Does Pre-Play Social Interaction Improve Negotiation Outcomes?

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Abstract

We study experimentally the impact of pre-play social interactions on negotiations. These interactions are often complex. Thus, we attempt to isolate the impact of several of its more common components: conversations, food, and beverages, which could be alcoholic or nonalcoholic. To do this, our subjects take part in a standardized negotiation (complex and simple) under six conditions: without interaction, interaction only, and interactions with water, wine, water and food and wine and food. We find that none of the treatments improve the outcomes over the treatment without interactions. We also study trust and reciprocity in the same context. For all-male groups, we find the same lack of superiority of interaction treatments over no interaction. For all-female groups, some very simple social interactions have a positive impact on trust.

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1. Introduction

Many transactions in economic life take place after social interactions. They are central at the start of business, government, and personal negotiations and other social, political and economic processes. These interactions are important in the culture of organizations all over the globe.

As an example of their perceived importance, the following quote from Harvard's Program on Negotiation[1] is illustrative: "*The reciprocal nature of trust reinforces the value of taking time to get to know the other party and build rapport before you begin to negotiate. Don't assume that you can form a bond simply by exchanging a few friendly e-mails before meeting in person. Rather, try to forge a personal connection by meeting for an informal lunch or two.*"

Policymakers have taken this kind of advice to heart. For example, business meals tend to be tax-deductible at least in part. The IRS considers that 50% of such expenses are deductible in general.[2] The HMRC allows to deduct the part of the expense that is "wholly and exclusively" for the purpose of generating profits.[3] But it is not only a matter for private businesses. Government offices and universities also subsidize business meals. Given this perceived importance, it is rather surprising that very little research effort has been devoted to ascertain its actual impact to improve substantive economic outcomes.

Real negotiations often involve many issues, over which participants usually have diverse preferences. Under incomplete information about those preferences, it is easy for negotiations outcomes to reach inefficient solutions. Our main goal is to investigate if social interactions with strangers improve negotiations' efficiency through trust-building. One initial difficulty to achieve our goal is that these interactions are complicated processes involving many components. The potential success of the complete process might not be able to tell us the role played by its different constituents. For example, the business meal preceding a negotiation involves communication, and other aspects, such as food and beverage intake. Of course, negotiations preceded by communication are commonplace outside business as well, in ceasefire or peace talks, or in political negotiations.

For this reason, we designed an experiment that would allow us to distinguish the effect of different factors on the negotiations. Our main finding is straight forward. We find no significant effect of social interaction on negotiation outcomes. In the words of the HMRC, the part of the expense that is wholly and exclusively for the purpose of generating profits is, on the basis of our

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[1] https://www.pon.harvard.edu/daily/dealmaking-daily/dealmaking-negotiations-how-to-build-trust-at-the-bargaining-table/ Retrieved on September 5, 2017

[2] http://www.irs.gov/taxtopics/tc512.html Retrieved on September 5, 2017

[3] http://www.hmrc.gov.uk/manuals/bimmanual/bim37000.htm Retrieved on September 5, 2017

experiment, a rather precisely estimated zero. A slightly more nuanced result arises for trust. For all-male groups, we find the same lack of superiority of any of our treatments with social interaction over the baseline of no interaction at all. For all female groups, some treatments with interaction delivered slightly higher trust than the one without any interaction.

The participants in our experiment were MBA students at the Burgundy School of Business in Dijon. This is an elite business school in the Bourgogne region of France. They were recruited for a wine tasting activity followed (or preceded) by some games. After gathering, they read the experimental instructions, then, the participants had 30 minutes to interact, except in the control treatment, which had no interaction. During the interaction phase, there were five treatments (besides the control). These depended on the availability of food and drinks. They were as follows (obviously all of them involve interaction): interaction only, water, wine, food and water, food and wine. After the interaction, they participated a four-player strategy-method trust game (Berg, Dickhaut and McCabe 1995).

After the interaction phase, participants took part in a negotiation simulation of a kind that is common in negotiation classes. In this simulation, they negotiate over a labor contract with many attributes, each of which carry a different number of points for each possible agreement. Participants are paid as a function of their total points, but they know only their own points. This incomplete information about the others' points, and hence the possible beneficial trade-offs, is what creates the opportunity for social interaction to increase trust and efficiency. There were two treatments in the negotiation phase (half of the subjects played each, between subjects). One involved hard negotiation (five issues) and the other, simple negotiation (two issues). We administered a de-briefing questionnaire at the end of the experiment.

As we discussed earlier, we run many treatments because our prior belief is that some form of pre-play interaction would indeed improve negotiations, and thus we wanted to find out the (possibly synergistic) impact of the different constituents. As it turned out, nothing appears to work better than moving directly into negotiations. We conjecture that the initial interactions serve a psychological need to lighten the load of an unpleasant task. We could say that pre-play social interaction is more of a consumption good than a production input. As such, its tax status might need to be revised if future research on this topic confirms out results.

With respect to trust, no treatment improved in a significant way the level of trust from both the baseline and the "interaction only" treatment. For male groups, trust in the "no interaction" treatment was either superior or at worst equal to every other treatment. For female groups, the trust in the "interaction only" treatment was either superior or at least equal to every other

treatment. Thus, communication can improve trust for females, but the remaining components of a social interaction do not produce any significant change.

Reciprocity shows very similar patterns: no any single effect is found for males or females. Hence no significant gains are found for more complex interaction settings (vs. the no interaction at all).

Our results have important policy implications. There is a general belief both in the business world and in government, that interactions benefit their organizational performance. We have cast serious doubt on that belief. The results are also important to understand the determinants of trust, a very important driver of economic progress.[4]

The paper is structured as follows. Section 2 describes the experimental design. Section 3 establishes the results. Section 4 briefly reviews the related literature. Section 5 provides a concluding discussion and discusses some avenues for future research.

2. Related literature

One of the oft-stated purposes of pre-negotiation meetings is the building of "trust", personal rapport or increase altruism towards the participants. It can also signal intentions of negotiating type. For example, one could try to establish a certain "toughness" in character. Previous research has established that cheap-talk prior to playing a game can improve efficiency. Cooper et al. (1992) or Clark, Kay and Sefton (2001) show that cheap-talk increases efficiency in coordination games. Palfrey and Rosenthal (1991) have done the same for public good games, and Charness and Dufwenberg (2006) in trust games. There are also some results in bargaining games that are closer to our object of interest. Valley et al. (2002) studied a double oral with and without communication. They found that communication allowed to achieve higher levels of efficiency than predicted by theory. Forsythe, Kennan and Sopher (1991) showed that communication during a bargaining game did not improve the efficiency of negotiated outcomes. Our experiments allow for communication in a diverse set of environments, it is conducted prior to the game, as well as during it, and our negotiation simulations are more realistic.[5]

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[4] Trust has been shown to induce higher growth levels for countries, as in Zak and Knack (2001) and Algan and Cahuc (2010).

[5] Berkman et al. (2015) study the role of socialisation on cooperation. They also use a pre-play communication phase where subjects interact in pairs under a well-defined structure.

There is a recent strand of the literature focusing on the effect of alcohol and glucose in various economically relevant contexts. In contrast to that literature, we provide a far more comprehensive look at the problem, since we decompose the social interaction problem in all its constituents, of which alcohol and food consumption are only a part.

Alcohol has been shown to be positively associated with risk taking (Proestakis et al. 2013 however Burghart et al. 2013 found different results for men and women), rejection of unfair offers (Morewedge et al. 2014) as well as trust (Attanasi et al. 2013)[6]. Interestingly, from the latter paper it appears that it is not generalized trust, but instantaneous trust, related to the specific group sharing the substance. In the lab results have not been consistent: Corazzini et al. 2015 did not detect any effect of alcohol in depleting subjects' risk tolerance. However, they found that alcohol intoxication increases impatience and makes subjects less altruistic. Bregu et al. (2017) found no effect of alcohol on decision making (including games) but contrary to Corazzini found more generous dictators.

This, however, is in stark contrast with the results of Schweitzer and Gomberg (2001) who find that alcohol, even at levels that in some American states are below the legal limits for driving seriously lowers the efficiency of outcomes, by reducing the total number of earned points, and hence the final payment to both partners. This happens through a variety of processes: they use more aggressive tactics, less integrative tactics (Thompson 1991) and make more mistakes.

One way to understand the previous conflicting results comes from a different literature that focuses on the effects of glucose in decision-making. Danziger, Levav, and Avnaim-Pesso (2011) have shown that judicial decisions made before and after meals are radically different even if the cases are assigned randomly to the time of the day. A clue to this finding can be garnered from Gailliot and Baumeister (2018) who document from a variety of sources the impact of lower glucose levels on reducing self-control. Alcohol consumption depletes glucose levels, and hence self-control, so the joint consumption of food and alcohol might give markedly different effects than alcohol on its own.

3. Experimental design

The participants to our experiment were invited to participate in wine tasting activities, followed (or preceded) by modified versions of the classic trust game (Berg, Dickhaut and McCabe 1995)

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[6] A caveat in this case is that this is a survey, not an experiment, and certainly not a game.

and of the negotiation game introduced by Schweitzer and Gomberg (2001).[7] Our experiment had a sequential structure intended to fulfil two requirements: constructing a proper setup to study social interactions around a table and introducing wine and meals in that particular environment as to measure whether the use of lubricants may impact social interactions. The sequences were: the Tasting Phase, the Interaction Phase, the Trust Game Phase, the Negotiation Phase, and the Questionnaire Phase.

We recruited 568 participants from the student population of the first year of the Master Grande École from the School of Wine and Spirits Business and the Burgundy School of Business (BSB) from Dijon, France, in November 2015 and November 2016. The choice of timing (very soon after the classes start) and participants (first year students) was done so that, together with random matching, we minimized the chance that participants were allocated to groups where member had already established a relationship. The BSB school has a pretty good index of social diversity (it is ranked third in France), which means that participants are quite a good representation of the French population (30% of students at BSB are recipients of social scholarships which is the highest percentage in France).[8]

Participants were invited to participate in a wine-testing event (something that occurs often at the BSB), and told they would also play some games. The invitations to such events (and more generally to paid experiments) are familiar and in accordance to the ethical standards of drinking alcohol inside the schools and minimize both selection biases and experimenter demand effects. Participants were as usually reminded not to consume alcohol before arriving at the study, not to eat for 2 hours prior to the experiment, and to bring a valid form of identification to verify their age. Most experiments started at 11 am.[9] The timing was done on the advice from experts on wine tasting from the school, because the mouth is best prepared two to three hours after breakfast. The experiment last on average 1 hour 30 minutes, including reading instructions, answering comprehension questions, decisions and payments. Participants earned on average 20.50€ (min 5€, max 38€) in addition to the participation fee of 5€. Participants were assigned to a treatment or a session randomly upon arrival. One participant was involved in only one session and one treatment in a typical between-subjects design.

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[7] No any participant was deceived. All the participants in the experiment did eventually take part in a wine tasting session. Those for whom wine was not part of the treatment had the wine tasting after the experiment.

[8] However, note that BSB students enter the school after a 2 years intensive preparation in special schools called "préparatoire" in which they are admitted based on their grades and an exam. Also, at the end of the 2 years, they need to pass a quite selective entrance exam to BSB (which has 4000 applicants for 450 places). This process means that BSB students are very good students, and they come from good high schools, mostly from big cities.

[9] A few sessions needed to be scheduled before or after 11AM due to room availability issues.

Participants arrived at the laboratory and waited in the corridor as they usually do for experiments. They were given anonymous numbers so they had to sit at the numbered places. However, the numbers were given (without specific emphasis) in such a way that this resulted in sitting in the lab in groups of four same-gender individuals.[10] In some sessions, at the beginning of the experiment, participants were seated in individual isolated cubicles, and in other sessions, in four-person isolated cubicles, according to the treatment. In case of non-appearance of some participants, some four same-gender groups were incomplete – those participants were seated in mixed groups of four and allowed to participate to the experiment, but the data collected was not used for further analyses (data from 32 participants was not considered for statistical investigation).

The Interaction Phase consisted in a classic 30 minutes period of (pre-play) communication. Some of our participants did not participate to the Interaction Phase, according to the treatment. Participants involved in sessions with the Interaction Phase were seated in four-person isolated cubicles and were allowed to talk. We divided this phase in two conditions: in one condition, the Interaction Phase was unstructured – participants simply performed pre-play verbal communication. In the other condition, the Interaction Phase was structured by its concomitance with the Tasting Phase, i.e. the introduction of liquids (wine or water) or liquids (wine or water) and nibbles.

The Tasting Phase consisted in a 30 minutes classic tasting exercise. As to avoid any deception, all our participants took part in the Tasting Phase, either at the beginning or at the end of the experimental session. Participants were presented with three standard INAO glasses containing the standard quantity of tasting liquids (1cl). The Tasting Phase was declined in four conditions: the liquid contained in the glasses was water, wine, and in some tasting exercises wine or water were accompanied by side nibbles. Glasses were presented in a "blind" tasting condition, i.e. without any indication of the label, price or other identifying information on the liquid. Glasses were only identified with neutral numerical codes. Participants were instructed to indicate on an individual answer sheet which glass of liquid they preferred at three specific moments: after they first took the first gulp from each of the glasses, after the 5th gulp and after the 10th gulp. This procedure is standard in the tasting exercises, as perception changes with time and sensorial familiarity. However, we motivated the consumption of liquids as participants were by default not allowed to spit (spitting devices were not provided). At the end of the tasting phase,

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[10] To be more precise, say the session consisted of X people, X/2 men and X/2 women. We paired them randomly inside each group. Numbers from 1 to X/2 were distributed randomly to men, and numbers between X/2+1 and X to the women (or vice versa). Participants were then called by numbers to go to sit a a specific table.

participants were instructed to leave their glasses and the answer sheets on the table at the exact same places they were when they arrived. Before the participants left the room, we conducted Breathalyzer tests on everyone and recorded results from each participant. Participants were not provided with their scores, however, inebriated participants (with a score higher than .05) were asked to remain in the laboratory to watch a movie as is the standard procedure in tasting sessions. After the participants left the room, we collected the answer sheets and measured the remaining liquid in each glass as to have a precise measure of the liquid intake.

The Trust Game Phase consisted in a variant of the traditional trust game. In a (sequential) Trust game, two players play the following roles: the sender (S) is endowed with certain money, P. S may send any fraction x of P (even nothing) to the other player, the receiver (R). Transferred money is tripled, R is entitled to return any amount (even 0). Rules are common knowledge. We interpret S's choices as a signal of trust (the higher the better) while R choices indicate reciprocity (idem). In our variant, participants read the experimental instructions individually in their own cabin. Every subject had an endowment of 10 euros. They played a double role: every participant is both S and R. Each of them played a Trust Game with the other 3 players from its group (sending and receiving, instructions available in Appendix). One decision was paid randomly. Participants were also asked to reveal their expectations about the behavior of others.

The Negotiation Phase consisted in a variant of the negotiating exercise from Schweitzer and Gomberg (2001). Participants were paired two by two in same-gender dyads. The exercise included two roles, an employer and a placement agent who negotiate over a compensation package for a prospective employee. The negotiation involved a Hard or an Easy Negotiation condition, consisting of two or five issues (wage, bonuses, trips, etc…) and included opportunities to create joint gains. Participants were then randomly assigned to the role of either agent or employer. Participants were described their role and were allowed to make notes on their confidential information sheets. The exercise consisted in structuring a job offer and closing a deal for a previously interviewed candidate. The job description and candidate's resume are included in Appendix A. Both participants received private information describing their interests and how these interests converted to point values. The last page of the instructions was a table of point values including one of the two columns of values represented in the payoff table in Appendix. Participants were informed that the points they earned in the negotiation would be converted to cash at an exchange rate of 10 points to an euro, and that they would earn nothing if they failed to reach an agreement. Once participants reached an agreement, we collected their agreement sheets.

In the Questionnaire Phase we collected data on the questions used in Schweitzer and Gomberg (2001): participants were asked about the negotiation process, their perceptions of how alcohol had affected their negotiation[11], and general demographic information. They were also measured their height and weighted. Finally, participants were asked demographic information, including their years of work experience, age, and gender.

These different phases lead to several treatments: No-Interaction, Unstructured Communication (in short Interaction), and Structured Communication. These three treatments represent three possible baselines and have variants.

The StrComm treatment mimics business meals with water as the base liquid. We run three variations of their treatment:

- StrComm+W (identical to the former StrComm with wine instead of water),
- StrComm+N (identical to StrComm plus a Nibble) and
- StrComm+W+N which combines the Wine and the Nibble.

In the No-Interaction treatments, participants only participated in the Trust Game, Negotiation, Questionnaire and Tasting Phases in this specific order. In the Interaction treatment, the sequence of phases consisted of Interaction, Trust Game, Negotiation Game, Questionnaire, and Tasting Phases in this order. In the 4 Structured Communication treatments, the phases were: Interaction and Tasting (simultaneous), Trust Game, Negotiation, Questionnaire.

Table 1 describes the number of participants and in parenthesis the number of independent observations per treatment.

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[11] For instance, with respect to the influence of alcohol, in sessions involving alcohol, participants were asked, "How inebriated did you feel during your negotiation?" which was rated on a scale ranging from 1 (not at all inebriated) to 11 (very inebriated), "Do you think alcohol affected your negotiation?' which was rated on a scale ranging from 1 (not at all) to 11 (very much), and "Did alcohol consumption help or hurt your side of the negotiation?". With respect to the negotiation process, participants were asked, "To reach an agreement, both of you made some concessions. In your negotiation, who made most of the concessions?" which was rated on a scale ranging from 1 (I made all the concessions) to 6 (both about the same) to 11 (the other person made all the concessions).

Table 1. Sample by treatment

	Male				Female			
	Hard	Easy	Trust	Recipr.	Hard	Easy	Trust	Recipr.
No Interaction	16	28	44	44	20	20	40	40
	(8)	(14)	(11)	(11)	(10)	(10)	(10)	(10)
Interaction	20	24	44	44	16	16	32	32
	(10)	(12)	(11)	(11)	(8)	(16)	(8)	(8)
StrComm	36	20	56	56	32	20	52	52
	(18)	(10)	(14)	(14)	(16)	(10)	(13)	(13)
StrComm+W	28	24	52	52	28	20	48	48
	(14)	(12)	(13)	(13)	(10)	(10)	(12)	(12)
StrComm+N	32	20	52	52	20	12	32	32
	(16)	(10)	(13)	(13)	(10)	(6)	(8)	(8)
StrComm+W+N	24	24	48	48	20	16	36	36
	(12)	(12)	(12)	(12)	(10)	(8)	(9)	(9)
Total	156	140	296	296	136	104	240	240
	(78)	(70)	(74)	(74)	(68)	(52)	(60)	(60)

4. Results

This section explores four different outcomes from our experiments: hard negotiation (multidimensional), easy negotiation (bi-dimensional), trust and reciprocity. The analysis is done for male and female groups separately.

a) Hard negotiation

Our hard negotiation treatment exposes the participants to a bargaining situation where negotiations take place over different variables (wage, bonuses, etc.). As explained before we compare a series of environments:

- No pre-play interaction at all (No Interaction).
- Pre-play interaction without any communication structure (Interaction).
- Pre-play interaction with Structured Communication (only water).

These three treatments represent three possible baselines. Figure 1 top (males) and medium (females) shows the total number of points obtained in the complex bargaining across treatment conditions. The last three bars of the same figure enrich the Interaction with Structured Communication treatment in order to mimic business meals. Figure 1a already suggests what the regression analysis will show clearly: only StrComm+W for males is different from the baseline without communication but it yields the worst results. That is, it does not facilitate negotiations.

All in all, the use of wine or nibbles or both does not appear to improve negotiations. This is true again for males and females.

Table 2 shows these results using a regression analysis. Column 1a and 1b focus on hard negotiation. As independent variables we have *Unstructured Communication, Structured Communication, Wine, Nibbles* and *Wine+Nibbles*. The reference group is the *No-Interaction* subsample. We do not find any single positive and significant effect across the treatments. For males, one treatment, *SC + Wine+Nibbles* yields negative and statistically significant coefficients, while another two, *Structured Communication* and *SC+Wine* are negative and marginally significant.[12] That is, those treatment yield significantly lower points than the baseline treatment with no interaction, implying that communication hurts negotiation.

Overall, none of our five treatments outperforms the baseline of no interaction. Both males and females are better off with a perfect stranger and the introduction of any sort of socializing does not help to increase efficiency. Result 1 summarizes,

Result 1a: Pre-play interactions - be it through free or structured interactions, alcohol or nibbles, do not improve the efficiency of hard negotiation.

Table 2 shows that most of the estimated coefficients are negative, with few positive coefficients that are not statistically significant. This evidence suggests that the treatments do not improve the results of the negotiations. However, the lack of significance of positive coefficients might be caused by the lack of power due to the number of observations.

To check whether power is indeed a problem, we perform different power calculations to obtain the *theoretical* alpha that we should find with the number of observations we have (140 observations) and with the magnitude and standard deviation of these estimated coefficients. We then compared this *theoretical* alpha with the *observed* alpha that arises from the regressions. If the *observed* alpha is larger than the *theoretical* alpha then power should be not a problem. Otherwise, the lack of significance in the coefficient would due to a lack of power.

In the case of the estimated coefficient of StrComm+W+N in column 1b, the theoretical alpha of an effect of 0.6 s.d. (1.250 / 2.095), with 140 observations and 5 treatments is 0.27, while the observed alpha is 0.55. This suggests that the coefficient found is not significant and it is very likely that the effect is null. Finally, in the case of the estimated coefficient for StrComm+N in column 1b, the coefficient is greater than its standard deviation. This effect expressed in standard deviation is greater than one, so in an experimental design with 5 treatments only 100

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[12] This replicates, partially, the result of Schweitzer and Gomberg (2001), who only test the effect of alcohol and obtain a negative impact on negotiations.

observations are necessary to find a statistically significant effect with a p<0.05. This suggests that there would be sufficient power to find significant effects, if they were present, and that the lack of significance suggests with certainty that the effect is null.

Figure I.1 (in Appendix I) suggests an equivalent result separating by candidate and employer. Notice that even though the points achieved by candidate and employer are quite similar on average the distribution between them can vary quite a lot in the different pairs, as Figure 1a (bottom) makes clear. Table I.1, columns 1a and 1b confirm this observation using regression analysis.

Result 1b: Pre-play interactions - be it through free or structured interactions, alcohol or nibbles, do not improve the amount obtained by either candidates or employers of hard negotiation.

Figure 1 (bottom) shows graphically how the different outcomes are located with respect to the Pareto frontier of the game. The frontier is represented in orange and the outcomes for all the different pairs are represented in different colour according to the treatment.

Consistent with the results above 1a and 1b, the colours/treatments are quite evenly spread inside the frontier and no colour dominates in any part of the graph. This merely confirms in a summary graphical way, the results 1a and 1b above. It also shows that generally, the outcomes are not efficient. This should not be surprising, there is a severe asymmetry of information and considerable cognitive complexity in the negotiation, that would make obtaining an efficient solution quite challenging.

In order to understand if the lack of effects we observed were robust to the fact we are only estimating an average treatment, we interact the treatment with the quantity of liquid consumption, which is a proxy for alcohol inebriation in the treatments with alcohol.

We control the amount consumed by measuring the remaining wine in the glass. In that way, we can see whether inebriation can vary the effectiveness of the negotiation. Following Table 2, we run new regressions for hard negotiation in which we include interactions between the treatments and amount of liquid consumed (See Appendix I, Table I.3 for overall points, Table I.3a for candidate and Table I.3b for Employer). Results show that there is no effect of liquid consumption among wine treatments (no positive and significant treatment interaction terms).
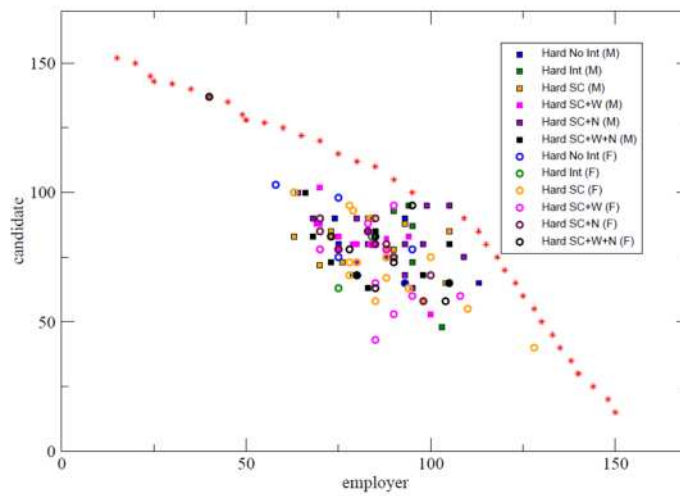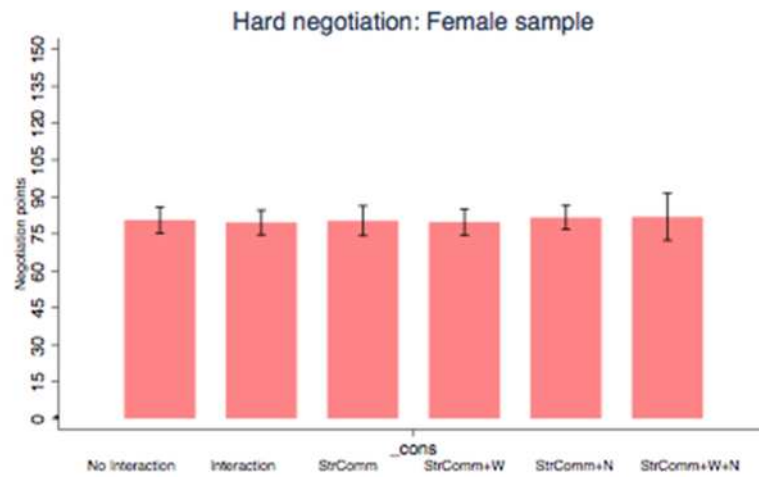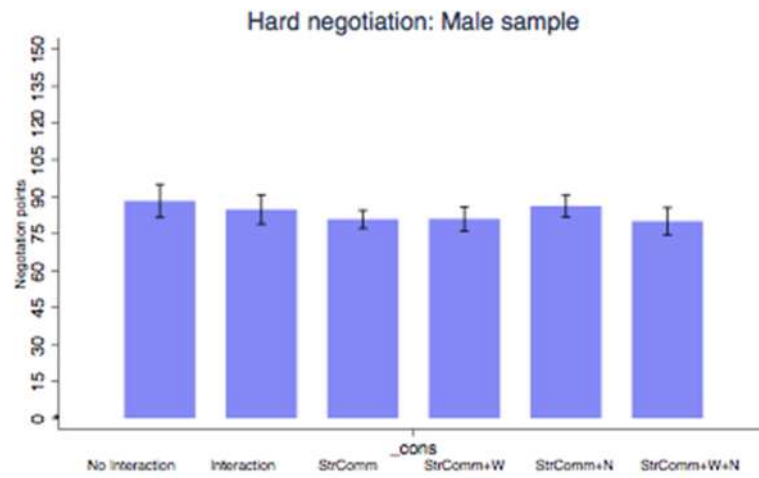
Figure 1: Results for Hard negotiation: Males (top) and females (medium); in the bottom Hard negotiation

results with respect to the Pareto frontier (in orange).

Table 2: Regression analysis (Double cluster. Individual and group level): Hard and Easy negotiation

	Hard Negotiation		Easy Negotiation	
	Male	Female	Male	Female
	1a	1b	2a	2b
Interaction	-3.462	-1.025	-8.542***	-4
	(4.621)	(1.956)	(3.004)	(3.421)
StrComm	-7.424*	-0.337	-6.750**	-3.750
	(3.812)	(1.082)	(2.596)	(2.648)
StrComm+W	-7.277*	-0.829	-2.292	-1.500
	(3.822)	(1.619)	(2.457)	(1.505)
StrComm+N	-2.062	1	0.750	-6.500**
	(4.233)	(0.924)	(0.649)	(2.847)
StrComm+W+N	-8.229**	1.250	-3.958**	-3.375*
	(4.068)	(2.095)	(1.635)	(1.723)
Employer	5.090**	6.838*	-0.786	-0.865
	(2.225)	(3.544)	(0.976)	(1.069)
Constant	85.77***	77.23***	60.39***	60.68***
	(3.723)	(1.995)	(0.687)	(0.636)
Obs.	156	136	140	104
R^2	0.100	0.061	0.218	0.101

Note: Standard errors in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$). Reference group: No Interaction.

b) Easy negotiation

One possible explanation why social interaction does not have an effect for the hard negotiation is that the problem to solve may be too complex. With five issues to discuss, there are too many trade-offs, even if participants are genuinely disposed to have a more profitable agreement. To test if this explanation had merit, we ran an experiment where we simplified the very same bargaining problem to two dimensions: wage and number of trips a month. Now participants only negotiate over these two dimensions.

Figure 2 (males at the top and females at the middle) shows the results descriptively. Again, we do not appreciate positive effects for pre-play interactions – structured or not –- on negotiation outcomes. The only differences are negative, that is, they reduce the total number of points earned in the negotiation with respect to the no-interaction benchmark. This is precisely the case for Interaction and StrComm.
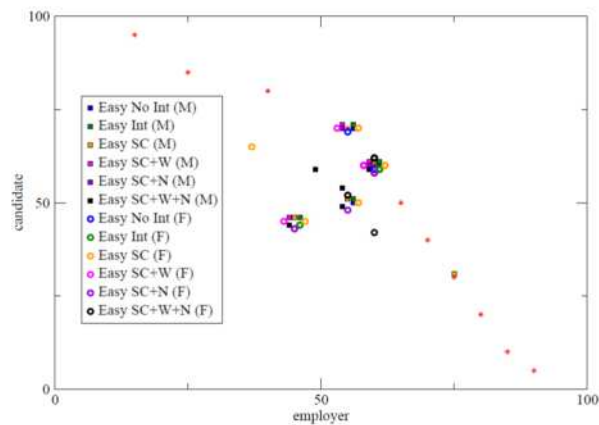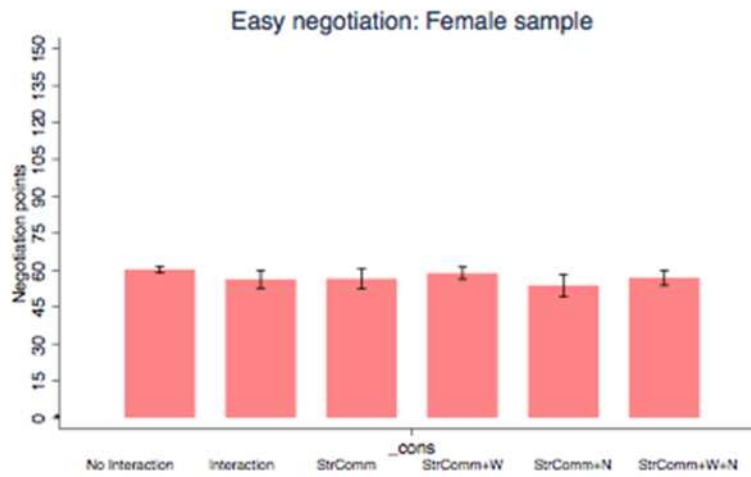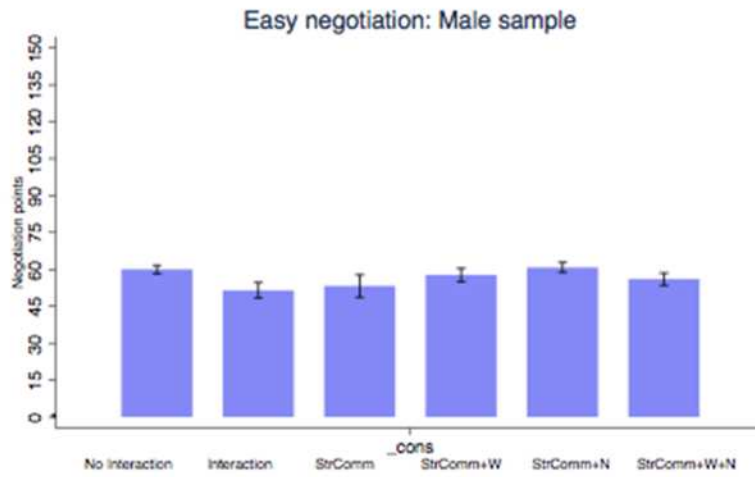
Figure 2: Results for Hard and Easy negotiation: Males (left) and females (right); outcomes for Easy (bottom) negotiation represented with respect to the Pareto frontier (in orange).

Columns 2a and 2b in Table 2 show the econometric analysis establishing these results formally. Interaction and StrComm is bad for men, as well as StrComm+W+N[13] while, for women, StrComm+N harms negotiation outcomes.

As in the case of hard negotiation, we have established the following result.

Result 2a: Result 1a –pre-play interactions do not improve the outcome of hard negotiations – is also replicated for easy negotiations.

In this way, we reject the hypothesis that the reason why pre-play communication does not generate positive outcomes in negotiations is because they are hard.

In a similar way to what happens in hard negotiations, we also do not find that pre-play negotiations make a positive difference, for neither employers nor candidates, as suggested in figure I.2 and confirmed using regression analysis in table I.1 columns 2a and 2b.

As in the case of the hard negotiation we conducted power computations to check if this drives the lack of significant positive effects. The estimated coefficients for StrComm+N in column 2a, is greater than its standard deviation. This effect expressed in standard deviation is greater than one, so in an experimental design with 5 treatments only 100 observations are necessary to find a statistically significant effect with a $p<0.05$. So, as with the hard negotiation it looks like there would be sufficient power to find significant effects if they existed.

Result 2b: Pre-play interactions - be it through free or structured interactions, alcohol or nibbles, do not improve the amount obtained by either candidates or employers of easy negotiation.

Let see how the easy negotiation with respect to the Pareto frontier. Figure 2 (bottom) shows the outcomes of the different environments. As for the Hard negotiation, it confirms visually the Results 2a and 2b above. But it also shows that the Easy negotiation environment makes the achievement of an efficient outcome much easier. A majority of the points are concentrated in the Pareto frontier. They are also quite symmetric as both players get very similar points. Clearly, the Easy environment makes the achievement of efficiency less daunting, showing the importance of information and cognitive constraints on negotiation. In that way we can show:

Result 2c: Lowering the number of issues in negotiations, and thereby their cognitive costs, increases the efficiency of negotiations.

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[13] As with hard negotiations, this replicates, partially, the result of Schweitzer and Gomberg (2001).

This analysis reassures us that the treatments do not improve the results of the negotiations.

As we already controlled in hard negotiations, Table I.3 from Appendix I includes new regressions for easy negotiation treatments. The regressions interact the quantity of liquid consumption among participants with the different treatments. As for with the hard negotiations, we do not find that the interactions shed any new light of the previous results in terms of efficiency. Table I.3a and I.3b repeat the analysis divided by Candidate and Employer

c) Trust

We might explain the absence of positive results for negotiations shown in previous section by the interplay of several factors. It might the case that alcohol makes people less thoughtful and more aggressive (Schweitzer and Gomberg, 2001), or that pre-play interaction make participants less focused on the task (Yuan, Head, and Du 2003). In this section we will focus exclusively on trust among participants. Since trust might be a moderating factor in bargaining – we need trust to reach agreements – we will study now how our participants played the Trust Game using the same treatments as before.

Figure 3 (top) shows the average trust behaviour among males (left) and females (right) across treatments. On the left side we show the baseline (no interaction) and moving to the right, treatments with an increasing number of characteristics. Table 3 analyses the same problem using a censored model (Tobit) and several independent variables (the treatments), where the reference groups is the "no interaction" treatment. Model 1a refers to males and Model 1b to the female subsample.

One first observation is that the trust level is higher than observed in many previous experiments. A likely cause for this difference is the fact that trust is higher because our participants interact face-to-face, something that is known to increase trust (see e.g. Wilson, Straus, and McEvily 2006) and it is also quite realistic and appropriate given the situations we are trying to mimic.

For men, the trust resulting from the baseline (no interaction at all) is higher (or no lower) than the one resulting from the other treatments involving social interaction. The Tobit regression found some significantly negative effects on trust: in StrComm+W+N (a business meal). Therefore, social interactions either do not help to enhance trust among males or even worsens it.
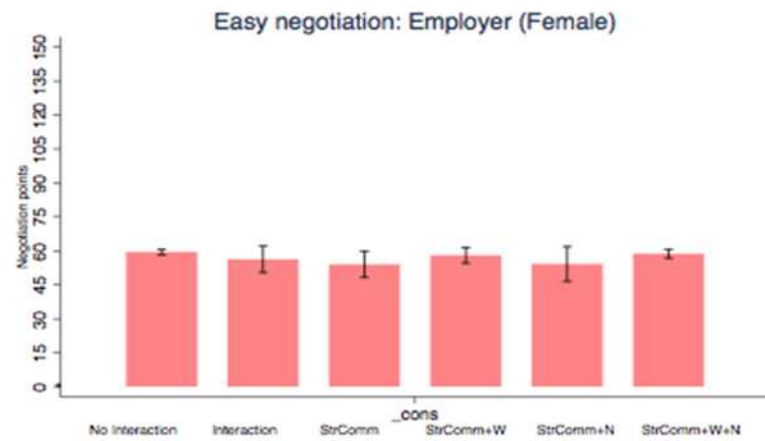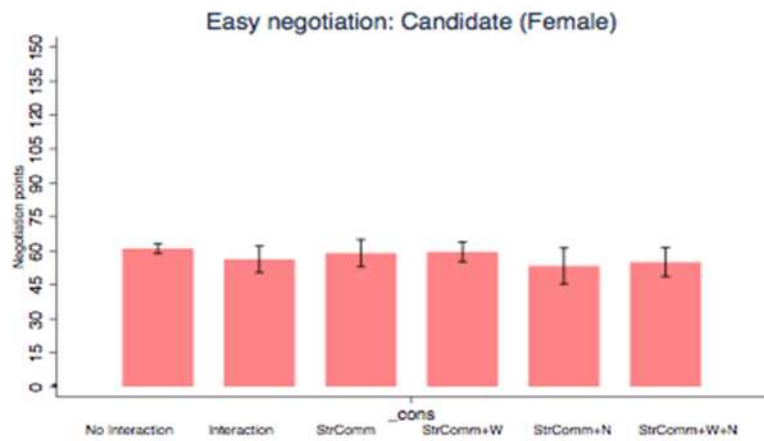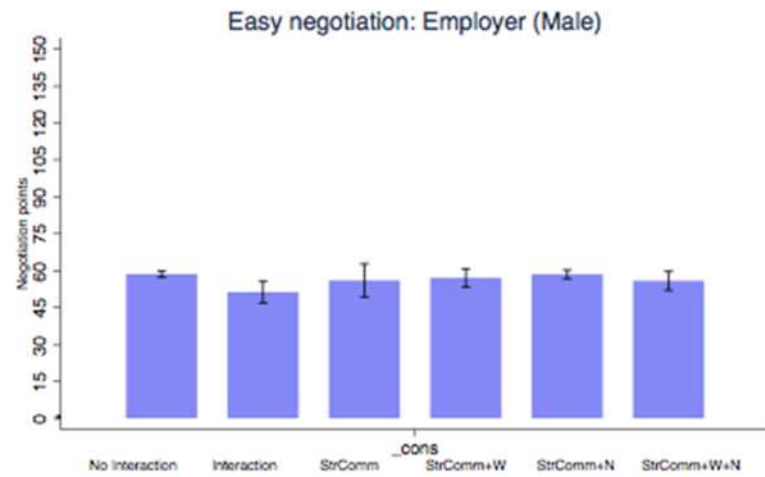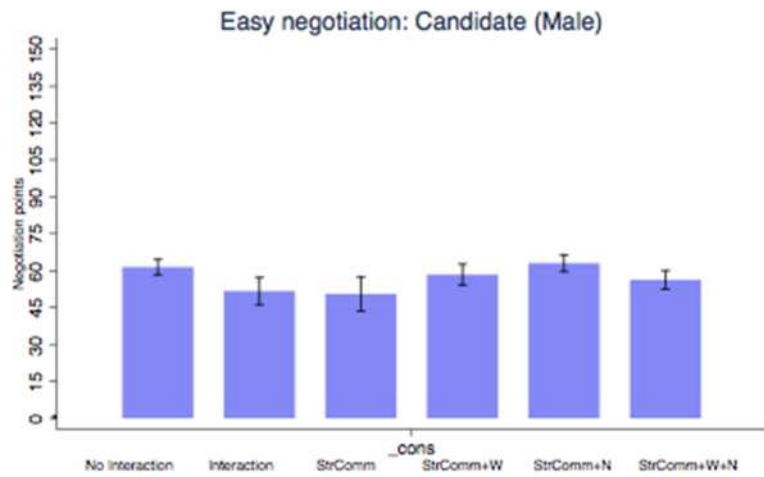
Figure 2: Results for Trust and Reciprocity: Males (left) and females (right)

Table 3: Regression analysis (Censored Tobit): Trust and Reciprocity by gender

	Trust		Reciprocity	
	Male	Female	Male	Female
	1a	1b	2a	2b
Interaction	-0.569***	0.310**	-0.293***	-0.188***
	(0.156)	(0.125)	(0.0545)	(0.0485)
StrComm	0.0189	0.0495	-0.0262	-0.0778*
	(0.154)	(0.102)	(0.0497)	(0.0407)
StrComm+W	0.0860	0.367***	-0.0239	0.0588
	(0.159)	(0.109)	(0.0521)	(0.0412)
StrComm+N	0.0808	0.265**	0.0285	-0.0311
	(0.159)	(0.119)	(0.0505)	(0.0457)
StrComm+W+N	-0.369**	0.153	0.0592	-0.00453
	(0.153)	(0.113)	(0.0514)	(0.0441)
Employer	0.0465	-0.0235	0.0227	-0.0176
	(0.0858)	(0.0656)	(0.0293)	(0.0250)
Constant	1.272***	0.681***	0.397***	0.427***
	(0.131)	(0.0833)	(0.0398)	(0.0332)
Obs.	296	237	287	232
R^2	0.079	0.049	0.361	-1.409

Note: Standard errors in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$)

For women, we find a slightly different result. Model 1b (Table 3) allows us to explore this issue. Using no-interaction as reference group, we see that unstructured communication clearly increases trust and so do Wine and Nibbles (but not together) and neither does structured communication. In all, some very simple social interactions may have a positive impact on trust for women but the effect for complex interactions - involving meals for instance- do not improve on basic interactions without any additional structure.

Result 3 summarizes our findings about trust.

Result 3:   For males, pre-play interactions - either free or structured ones, alcohol or nibbles do not improve trust. For females, unstructured communication provides at least as high a level of trust as more complex social interactions.

d) Reciprocity

Finally, we study whether reciprocity is sensitive to the different types of social conditions.[14] Recall that reciprocity reflects the amount of money an individual would like to return to another participant who previously sent him some money. This measure can be also interpreted as gratitude.

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[14] Fourteen participants did not respond correctly to the Reciprocity questions. As a result, we lost some observations between the trust and reciprocity experiments.

Our six treatments cover very different environments ranging from pure strangers (no pre-play interaction) to a situation akin to a business meal (spending time with the other partner, communicating with him or her, having wine and some food). The question is whether different levels of interaction may create different levels of reciprocity.

For males, we do not see effects of different forms of social interactions on reciprocity. Figure 3 (bottom) compares the average level of reciprocity among the six treatments for males (left) and females (right). It is straightforward to check that the different forms of interaction we tried do not seem to outperform the complete stranger environment (no pre-play interaction).

Table 3, model 2a, shows the ¡results using a censored regression model. No single independent variable has a positive and significant impact in trust for males.

The left side of Figure 3 (bottom) shows the treatments with women. Consistently with the male samples, reciprocity among women does not vary substantially in environments with different levels of interaction. Table 3, model 2b, shows the regression analysis: as in previous case, no single treatment outperforms the reference group (no interaction). We may conclude as follows.

Result 4:   Pre-play interactions do not improve reciprocity. This is true both for male and female participants.

5. Conclusions

In this paper, we have established that pre-play communication does not seem to help improve negotiation outcomes, neither at the aggregate session level, nor in the regression analysis, when we analyse more deeply the individual interactions. The lack of positive effects have been shown in a variety of conditions, with communication being more or less structured, accompanied or not by food and drink, and for both easy and hard negotiations. We have also shown that communication does not enhance trust, a possible pathway to improve negotiation outcomes.

As with any laboratory experiment, one potential limitation is the external validity of results. We believe this is less of a problem in our case. Our sample consists of business school students, from an elite business school, with tough exam entrance requirements. At the same time, they are also rather diverse and representative of the French society since as we mention in the design section many are recipients of social scholarships and the diversity index is the third highest in France. They most likely understand they will be negotiators in the future and many of whom have had internships prior to starting their studies and have an appreciation of the business world. They are clearly the kind of people that will do high level negotiations in the future.

One could argue that in an even more diverse setting, perhaps with people from very different socio-cultural origins, the results could be different. That is certainly a possibility worth studying in future research, but at a minimum we have established that an unqualified recommendation to "try to forge a personal connection by meeting for an informal lunch or two" is certainly not warranted. Similarly, it could be argued that in reality it is often one party who invites the other to the informal lunch, and perhaps the act of taking the trouble to call up and invite the other party to the informal communication signals some important personality trait on that party. Again, that is an interesting conjecture that is worth exploring, but even if so, our research shows that it is not the act of communicating per se which improves negotiation, but rather something else, the signalling.

On the other hand, our experiment mimics quite well the real business meal. We fixed the starting time of all experimental sessions was at the very same time (11 AM). This was done for two reasons: first, to prevent heterogeneity effects on participants due to glucose (see Danziger et al 2011); second, the timing of the trust and negotiation activities (which happened after the allocation of participants in the rooms and the interaction phase) occurred about noon, which is very close to real business lunchtime in France.

Finally, the policy implications of the paper are very significant. While it would be premature to change the tax codes and practices of many countries based on a single study, we would recommend that tax authorities to pay a lot more attention to the fact that the business lunch, or dinner, could be a form of untaxed in-kind compensation to employees leaking out of badly stretched public finances.

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Appendix I:

Hard negotiation: Candidate (Male)

Hard negotiation: Employer (Male)

Hard negotiation: Candidate (Female)

Hard negotiation: Employer (Female)

24
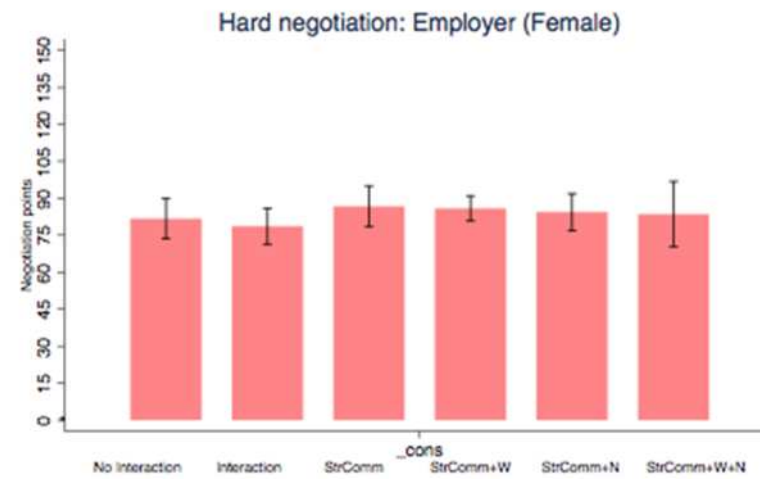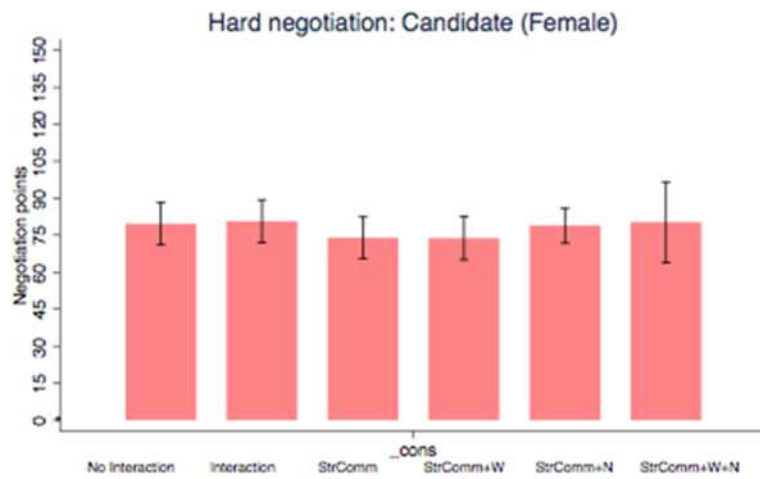
Figure I.1: Results for Hard negotiation (males and females): Candidate (left) and employer (right)

Figure I.2: Results for Easy negotiation (males and females): Candidate (left) and employer (right)

Table I.1: Regression analysis (Double cluster. Individual and group level): Hard and Easy negotiation (Candidate and Employer)

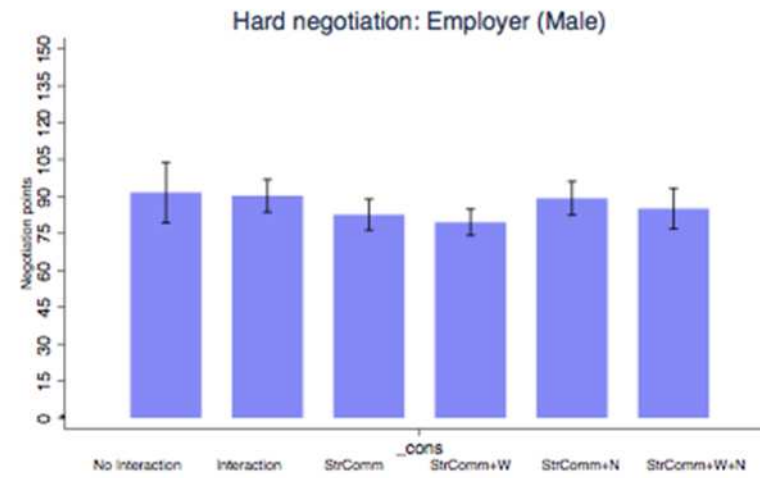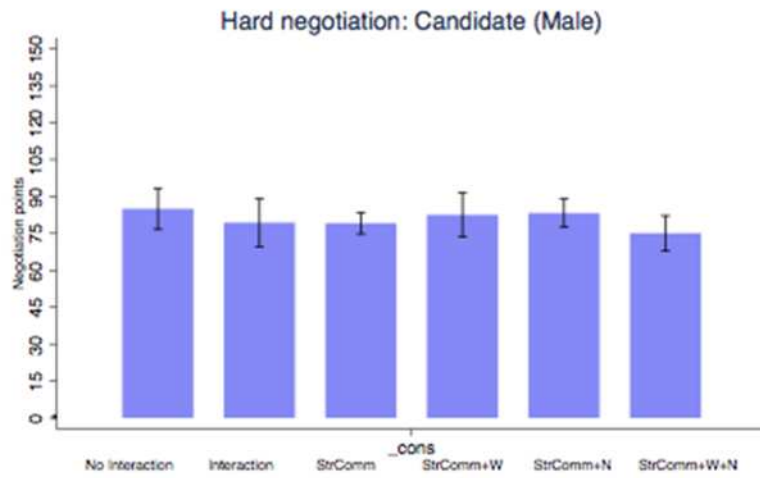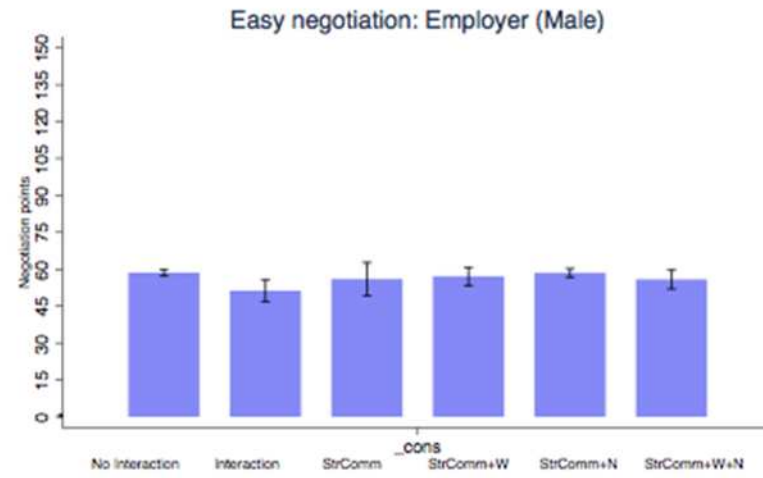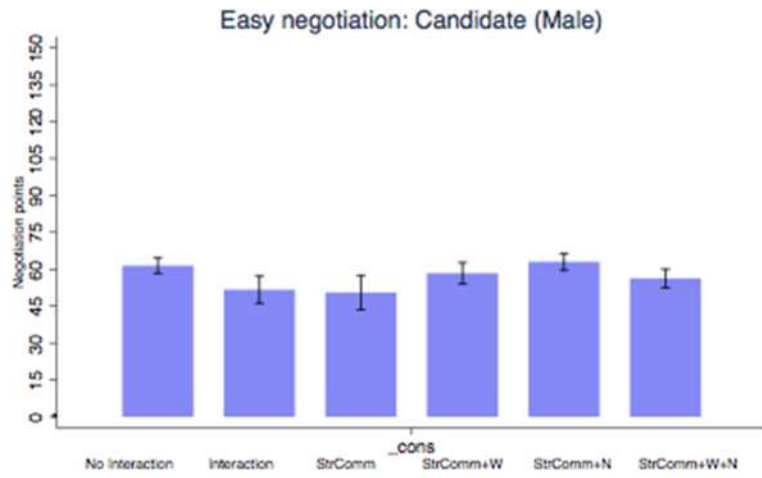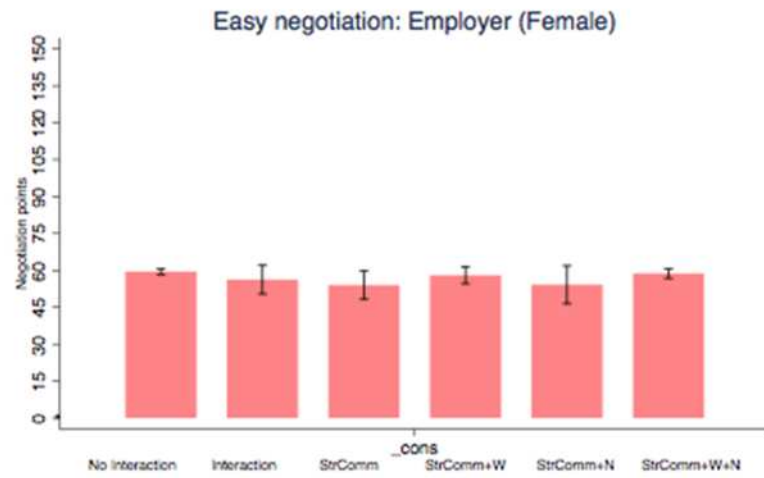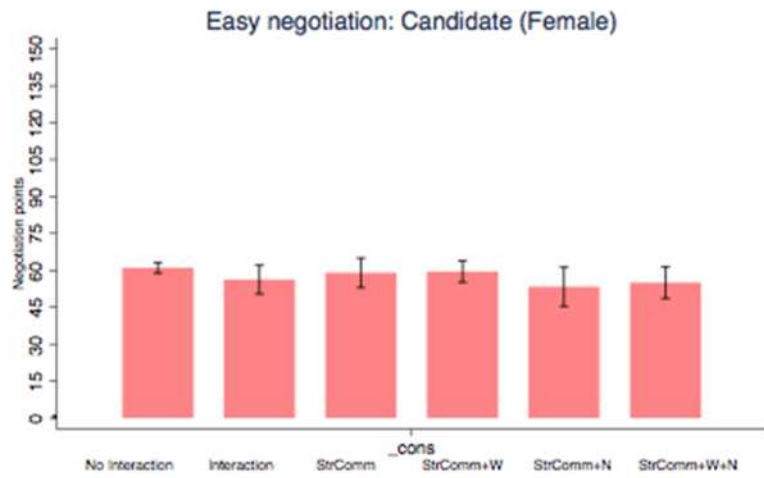|	Candidate				Employer			
	Hard Negotiation		Easy Negotiation		Hard Negotiation		Easy Negotiation	
	Male	Female	Male	Female	Male	Female	Male	Female
	1a	1b	2a	2b	1a	1b	2a	2b
Interaction	-5.600	1.025	-9.762***	-4.750	-1.325	-3.075	-7.321**	-3.250
	(7.188)	(5.650)	(3.553)	(3.617)	(5.500)	(4.187)	(2.852)	(3.520)
StrComm	-5.833	-5.662	-10.93***	-2	-9.014	4.987	-2.571	-5.500
	(4.981)	(5.623)	(3.932)	(3.327)	(5.662)	(5.585)	(2.742)	(3.561)
StrComm+W	-2.429	-5.814	-3.095	-1.500	-12.13**	4.157	-1.488	-1.500
	(5.732)	(5.168)	(2.829)	(2.148)	(5.265)	(3.445)	(2.466)	(1.480)
StrComm+N	-1.750	-0.700	1.571	-7.667**	-2.375	2.700	-0.0714	-5.333*
	(5.167)	(4.931)	(2.088)	(3.326)	(5.452)	(4.176)	(1.189)	(2.678)
StrComm+W+N	-9.917*	0.700	-5.179***	-6**	-6.542	1.800	-2.738	-0.750
	(5.649)	(8.568)	(1.625)	(2.851)	(5.641)	(7.517)	(2.062)	(1.258)
Constant	85***	79.60***	61.43***	61***	91.63***	81.70***	58.57***	59.50***
	(4.441)	(3.564)	(0.899)	(0.960)	(4.602)	(3.079)	(0.725)	(0.480)
Obs.	78	68	70	52	78	68	70	52
R^2	0.070	0.041	0.309	0.143	0.119	0.041	0.167	0.140

Note: Standard errors in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$). Reference group: No interaction

Table I.2: Regression analysis (Censored Tobit): Trust and Reciprocity by gender (Candidate and Employer)

	Candidate				Employer			
	Trust		Reciprocity		Trust		Reciprocity	
	Male	Female	Male	Female	Male	Female	Male	Female
	1a	1b	2a	2b	1a	1b	2a	2b
Interaction	-0.712***	0.318*	-0.309***	-0.176***	-0.441**	0.299*	-0.277***	-0.199***
	(0.237)	(0.177)	(0.0791)	(0.0660)	(0.204)	(0.173)	(0.0747)	(0.0706)
StrComm	-0.171	0.141	-0.0492	-0.0823	0.194	-0.0398	-0.00427	-0.0724
	(0.230)	(0.145)	(0.0722)	(0.0558)	(0.206)	(0.142)	(0.0681)	(0.0588)
StrComm+W	-0.0717	0.399**	-0.0413	0.0820	0.225	0.333**	-0.00719	0.0356
	(0.238)	(0.155)	(0.0758)	(0.0567)	(0.214)	(0.152)	(0.0713)	(0.0592)
StrComm+N	-0.0717	0.241	0.0562	0.00230	0.214	0.288*	0.00225	-0.0643
	(0.238)	(0.167)	(0.0732)	(0.0628)	(0.213)	(0.167)	(0.0692)	(0.0657)
StrComm+W+N	-0.512**	0.170	0.0469	0.0474	-0.240	0.135	0.0717	-0.0568
	(0.231)	(0.159)	(0.0742)	(0.0607)	(0.201)	(0.159)	(0.0709)	(0.0635)
Constant	1.423***	0.653***	0.403***	0.409***	1.179***	0.684***	0.413***	0.426***
	(0.192)	(0.108)	(0.0535)	(0.0423)	(0.159)	(0.107)	(0.0510)	(0.0442)
Obs.	148	118	142	117	148	119	145	115
R²	0.076	0.044	0.341	-1.480	0.088	0.060	0.403	-1.506

Note: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Reference group: No interaction

Table I.3 Control Effects (Censored Tobit)

	Hard Negotiation		Easy Negotiation	
	Male 1a	Female 1b	Male 2a	Female 2b
Employer	4.643**	6.835***	-0.499	-0.661
	(1.850)	(2.381)	(1.107)	(1.123)
Unstructured Communication	-3.463	-1.025	-8.542***	-4**
	(3.835)	(4.647)	(1.781)	(1.884)
Structured Communication	4.129	-0.401	-9.318*	-5.610
	(16.54)	(13.06)	(5.065)	(3.679)
SC + Wine	-4.658	-0.142	-2.292	-4.823*
	(23.23)	(6.995)	(1.781)	(2.867)
SC + Nibbles	-3.287	1	2.068	8.464
	(11.99)	(4.381)	(5.068)	(11.53)
SC + Wine + Nibbles	3.454	10.33	-3.049	12.45
	(6.803)	(18.30)	(5.055)	(9.535)
Liq.Cons.* Structured Communication	-39.61	0.229	10.36	8.265
	(55.46)	(45.01)	(19.58)	(14.32)
Liq.Cons.*(SC + Wine)	-8.889	-3.770		17.72
	(77.89)	(31.29)		(12.00)
Liq.Cons.*(SC + Nibbles)	74.52		-5.454	2.938
	(85.45)		(19.83)	(43.54)
Liq.Cons.*(SC + Wine + Nibbles)	-56.64**	-19.23	-1.121	-23.02*
	(27.71)	(46.59)	(17.79)	(12.35)
FoodCons.*(SC + Nibbles)	-21.41			-18.97**
	(23.37)			(7.616)
FoodCons.*(SC + Wine + Nibbles)		-8.160		-11.58
		(17.43)		(8.821)
Constant	85.99***	77.23***	60.25***	60.58***
	(3.004)	(3.319)	(1.331)	(1.376)
Obs.	156	136	136	104
R^2	0.017	0.007	0.036	0.035

Note: Standard errors in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$)

Table I.3a Control Effects (Censored Tobit) (Candidate)

	Hard Negotiation		Easy Negotiation	
	Male	Female	Male	Female
	1a	1b	2a	2b
Unstructured Communication	-5.600	1.025	-9.762***	-4.750*
	(5.210)	(6.230)	(2.678)	(2.612)
Structured Communication	6.176	8.605	-19.29***	-11.71*
	(22.47)	(16.14)	(7.094)	(6.914)
SC + Wine	-7.769	12.40	-3.095	-7.148*
	(22.52)	(11.73)	(2.678)	(3.804)
SC + Nibbles	12.71	-0.700	0.238	9.000
	(16.28)	(5.874)	(7.576)	(11.49)
SC + Wine + Nibbles	5.333	80.99***	-5.029	19.00
	(10.75)	(25.49)	(5.902)	(13.03)
Liq.Cons.* Structured Communication	-41.18	-52.48	36.20	38.10
	(75.35)	(56.08)	(28.84)	(25.34)
Liq.Cons.*(SC + Wine)	18.46	-100.00*		28.96*
	(75.99)	(57.03)		(14.87)
Liq.Cons.*(SC + Nibbles)	-51.43		5.556	-0
	(55.35)		(29.30)	(51.92)
Liq.Cons.*(SC + Wine + Nibbles)	-67.78	-34.22	-2.000	-35.09**
	(42.28)	(63.95)	(21.29)	(15.76)
FoodCons.*(SC + Nibbles)				-20.00
				(12.32)
FoodCons.*(SC + Wine + Nibbles)		-85.79***		-18.95
		(24.46)		(12.25)
Constant	85.00***	79.60***	61.43***	61.00***
	(3.883)	(4.153)	(1.820)	(1.742)
Obs.	78	68	68	52
R^2	0.015	0.034	0.055	0.064

Note: Standard errors in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$)

Table I.3b Control Effects (Censored Tobit) (Employer)

	Hard Negotiation		Easy Negotiation	
	Male 1a	Female 1b	Male 2a	Female 2b
Unstructured Communication	-1.325	-3.075	-7.321***	-3.250
	(5.372)	(5.243)	(2.099)	(2.390)
Structured Communication	2.081	-12.56	7.143	-1.695
	(23.16)	(16.29)	(6.638)	(3.943)
SC + Wine	-12.13**	-1.655	-1.488	-1.167
	(5.019)	(7.020)	(2.099)	(3.903)
SC + Nibbles	-19.39	2.700	4.429	9.250
	(16.81)	(4.943)	(6.017)	(7.724)
SC + Wine + Nibbles	1.179	-53.70**	4.206	5.885
	(8.595)	(20.23)	(10.91)	(12.37)
Liq.Cons.* Structured Communication	-38.04	62.38	-38.10	-19.51
	(77.69)	(55.70)	(24.55)	(16.59)
Liq.Cons.*(SC + Wine)	120.0		-20.00	
	(92.47)		(23.86)	
Liq.Cons.*(SC + Nibbles)	-41.18	-23.33	-18.52	-10.26
	(36.62)	(52.11)	(37.50)	(17.43)
Liq.Cons.*(SC + Wine + Nibbles)	-18.46			-17.50*
	(23.51)			(8.727)
FoodCons.*(SC + Nibbles)		31.91		-1.852
		(29.23)		(17.70)
FoodCons.*(SC + Wine + Nibbles)		64.00***		-4.615
		(19.14)		(11.18)
Constant	91.63***	81.70***	58.57***	59.50***
	(4.004)	(3.495)	(1.426)	(1.593)
Obs.	78	68	68	52
R²	0.021	0.034	0.038	0.040

Note: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)