table A5.

<sup>18</sup>One other possibility is that participants hold mis-calibrated beliefs about which communication strategy will be most effective against men. However, if this is the case, one might expect men to change direction once they realize their tactic is failing to produce a “yielding” response from other men, and yet they do not (as shown by the high relationship between ultimatums and actually choosing \$15, as well as ultimately mismatching, shown in Appendix Table A6).

[Vesterlund \(2007\)](#), that do not appear against women or when merely choosing an option without first negotiating. Excess male competition may be the natural product of an evolutionary process that is winner-take-all. If males need to be the best in order to reproduce, they may, for example, evolve sub-optimally large antlers to beat out the competition, as described by [Frank \(2011\)](#). Unfortunately, behaviors optimized for a winner-take-all setting may produce negative consequences in situations with financial payoffs, where aggressively trying and failing to win produces a worse outcome than the downside of a more moderated approach.

In regards to women, men may be constrained in their behavior by social norms that dictate chivalry or politeness toward women.<sup>19</sup> From an efficiency stand point, these social norms appear to provide a useful “fire break” to the toxic masculinity exhibited by male-male pairs, which results in significant money going up in smoke.

## 4 Conclusion

In this paper, we developed an incentivized negotiation experiment to study the impact of gender on negotiation strategies and payoffs. We find that situations with communication may be fundamentally different than games without verbal interaction. Relative to a control game with no communication, men do worse compared to women in the same game with communication. This effect is driven by the treatment where participants were informed of their partner’s gender, which we show leads to men exhibiting more aggressive behavior toward male partners.

Men use ultimatums towards male negotiating partners more than twice as often as they do with female negotiating partners. Similarly, men are more likely to use a friendly approach toward female partners than male partners. We present evidence from payoffs that men’s use of ultimatums versus friendly strategies appear mis-paired with whom they are most effective against, even contradicting participant’s own behavior in the non-

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<sup>19</sup>This is consistent with a body of literature showing that complying with norms, rules, and social considerations can create utility that might offset losses from non-payoff maximizing behavior. For example, participants stopping at (meaningless but payoff-costly) “red lights” in a timed lab game ([Kimbrough and Vostroknutov, 2016](#)), participants rejecting low or unfair offers in an ultimatum game ([Kahneman, Knetsch and Thaler, 1986; Thaler, 1988](#)), and participants contributing more to public goods when identified to other players ([Kessler, Low and Singhal, 2017](#)).

communication game. As a result, male-male pairs perform the worst of all pair types, destroying significant value. We posit that men are influenced by behavioral factors in their negotiation behavior, leading them to be over-competitive against other men, at the expense of their own payoff.

Our results align with findings of over-competitiveness by men ([Niederle and Vesterlund, 2007](#)) as well as findings that same sex pairs may perform worse in certain games ([Sutter et al., 2009](#)). Yet our findings stand in direct contradiction to literature that suggests that men are more skilled or effective negotiators, largely based on games without explicit verbal communication. We find that men's over-aggressiveness toward other men disadvantages them in negotiations, and thus that companies may benefit from including female negotiators, especially when facing male negotiators and when there are high costs of negotiation breakdown.

The fact that men's excess aggressiveness appears tempered against female partners may in some cases be a positive for women, particularly in their ability to be effective negotiators. However, even such "benevolent" sexism has been linked to overall sexist beliefs ([Glick and Fiske, 1996](#)). Moreover, [Huang and Low \(2017\)](#) shows that hostile behavior by men toward women in this same negotiation setup increased dramatically immediately following the 2016 Presidential election, demonstrating that social norm constraints on male aggression may be sensitive to context.

More broadly, our results have significant policy implications for the elevation of male negotiating skills and tactics as something to be desired or emulated. There is a large body of literature examining behavioral differences between men and women, and musing on how these differences may ultimately contribute to the gender wage gap (e.g., [Buser, Niederle and Oosterbeek, 2014](#); [Wiswall and Zafar, 2018](#); [Coffman, 2014](#); [Exley and Kessler, 2019](#); [Dohmen and Falk, 2011](#); [Charness and Gneezy, 2012](#); [Croson and Gneezy, 2009b](#)). There is scant examination of when male behavior may actually fail to maximize social welfare, such as in the production of asset bubbles ([Eckel and Füllbrunn, 2015](#)).<sup>20</sup> We show that toxic masculinity in negotiations could be a real threat for value creation, and that it may be wise to consider when competitive instincts are suboptimal for companies wishing to

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<sup>20</sup>This connection has been made in the popular press. For example, Christine Lagarde mused to a reporter: "if Lehman Brothers had been 'Lehman Sisters,' today's economic crisis clearly would look quite different." See ([Dealbook, 2010](#); [NPR, 2014](#)).

maximize profits, rather than rack up binary “wins.” It is worth considering then, when female negotiators should be the ones sent to the table.

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## A Supplemental Results

TABLE A1: REVEALED PARTICIPANT CHARACTERISTICS BY GENDER

N:	Male	Female	<i>p</i> -value
	116	116	
Left- or right-handed	.931 (.024)	.879 (.03)	.18
Are you an only child?	.112 (.029)	.095 (.027)	.668
Month of birth	5.569 (.286)	6.181 (.312)	.149
Can roll tongue?	.733 (.041)	.784 (.038)	.359
Has hitchhiker thumbs?	.284 (.042)	.336 (.044)	.397

*Notes:* Table A1 provides summary statistics of participant's characteristics that were revealed to their partners regardless of treatment. Standard deviations in parentheses.

TABLE A2: SUMMARY STATISTICS

N:	Informed	Uninformed	<i>p</i> -value
	122	110	
Male	.5 (.045)	.5 (.048)	1
Age	21.066 (.428)	20.736 (.421)	.584
Non-white	.721 (.041)	.627 (.046)	.129
Employment Status	.364 (.044)	.382 (.047)	.777
Native English Speaker	.843 (.033)	.9 (.029)	.195
US Citizen	.785 (.037)	.882 (.031)	.048
Politically Liberal	.861 (.031)	.882 (.031)	.632

*Notes:* Table A2 provides summary statistics of participant's characteristics between these two treatments. Participants were randomly assigned to the Informed and Uninformed treatment at the session level. Fifty-five men and 55 women were uninformed of their negotiating partner's gender and 61 men and 61 women were informed of their negotiating partner's gender. We find these two groups are balanced on all characteristics with the exception of being a US citizen. Our results are robust to controlling for a number of individual controls, including being a US citizen, and session controls. Standard deviations in parentheses.

TABLE A3: CHOOSING \$15 BY TREATMENT AND PARTNER GENDER  
(MEN IN NEGOTIATION GAME ONLY)

	Dependent variable: Choosing \$15			
	Informed		Uninformed	
	(1)	(2)	(3)	(4)
Negotiation × Partner Female	-0.163* (0.0935)	-0.232*** (0.0870)	0.0213 (0.0971)	0.0375 (0.0965)
Partner Female	0.0879 (0.0584)	0.124** (0.0545)	-0.0671 (0.0702)	-0.0854 (0.0702)
Negotiation	-0.0596 (0.0669)	-0.161* (0.0886)	-0.157** (0.0595)	-0.183** (0.0808)
Constant	0.670*** (0.0490)	0.745*** (0.216)	0.745*** (0.0477)	0.570* (0.293)
Ind. Clusters	61	61	55	55
Controls		YES		YES
Observations	488	488	440	440
R-Squared	0.032	0.107	0.026	0.081

*Notes:* Table A3 shows that in the informed negotiation game men's action when gender is known appears to invert compared to the optimal tailoring observed in the control game in a regression framework. Robust standard errors clustered at the individual level are in parentheses. Session controls include day of the week, within day trend, and game round. Individual controls include subject's age, being nonwhite, begin liberal, being a US citizen, being a native English speaker, employment status, and the number of sessions completed. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE A4: USE OF AGGRESSIVE AND YIELDING COMMUNICATION STRATEGIES BY MEN  
NEGOTIATION GAME ONLY

Dependent variable:	Ultimatum		Friendly	
	(1)	(2)	(3)	(4)
Partner Female × Informed	-0.107* (0.064)	-0.135** (0.061)	0.104* (0.058)	0.114** (0.057)
Informed	0.042 (0.070)	0.026 (0.081)	-0.048 (0.053)	-0.032 (0.055)
Partner Female	-0.040 (0.043)	-0.037 (0.039)	0.030 (0.042)	0.032 (0.038)
Constant	0.226*** (0.044)	0.209 (0.241)	0.504*** (0.036)	0.491*** (0.179)
Ind. Cluster	116	116	116	116
Controls		YES		YES
Observations	464	464	464	464
R-Squared	0	0	0	0

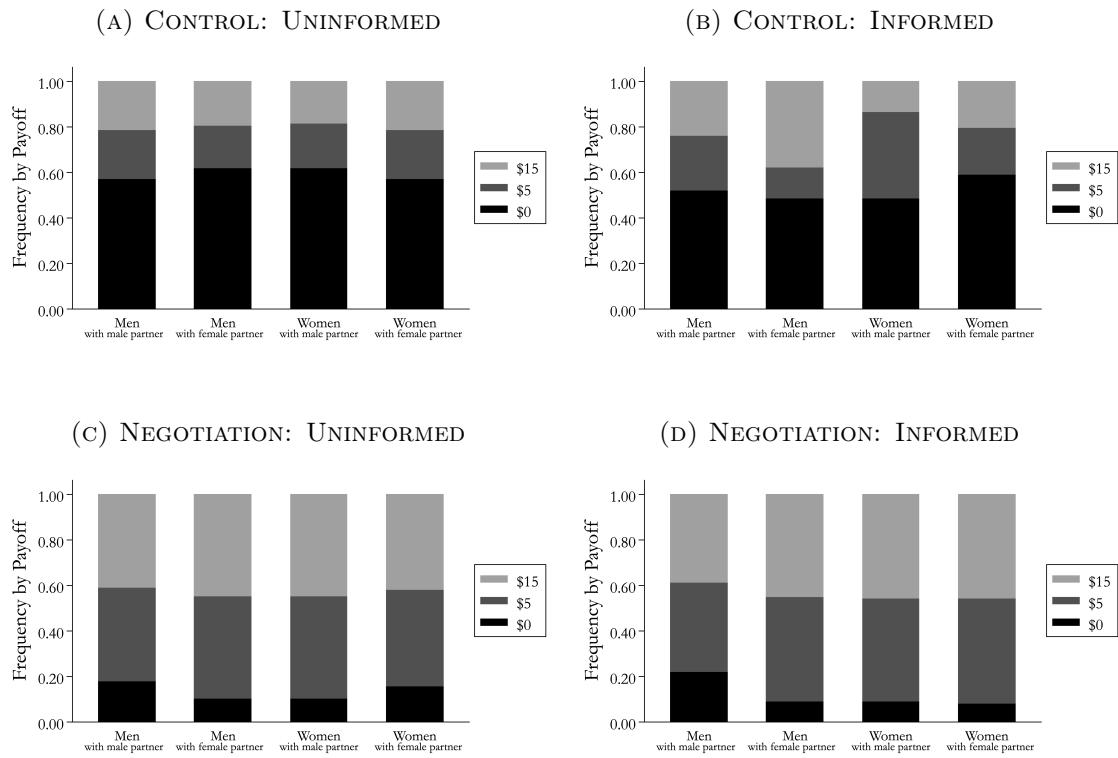
*Notes:* Table A4 shows that men's tailoring toward women is significantly different when informed versus uninformed for *ultimatums* and being *friendly*. This suggest that the paradoxical tailor is driven by gender information since only when men are informed does the decreased use of aggressive strategies and increased use of yielding strategies toward women appear. Robust standard errors clustered at the individual level are in parentheses. Session controls include day of the week, within day trend, and game round. Individual controls include subject's age, being nonwhite, begin liberal, being a US citizen, being a native English speaker, employment status, and the number of sessions completed. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE A5: OTHER COMMUNICATION MEASURES  
INFORMED TREATMENT ONLY

Strategy	Definition	Percent Use Measure						
		Men			Women			
		Unknown Partner	Male Partner	Female Partner	Unknown Partner	Male Partner	Female Partner	
<b>Leading Ultimatum</b>	This is the first person who used an ultimatum strategy.	11.86 (1.61)	15.04 (2.82)	6.84 (1.65)	**	3.64 (.96)	4.94 (1.35)	7.15 (2.04)
<b>Tough Talker</b>	This is when a person is a tough negotiator and fights for the \$15. They are trying hard to convince the other person to take the \$5. They will use a strong tone and may seem pushy or mean.	14.13 (1.72)	22.37 (3.47)	9.77 (1.98)	***	10.16 (1.4)	6.93 (1.39)	10.08 (2.15)
<b>Ask \$15</b>	This is when a person asks the other person if they can take the \$15 at any point in the conversation.	17.8 (1.95)	16.11 (2.88)	14.03 (2.23)		21.16 (2.24)	19.95 (2.82)	22.33 (3.36)
<b>Leading Concession</b>	This is when a person starts the conversation (not including saying hi or other pleasantries) by offering the \$15 to the other person or stating that they will take \$5.	17.36 (2.03)	15.75 (2.76)	19.28 (2.45)		15.74 (1.98)	19.98 (2.71)	16.23 (2.75)
<b>Concession</b>	This is when a person offers \$15 to the other person or offers to pick the \$5 at any point in the conversation. (Note: someone offering \$15 may also be doing a leading concession.)	26.3 (2.49)	26.12 (3.62)	34.34 (3.39)	*	25.96 (2.42)	29.34 (3.18)	25.98 (3.62)
<b>Responsive Concession</b>	This is when the person gives in to the other person's ask or demands after there is an initial negotiation or backandforth.	19.76 (1.84)	15.12 (2.65)	21.68 (2.29)	*	23.63 (2.16)	23.34 (2.48)	21.58 (3.02)
<b>Started Negotiation</b>	This is the person that starts the negotiations on how to split the money, not including saying hi or other pleasantries.	33.15 (2.12)	33.28 (2.92)	34.97 (2.6)		37.83 (2.32)	43.59 (2.63)	34.07 (3.14) ***
<b>Used the Word Fair</b>	This is when the person mentions anything about trying to make a fair split.	4.67 (1.14)	4.28 (1.16)	4.1 (1.26)		4.49 (.92)	3.46 (1.05)	2.9 (.91)
<b>Mentioned Previous Choices</b>	This is when the person mentions what they previously chose. Individuals had to negotiate with multiple people, so sometimes they will mention what their previous choice was.	34.52 (2.75)	15.32 (2.99)	36.06 (3.38)	***	35.58 (2.78)	30.73 (3.33)	35.75 (4.09)
<b>Random Game</b>	This is the person that introduces a random game such as playing rock/paper/scissor (rps), guessing a number, using trivia questions, using birthday dates, or other similar games to choose who picks \$15 for themselves.	8.17 (1.6)	6.82 (2.18)	9.32 (2.04)		10.05 (1.76)	8.43 (2.03)	7.6 (2.11)
<b>Alternating Strategy</b>	This is when the person claims to be alternating between 5 and 15 and that this is their strategy.	12.07 (1.61)	9 (2.15)	13.82 (2.14)	*	16.02 (1.93)	10.43 (1.64)	14.8 (2.51)
<b>Sad Story</b>	This is a person that uses their current (unfortunate) situation to gain sympathy from the other person and tries to get the \$15.	8.27 (1.42)	5.82 (1.84)	3.95 (.99)		11.46 (1.7)	3.81 (.91)	8.82 (2.17) *
<b>Happy Emojis</b>	This is when a person uses any sort of happy emojis or smiley faces.	5.28 (1.15)	4.68 (1.7)	8.15 (1.74)	*	7.96 (1.37)	10.36 (2.06)	8.95 (2.3)
<b>Sad Emojis</b>	This is when a person uses any sort of sad or angry emojis.	2 (.48)	1.35 (.58)	1.64 (.6)		5.23 (1.13)	1.86 (.61)	1.87 (.92)
<b>Aggressive Score</b>	Normalized friendly to aggressive score given to each participant by the MTurk worker based on the conversation transcript.	26.82 (1.37)	33.32 (2.72)	21.75 (1.73)	***	22.96 (1.2)	19.96 (1.38)	21.66 (1.7)
<b>Reached Agreement</b>	Mturk worker's perception that the negotiation was successful?	80.14 (2.47)	73.27 (4.26)	90.97 (2.01)	***	82.38 (2.28)	90.97 (2.01)	90.3 (2.65)

Notes: Table A5 provides the definition and average usage rate for all strategies coded by gender and partner gender. *Leading Ultimatum*, *Tough Talker* and *Ask \$15* are secondary measures for aggressive communication strategies. *Leading Concession*, *Concession*, and *Responsive Concession* are secondary measures for yielding communication strategies, respectively. *Started negotiation*, *used the word fair*, *mentioned previous choices*, *random game*, and *alternating strategy* are different “neutral” mechanisms. *Sad story*, *happy emojis*, and *sad emojis* are “emotion” based strategies and styles. Finally, *aggressive score* and *reached agreement* are scored provided from the MTurk worker’s perception of the negotiation as a “third party” observer. Robust standard errors clustered at the individual level in parenthesis. Stars denote significant difference in tailoring of strategies by men or women based on partner’s gender based on a two-sided t-test. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

FIGURE A1: PAYOFF FREQUENCY BY GENDER-PAIR BY INFORMATION CONDITION



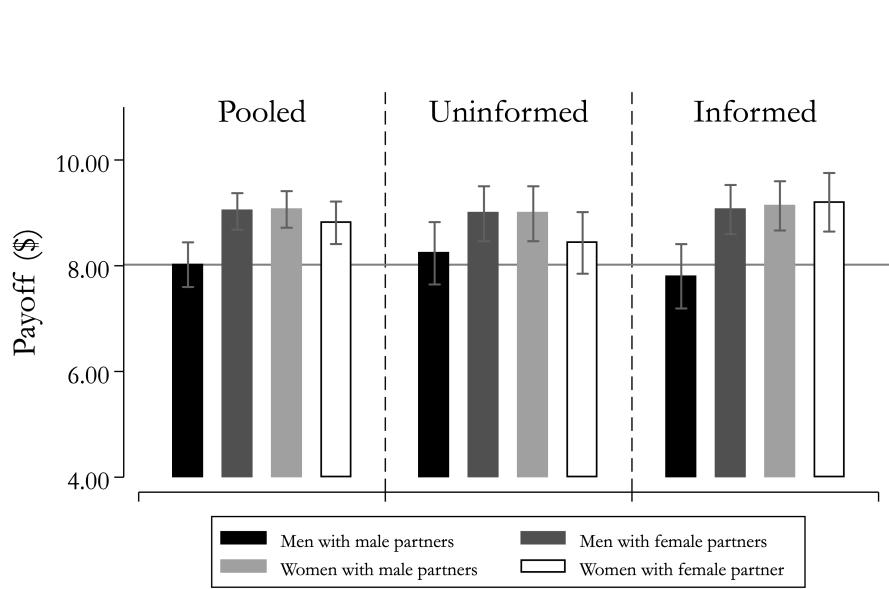
*Notes:* Figure A1 shows the frequency of possible payoffs (that is, \$0, \$5, or \$15) by gender-pair and information condition in the control and negotiation game. Note men with male partners are twice as likely to get a payoff of \$0 compare to any other gender-pair.

TABLE A6: CHOOSE \$15 AND MIS-MATCHING BY ISSUING ULTIMATUMS AND PARTNER GENDER  
 (MEN IN INFORMED ARM ONLY)

Dependent variable:	Choose \$15		Mis-match	
	(1)	(2)	(3)	(4)
Ultimatum	0.563*** (0.078)	0.512*** (0.078)	0.577*** (0.117)	0.569*** (0.107)
Ultimatum × Partner Female	-0.015 (0.105)	0.048 (0.117)	-0.334** (0.158)	-0.334** (0.163)
Partner Female	0.009 (0.074)	-0.027 (0.074)	-0.004 (0.044)	-0.023 (0.042)
Constant	0.459*** (0.065)	0.595* (0.298)	0.065 (0.040)	0.165 (0.164)
Ind. Cluster	61	61	61	61
Controls		YES		YES
Observations	244	244	244	244
R-Squared	0.146	0.200	0.229	0.263

*Notes:* Table A6 shows that men issuing ultimatums to other men leads to a higher likelihood of choosing \$15 for themselves and mis-matching. Robust standard errors clustered at the individual level are in parenthesis. Session controls include day of the week, within day trend, and game round. Individual controls include subject's age, being nonwhite, begin liberal, being a US citizen, being a native English speaker, employment status, and the number of sessions completed. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

FIGURE A2: PAYOFF BY GENDER AND PARTNER GENDER  
(NEGOTIATION GAME ONLY)



*Notes:* Figure A2 shows the average payoff by gender and partner gender for the negotiation game. We find that men do worse when paired with male partners compared to all other gender pairs. The first 4 bars show the results from the pooled sample, the next 4 bars show results from the uninformed condition, and the final 4 bars show payoffs from the informed condition. The horizontal line shows the average payoff for men with male partners in the pooled sample. Standard error bars shown around each mean.

## B Experimental Protocol Summary

This section provides a summary of the experimental protocol.<sup>21</sup> This project was reviewed by the University of Pennsylvania IRB, project #822499, and declared exempt May 13th, 2015, under 45 CFR 46.101, category 2. Subjects were recruited by the Wharton Behavioral Lab, which offers cash payments to students for participating in experiments. Participants are students from the University of Pennsylvania across a wide range of disciplines. Our population was restricted to undergraduate students. They participated in 1 of 21 sessions at the Wharton Behavioral Lab in October 2016.

Figure B1 shows the timeline of the experiment. After consenting to participate in this study, each participant read the general instructions, went through two practice rounds with the computer to understand the game and proceeded to the actual control and negotiation games. All subjects participated in four rounds of the control game followed by four rounds of the negotiation game. In addition, participants also went through two “add-on” rounds, which are not analyzed in this paper.

Figure B2 shows how partner information was displayed, enabling gender to be revealed in the “Informed” condition. Figure B3 shows the choice interface in the no-chat control condition. Note that partner information was visible, as was the payoff information, as participants made their choices. Figure B4 summarizes the sequence of screens in the main negotiation game. First partner information was displayed, then the chat started with partner and payoff information visible, and then the chat interface was replaced with the choice interface.

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<sup>21</sup>For complete experimental instructions, see [https://corinnelow.github.io/HuangLow\\_Instructions.pdf](https://corinnelow.github.io/HuangLow_Instructions.pdf).

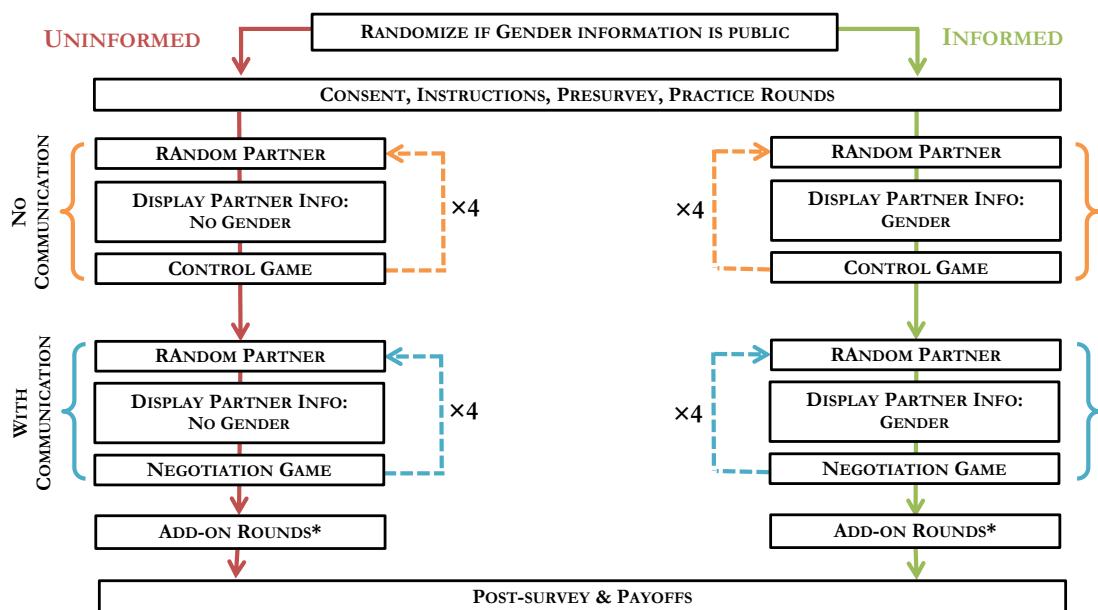


FIGURE B1: FULL EXPERIMENTAL DESIGN

(A) INFORMED CONDITION

Round 1	
Your partner in this round:	
Gender	Male
Left- or right-handed?	Left
Are you an only child?	No
Month of birth	May
Can roll tongue?	No
Has hitchhiker thumbs?	No

(B) UNINFORMED CONDITION

Round 1	
Your partner in this round:	
Left- or right-handed?	Left
Are you an only child?	No
Month of birth	May
Can roll tongue?	No
Has hitchhiker thumbs?	No

FIGURE B2: EXAMPLE OF PARTNER INFORMATION SCREEN WITH AND WITHOUT PARTNER GENDER

Remaining time (sec): 27

Round 1	
Your partner in this round:	
Gender	Female
Left- or right-handed?	Left
Are you an only child?	Yes
Month of birth	Apr
Can roll tongue?	Yes
Has hitchhiker thumbs?	Yes

**Payoff reminder:**

If you choose \$15 for yourself (\$5 for partner)

- ... And your partner "agrees," by choosing \$5 for themselves, you get \$15 (partner gets \$5)
- ... And your partner "disagrees," by choosing \$15 for themselves, you each get \$0

If you choose \$5 for yourself (\$15 for partner)

- ... And your partner "agrees," by choosing \$15 for themselves, you get \$5 (partner gets \$15)
- ... And your partner "disagrees," by choosing \$5 for themselves, you each get \$0

Please make your choice:

\$15 for yourself (\$5 for partner)

\$5 for yourself (\$15 for partner)

OK

FIGURE B3: EXAMPLE OF CHOICE WINDOW

(A) PARTNER INFORMATION

Remaining time (sec): 14											
<b>Round 5</b> Your partner in this round: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 50%;">Left- or right-handed?</td> <td style="width: 50%;">Left</td> </tr> <tr> <td>Are you an only child?</td> <td>No</td> </tr> <tr> <td>Month of birth</td> <td>May</td> </tr> <tr> <td>Can roll tongue?</td> <td>No</td> </tr> <tr> <td>Has hitchhiker thumbs?</td> <td>No</td> </tr> </table>		Left- or right-handed?	Left	Are you an only child?	No	Month of birth	May	Can roll tongue?	No	Has hitchhiker thumbs?	No
Left- or right-handed?	Left										
Are you an only child?	No										
Month of birth	May										
Can roll tongue?	No										
Has hitchhiker thumbs?	No										
This information will be available to you later on.											

(B) CHAT WINDOW

Remaining time (sec): 14													
<b>Round 5</b> Your partner in this round: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 50%;">Gender</td> <td style="width: 50%;">Female</td> </tr> <tr> <td>Left- or right-handed?</td> <td>Left</td> </tr> <tr> <td>Are you an only child?</td> <td>Yes</td> </tr> <tr> <td>Month of birth</td> <td>Apr</td> </tr> <tr> <td>Can roll tongue?</td> <td>Yes</td> </tr> <tr> <td>Has hitchhiker thumbs?</td> <td>Yes</td> </tr> </table>		Gender	Female	Left- or right-handed?	Left	Are you an only child?	Yes	Month of birth	Apr	Can roll tongue?	Yes	Has hitchhiker thumbs?	Yes
Gender	Female												
Left- or right-handed?	Left												
Are you an only child?	Yes												
Month of birth	Apr												
Can roll tongue?	Yes												
Has hitchhiker thumbs?	Yes												
<b>Payoff reminder:</b> If you choose \$15 for yourself (\$5 for partner) <ul style="list-style-type: none"> <li>• And your partner "agrees," by choosing \$5 for themselves, you get \$15 (partner gets \$5)</li> <li>• And your partner "disagrees," by choosing \$15 for themselves, you each get \$0</li> </ul> If you choose \$5 for yourself (\$15 for partner) <ul style="list-style-type: none"> <li>• And your partner "agrees," by choosing \$15 for themselves, you get \$5 (partner gets \$15)</li> <li>• And your partner "disagrees," by choosing \$5 for themselves, you each get \$0</li> </ul>													
Use the box below to chat with your partner. You have 2.5 minutes. <div style="border: 1px solid #ccc; height: 100px; width: 100%;"></div> Enter messages to your partner here. Press ENTER to send the message													
Please keep track of your time using the timer on the top right corner. Please remember that your partner in the next game will be a DIFFERENT partner.													

(C) CHOICE WINDOW

Remaining time (sec): 27													
<b>Round 1</b> Your partner in this round: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 50%;">Gender</td> <td style="width: 50%;">Female</td> </tr> <tr> <td>Left- or right-handed?</td> <td>Left</td> </tr> <tr> <td>Are you an only child?</td> <td>Yes</td> </tr> <tr> <td>Month of birth</td> <td>Apr</td> </tr> <tr> <td>Can roll tongue?</td> <td>Yes</td> </tr> <tr> <td>Has hitchhiker thumbs?</td> <td>Yes</td> </tr> </table>		Gender	Female	Left- or right-handed?	Left	Are you an only child?	Yes	Month of birth	Apr	Can roll tongue?	Yes	Has hitchhiker thumbs?	Yes
Gender	Female												
Left- or right-handed?	Left												
Are you an only child?	Yes												
Month of birth	Apr												
Can roll tongue?	Yes												
Has hitchhiker thumbs?	Yes												
<b>Payoff reminder:</b> If you choose \$15 for yourself (\$5 for partner) <ul style="list-style-type: none"> <li>• And your partner "agrees," by choosing \$5 for themselves, you get \$15 (partner gets \$5)</li> <li>• And your partner "disagrees," by choosing \$15 for themselves, you each get \$0</li> </ul> If you choose \$5 for yourself (\$15 for partner) <ul style="list-style-type: none"> <li>• And your partner "agrees," by choosing \$15 for themselves, you get \$5 (partner gets \$15)</li> <li>• And your partner "disagrees," by choosing \$5 for themselves, you each get \$0</li> </ul>													
Please make your choice: <input type="checkbox"/> \$15 for yourself (\$5 for partner) <input checked="" type="checkbox"/> \$5 for yourself (\$15 for partner)													
<div style="text-align: center;"><input type="button" value="OK"/></div>													

FIGURE B4: EXAMPLE OF NEGOTIATION GAME SCREEN SEQUENCE

## C Negotiation Transcript Coding Protocol

This section provides a summary of how the negotiation chat transcripts were coded to classify negotiation strategies.<sup>22</sup> Negotiation chat transcripts were coded by MTurk workers, after the completion of the experiment. Each MTurk worker reviewed 15 randomly selected negotiation transcripts. To ensure high quality of work, MTurk workers reviewed the communication strategy definitions and had to answer all 8 comprehension questions correctly to continue. Additionally, workers were also asked an attention question and if any worker failed to pass the attention question we discarded their work. Below are the specific negotiation strategy definitions provided to MTurk workers.

### Definitions:

**Hard commitment:** this is when a person starts the conversation (not including saying “hi” or other pleasantries) stating that they will pick \$15 for themselves regardless of what the other person is choosing. They have set their mind to this outcome and will not change.

- *Example 1: “Hi, I’m always choosing 15 not matter what, that is my strategy.”*
- *Example 2: “I’m letting you know that I’m picking 15 regardless of what you do.”*

**Tough talker:** this is when person is a tough negotiator and fights for the \$15. They are trying hard to convince the other person to take \$5. This may happen at any point in the conversation. They will use a strong tone and may seem “pushy” or “mean.” (Note: Someone using a tough talker strategy may also be playing a hard commitment strategy.)

- *Example 1: “It’s my turn to take \$15, I let the other person have theirs”*

**Asked for the \$15:** this is when a person asks the other person if they can take the \$15 at any point in the conversation.

- *Example 1: “Can I pick \$15?”*
- *Example 2: “Would it be ok if I pick 15?”*

**Led with a concession:** this is when a person starts the conversation (not including saying “hi” or other pleasantries) by offering the \$15 to the other person or stating that they will take \$5.

- *Example 1: “Hi, you can take the \$15” or “Hi, I’ll pick \$5”*
- *Example 2: “Hi, you can pick which one you want, I’ll pick the other option.”*

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<sup>22</sup>For complete chat transcript coding instructions, see [https://corinnelow.github.io/HuangLow\\_Instructions.pdf](https://corinnelow.github.io/HuangLow_Instructions.pdf).

**Offered the \$15:** this is when a person offers \$15 to the other person or offers to pick the \$5 at any point in the conversation. (Note: someone offering \$15 may also be doing a “led with a concession” strategy.)

- *Example 1: “Ok, you can pick \$15”*
- *Example 2: “I’ll just take the \$5”*

**Friendly negotiator:** this is when the person tries to be friendly and build a relationship with the other person in order to gain their trust. We provided each person some information about the other person (e.g., birthday month, can they roll their tongue, do they have hitchhiker thumbs, etc) – many times, the person will comment on one of these traits.

- *Example 1: “Hi, how is your day going?”*
- *Example 2: “Happy birthday month! Oh look, we both have hitchhiker thumbs!”*

**Started negotiations:** this is the person that starts the negotiations on how to split the money, not including saying “hi” or other pleasantries.

- *Example 1: “We should discuss this so we can cooperate and get something. How do you want to split this?”*
- *Example 2: “Any ideas on what we should do?”*

**Random game:** this is the person that introduces a random game such as playing rock/paper/scissor (“rps”), guessing a number, using trivia questions, using birthday dates, or other similar games to choose who picks \$15 for themselves.

- *Example 1: “What if we play rps?”*
- *Example 2: “How about I think of a number, 0 or 1, and if you guess it you get \$15. I promise to tell the truth”*
- *Example 3: “We were both born in June! Let’s do birth dates, the closest one wins \$15?”*

**Sad story:** this is a person that uses their current (unfortunate) situation to gain sympathy from the other person and tries to get the \$15.

- *Example 1: “I really need the money, my fridge broke so I need to buy food.”*
- *Example 2: “I’m having a terrible day, I just failed my midterm.”*
- *Example 3: “I’m poor, I need the money for food and to pay for college.”*

**Happy emojis:** this is when a person uses any sort of happy “emojis” or smiley faces.

- *Example 1: “:)”*
- *Example 2: “:D”*

**Sad/angry emojis:** this is when a person uses any sort of sad or angry “emojis”.

- *Example 1: “:(”*
- *Example 2: “>:(”*

**Mentioned the word fair:** this is when the person mentions anything about trying to make a fair split

- *Example 1: “How can we do this fairly?”*
- *Example 2: “I’ll pick \$5, its fair since you picked \$5 before”*
- *Example 3: “I don’t know how to split this in a fair way.”*

**Mentioned previous choices/outcomes:** this is when the person mentions what they previously chose. Individuals had to negotiate with multiple people, so sometimes they will mention what their previous choice was.

- *Example 1: “I chose 5, 15, 5 in the previous rounds”*
- *Example 2: “But I’ve picked 5 in the last 2 rounds too”*

**Alternating strategy:** this is when the person claims to be alternating between 5 and 15 and that this is their strategy.

- *Example 1: “I’m alternating between 5 and 15”*
- *Example 2: “My strategy is to pick 5 on even rounds and 15 on odd rounds”*

**Gave-in:** this is when the person gives in to the other person’s ask or demands after there is an initial negotiation or back-and-forth.

- *Example 1: Person A: “Can I pick 15?”*
  - *Person A: “Can I pick 15?”*
  - *Person B: “I would like 15 as well. Why do you want 15?”*
  - *Person A: “Honestly, I need it to buy food.”*
  - *Person B: “Oh, me too. This is hard...Ok, you can take the \$15.”*
- *(In this example, Person B is “giving in”.)*