University of Passau

Economics Faculty

Chair of Economic Theory

Professor Dr. Johann Graf Lambsdorff

UNIVERSITÄT PASSAU

The Impact of Communicating in a Foreign Language on the Cooperation Behaviour in a Prisoner's Dilemma

- An Experimental Analysis

Seminar Paper

Lab and Field Experiments: Corruption, Conflict and Cooperation

Seminar Leader: Dr. Katharina Werner

Summer Term 2019

written by

Julika Stauber

MA International Economics and Business

staube03@ads.uni-passau.de

Date of submission: 26.10.2019

Abstract

This experiment analyses whether people are more likely to cooperate with another person after having communicated with the person in their mother tongue opposed to after having spoken in a foreign language. The cooperation decision was embedded in a simple Prisoner's Dilemma. Results show that the language does not have any significant impact on cooperation and coordination rates. However, it could be supposed that exchanging more words during a conversation increases cooperation and coordination. This topic is especially relevant for multinational companies as in this context good communication and cooperation between team members, who are communicating with each other in a foreign language, are essential.

Table of Contents

List of Abbreviations

Economics of Corruption	EoC
percentage points	ppt
Prisoner's Dilemma	PD

List of Illustrations

1. Introduction

In a globalised world with multinational teams and companies, cooperation and coordination between people from different countries is becoming more and more important (Loosemore and Muslmani 1999).

However, as people often are located in different parts of the world, they can only communicate via written messages, telephone or video conferencing. These conversations are often held in English (Henderson 2005). According to Sharifian (2013), more than 80% of the communication held in English is between people for whom English is a foreign language. If non-native English speakers do not have a native proficiency, a language barrier arises which might hinder effective communication in these teams (Tenzer, Pudelko and Harzing 2014). This might result in misunderstandings (Cavallera 2016) and reduced trust within these teams (Tenzer, Pudelko and Harzing 2014). Hence, it is of great importance to examine how people interact with others in foreign languages.

There is already research into decision behaviour with decision problems being posed in different language e.g. Keysar, Hayakawa and An (2012) and Costa et al. (2014). However, experiments that examine the cooperation behaviour between people after they communicated in different languages seem to be lacking. This experiment intends to investigate this gap in experimental literature by answering the research question whether people are more likely to cooperate with each other in a posed decision problem after they talked to each other in their mother tongue opposed to when having communicated in a foreign language. A Prisoner's Dilemma (PD) setting with prior communication via a chat is used, resembling interaction via E-Mails or chats. However, no significant treatment effects could be found.

2. Related Literature

The underlying idea that communicating in a foreign language could create barriers between two persons is i.a. discussed by Tenzer, Pudelko and Harzing (2014) who, based on a qualitative design, state that a language barrier decreases trust.

There is extensive experimental research using the PD with and without prior communication and some experimental research that looks at the impact of language on decisions. Keysar, Hayakawa and An (2012), for example, examine whether people make the same decisions when receiving instructions in a foreign language compared to their mother tongue. They find that framing effects disappear, loss aversion is reduced and the acceptance of bets increases in the

foreign language treatment. Costa et al. (2014) also change the language of the instructions of a trolley dilemma and find evidence that a foreign language leads to more utilitarian decisions in the footbridge version of this dilemma. In this version, participants had to decide whether to push a heavy man down a bridge to stop a train in order to save the lives of five people. However, when they looked at the switch version of the dilemma, i.e. pulling a switch to redirect the train to another track, they cannot find any difference in decisions in the different language treatments. They suggest that the effect of foreign language runs via emotionality. Another experimental study by Hemesath and Pomponio (1998) looks at the decisions of students from China and the US in a PD and finds that there is less cooperation if the partner is from the other country.

However, this experimental language literature only investigates the influence of providing the instructions in different languages and not of talking to each other in different languages before making a decision.

During the Economics of Corruption (EoC) week at the University of Passau in October 2018, some other students and I conducted an experiment in the form of a stag hunt game with communication before a decision between the participants either in their native language German or in a foreign language, English. We found that groups who talked in German before having to decide whether to accept a bribe were indeed 28 percentage points (ppt) more likely to engage in corrupt behaviour than groups talking in English. As here, the treatment also was the communication in different languages before being confronted with a decision situation, this experiment forms the main basis of my experiment.

3. Experimental Design

The experimental design builds on the PD which was already discussed in 1950 by Flood and Dresher and got its name from Tucker (Kuhn 2019), and the small-scale experiment conducted during the EoC. It now combines a PD with upfront communication via a chat in German or English. Treatments, i.e. the German and the English version of the experiment, were played in different sessions, hence a between-subject design was used. Subjects were randomly assigned to groups of two, being either *Player A* or *Player B*, and then instructed to communicate via a chat window with their assigned partner for three minutes about what they like to do in summer in Passau. These instructions were given either in German or in English depending on the respective treatment. In addition, the subjects in the English treatment were asked to

communicate with their partner in English exclusively. The stages after the chat were in German for all participants to avoid the distortion due to different instruction languages which e.g. Keysar, Hayakawa and An (2012) showed. Directly after the chat the PD was explained, and all subjects had to decide to either cooperate or not to cooperate with the other person. All possible outcomes were explained in the instructions to make sure that everyone understood the game and no anchoring on a specific strategy took place. In addition, it was clearly stated that the partner does not know about the decision before taking his/her own. After the PD decision, the participants' beliefs about their partner's decision were retrieved and the level of sympathy for the partner was indicated on a scale from 1 to 10, 1 representing low and 10 high sympathy. Afterwards, the decisions and corresponding payoffs were displayed. All subjects in a session received the same information and as the experiment was a one-shot game, subjects did neither change roles nor groups during the experiment. The complete instructions and displayed information can be found in the appendix (A2-8).

4. Setting

For programming and running the experiment, the software z-tree (Fischbacher 2007) was used. The experiment was conducted in 14 sessions as part of a graduate level seminar at the University of Passau on 2nd and 3rd of July 2019 in a computer laboratory. To ensure anonymity, the participants were separated from each other and from the experimenters by movable walls.

In each session, additionally, a second independent experiment was conducted, i.e. participants always took part in two consecutive experiments. At the beginning of each session, general instructions (A1) were read out loudly in German, directly followed by the first experiment. The order and the treatments of the both experiments were randomly altered in each session and there were no significant order effects. After finishing both experiments, the participants had to answer one common questionnaire with mainly demographic questions (A9,10). The sessions lasted on average about 15 minutes and either 12 or 18 people participated.

Most participants were recruited by asking people on campus to participate directly before each session. In addition, the experiments were announced in lectures, via facebook and on posters at the days of conduct. Upon arrival at the laboratory, participants drew a number to be randomly assigned to PCs. Overall, 234 people participated in this experiment.

Payoffs of this experiment were not paid out in money, but participants were incentivised by free coffee, sweets and fruits. However, participants could win an escape game coupon in the other experiment conducted during the same session.

5. Hypotheses

As there is no literature that directly assesses the impact of talking to a person in either mother tongue or foreign language prior to a decision that affects the person talked to, the following hypotheses were derived from the experiment conducted during the EoC in 2018. Since the cooperation rate in the German treatment has been found to be 28ppt higher compared to the foreign language treatment, participants in the German treatment in this experiment are believed to choose "Cooperate" more often than in the English one. This expectation would also be in line with Tenzer, Pudelko and Harzing (2014), who state that a language barrier decreases trust. In this experiment, decreased trust is expected to result in a lower cooperation rate.

H1: "Cooperate" is chosen more often in the German than in the English treatment.

It directly follows from this hypothesis that mutual cooperation, i.e. both players in a group choose to cooperate, is also expected to occur more often in the German treatment.

In addition, as Cavallera (2016) states that communicating in a foreign language might result in misunderstandings, I expect participants in the German treatment to have a higher coordination rate, i.e. both people in the group choose the same strategy, than the ones in the English treatment.

H2: Participants in the German treatment have a higher coordination rate, i.e. groups are more likely to choose the same strategy, which results in mutual cooperation or mutual non-cooperation.

In addition, Costa et al. (2014) find that the behaviour of participants in the foreign language treatment approaches the behaviour in the mother tongue treatment the higher their proficiency level of the foreign language was. Therefore, my next hypothesis is on the impact of the English level on the cooperation rate.

H3: Participants in the English treatment who classified their English level as bad have a lower cooperation rate than other participants.

However, the willingness to cooperate could also be a result of perceived sympathy of the partner. Thus, I expect that a higher sympathy level increases the cooperation rate independent from the treatment participants are in.

H4: The more sympathetic the partner is classified, the more often "Cooperate" is chosen.

6. Data

The following analysis is based on two datasets. The first dataset excludes bad observations, i.e. one group in the English treatment that did not talk in English and a group with one participant who spoke neither German nor English well and thus, did not understand the instructions. Also excluded are all non-German speakers and their partners. The partners are dropped as well, as they did not talk to someone with the same mother tongue and hence, no mother tongue conversation took place. 182 observations remain in this first dataset, 98 of which are in the German and 84 in the English treatment.

The second dataset only excludes bad observations, leaving 230 observations, and was used to conduct a robustness check by only looking at non-German speakers, see chapter 7.6.

In Table 1 some descriptive statistics for the first dataset can be found. Male is a dummy for being male, the semester variable states in which semester the participants are and gametheory as well as prisoners_dilemma are dummies for knowing the respective concepts. Table 1 shows that there is no significant difference between the treatments. Therefore, it can be concluded that the randomisation worked. The higher percentage of female participants is in line with the share of females studying at the University of Passau.

	(1)	(2)	(3)
	English	German	ttest
	mean	mean	b
male	0.4167	0.3673	-0.0493
age	22.1905	22.5918	0.4014
semester	4.3333	4.1735	-0.1599
gametheory	0.7024	0.6633	-0.0391
prisoners_dilemma	0.6548	0.6327	-0.0221
N	84	98	182

This table shows the means for individual characteristics in the English and German treatment. t-test for differences in means (German – English): significance levels *p<0.1, **p<0.05, ***p<0.01.

7. Results

7.1 Cooperation Rate per Treatment

H1 hypothesised that the cooperation rate in the German treatment would be higher than in the English treatment. However, Figure 1 illustrates the opposite, as 75% of the participants in the English treatment chose "Cooperate" whereas in the German treatment, only 71.43% did. A Fisher's exact test (A11) was conducted to test whether the difference between the treatments is statistically significant. However, as this test gives a large p-value of 0.619, the result cannot be considered significant. In addition, also the group cooperation rate per treatment was analysed, i.e. that both players in the group chose "Cooperate". Figure 2 shows that the group cooperation rate was about 3.7ppt higher in the English compared to the German treatment as well. The Fisher's exact test (A12) again depicts a non-significant difference. Hence, H1 can be rejected.

R1: Communicating in a foreign language compared to the mother tongue prior to the decision in a PD has no effect on the cooperation rate.
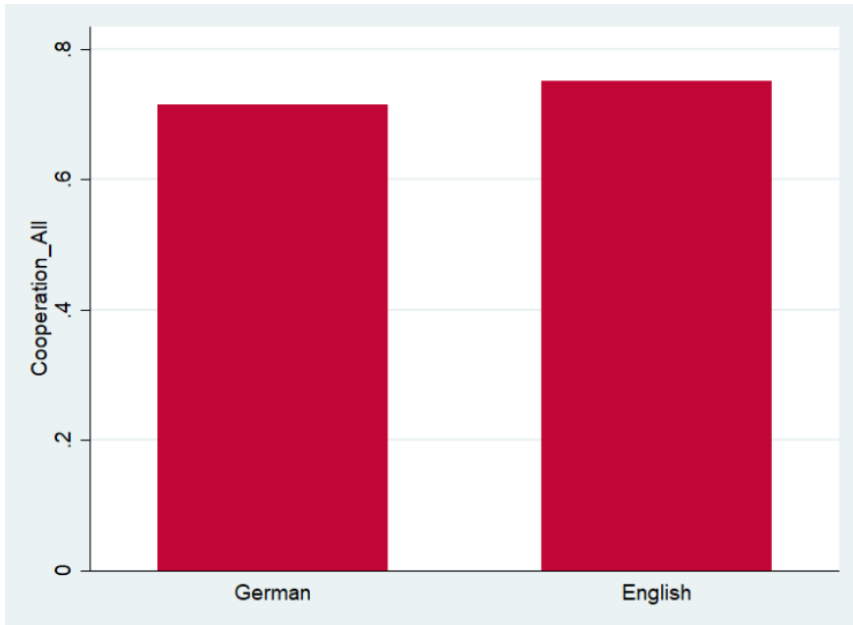
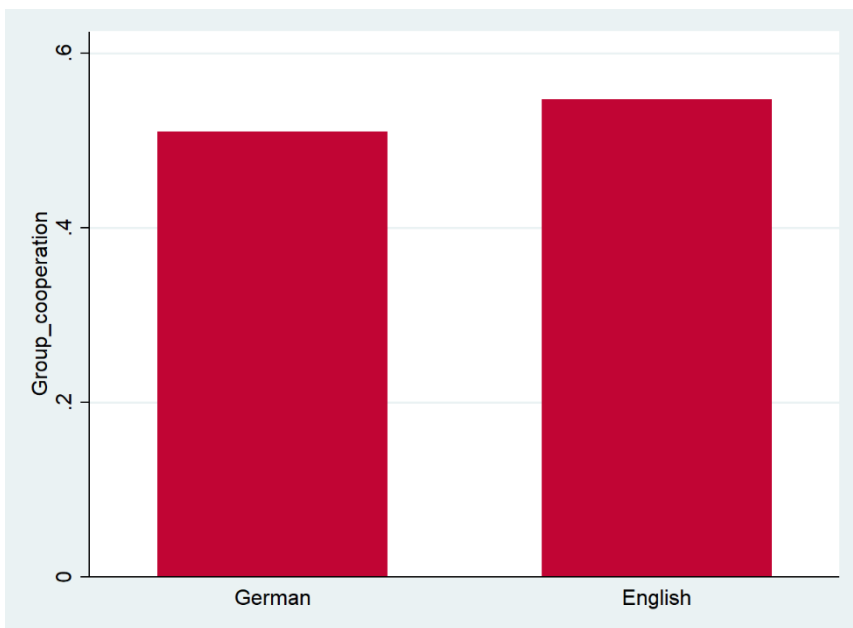*Figure 1: Individual cooperation rate in percent by treatment*

Figure 2: Group cooperation rate in percent by treatment

7.2 Coordination Rate per Treatment

H2 states that participants in the German treatment would have a higher coordination rate, meaning that the two players in a group choose the same option in the PD. As Figure 3 depicts, coordination rates are almost the same in both treatments, with an only slightly higher rate in the English treatment. Unsurprisingly, the Fisher's exact test (A13) depicts an insignificant difference between the treatments. Consequently, H2 cannot be confirmed either.
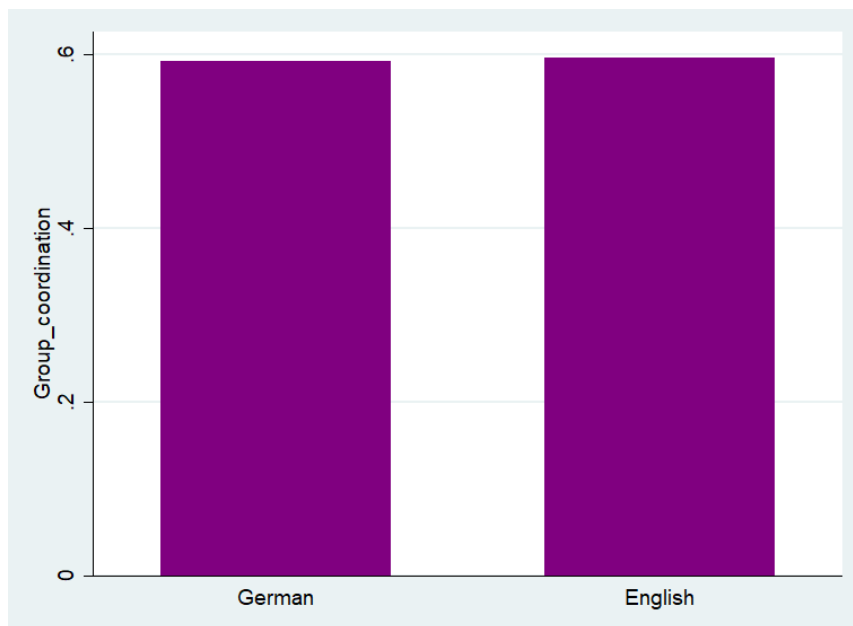

Figure 3: Coordination rate in percent by treatment

R2: Communicating in a foreign language compared to the mother tongue prior to the decision in a PD has no effect on the coordination rate within a group.

7.3 Effect of English Level on Cooperation

In H3 it was hypothesised that participants in the English treatment with a bad English level would cooperate less than other participants. However, as Figure 4 depicts, participants who classified their English as bad, i.e. indicated an English level of 1 to 5 out of 10, had a cooperation rate of 92.31% whereas participants with a good English level only cooperated in 71.83% of the cases. This directly contradicts H3. However, only 13 people in the English treatment classified their English as bad, which is a small number, which cannot be considered representative. In addition, the Fisher's exact test (A14) again yields a non-significant difference between the two English level groups.

R3: The English proficiency does not significantly influence the individual cooperation rate.
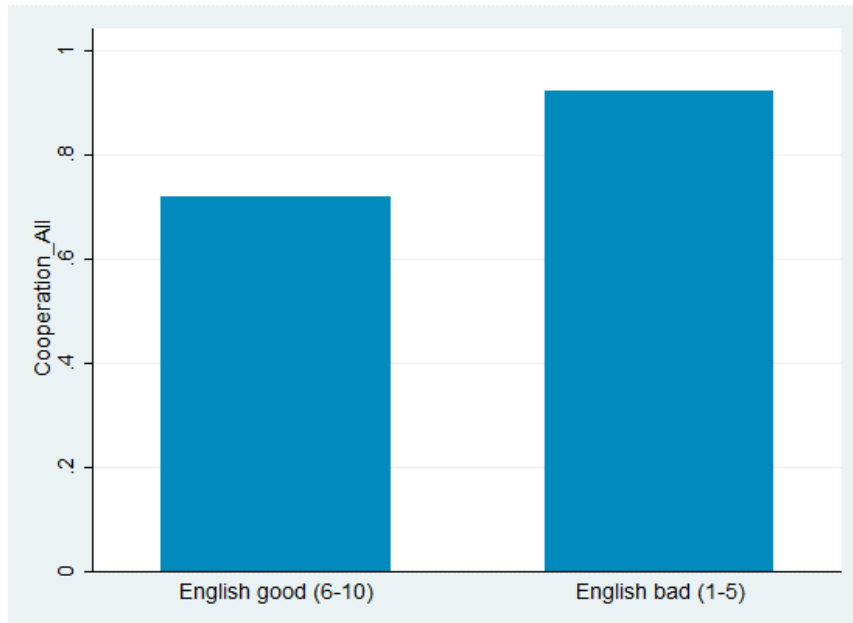
Figure 4: Individual cooperation rate in percent by English level in the English treatment

7.4 Effect of Sympathy Level on Cooperation

H4 states that the higher a participant rated their sympathy for their partner, the higher the individual cooperation rate would be. Leaving out sympathy level 2, it might appear that cooperation rates indeed increase by sympathy level, as can be seen in Figure 5. To test for significance, logit regressions with and without control variables were conducted. The dependent variable was individual cooperation, which is one in case the participant chose "Cooperate" and zero otherwise. The variable English is a dummy for being in the English treatment and Groupwords is a variable for the number of words exchanged during the chat. Both regressions show a non-significant effect of the sympathy level on the cooperation rate, see Table 2. Hence, H4 must be rejected as well.

R4: The sympathy level has no significant effect on the individual willingness to cooperate.
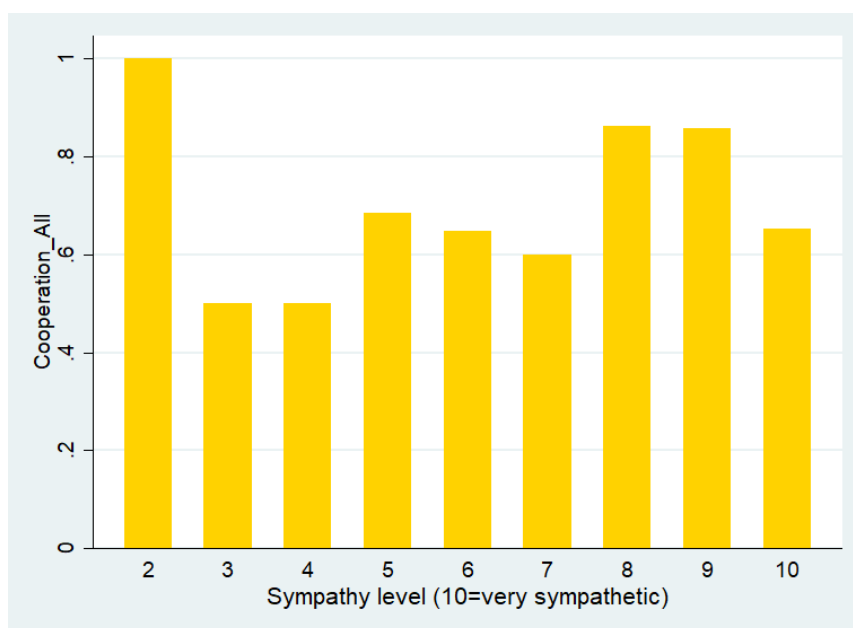
Figure 5: Individual cooperation rate in percent by sympathy levels

Table 2: Impact of the sympathy level on the individual cooperation rate

VARIABLES	(1) Cooperation	(2) Cooperation
Sympathy_All	0.0251	0.0169
	(0.0166)	(0.0170)
English		0.0643
		(0.0656)
male		-0.0746
		(0.0654)
age		0.0114
		(0.0144)
gametheory		0.00472
		(0.0860)
Prisoners_dilemma		-0.101
		(0.0838)
Groupwords		0.00172*
		(0.00102)
Observations	182	182

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.5 Other Results

As the variable Groupwords was found to be positively related to the individual cooperation rate (Table 2), further regressions to deeper analyse this matter were conducted. The individual cooperation rate significantly, at the 10%-level, increases when looking at the whole sample, whereas the effect is insignificant when looking at the treatments separately (Table 3). When looking at group cooperation and coordination as outcome variables, the positive effect of Groupwords in the whole sample is larger than for individual cooperation and significant at the 1%-level and the 10%-level respectively. The positive coefficient in the German sample is larger and significant at the 5%-level for group cooperation and at the 10%-level for coordination, see Table 4 and 5.

Table 3: Impact of number of words exchanged on the individual cooperation rate

	Effect of Groupwords on Cooperation		
	(1)	(2)	(3)
VARIABLES	Whole sample	English	German
Groupwords	0.00177*	0.00189	0.00203
	(0.000988)	(0.00149)	(0.00139)
male	-0.0773	-0.0214	-0.113
	(0.0656)	(0.0990)	(0.0883)
age	0.0113	0.00113	0.0215
	(0.0143)	(0.0195)	(0.0219)
gametheory	0.00481	0.0435	-0.0492
	(0.0861)	(0.121)	(0.122)
Prisoners_dilemma	-0.0948	-0.165	-0.0431
	(0.0837)	(0.120)	(0.119)
Observations	182	84	98

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Impact of number of words exchanged on group cooperation

	Effect of Groupwords on Group Cooperation		
	(1)	(2)	(3)
VARIABLES	Whole sample	English	German
Groupwords	0.00285***	0.00169	0.00362**
	(0.00108)	(0.00171)	(0.00146)
male	-0.00608	-0.0624	0.0137
	(0.0758)	(0.114)	(0.101)
age	0.00247	-0.00595	0.0142
	(0.0149)	(0.0217)	(0.0208)
gametheory	0.0563	0.0462	0.0876
	(0.0958)	(0.137)	(0.133)
Prisoners_dilemma	-0.0587	0.0715	-0.170
	(0.0927)	(0.131)	(0.128)
Observations	182	84	98

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Impact of number of words exchanged on coordination

	Effect of Groupwords on Coordination		
	(1)	(2)	(3)
VARIABLES	Whole sample	English	German
Groupwords	0.00188*	0.000209	0.00251*
	(0.00110)	(0.00171)	(0.00149)
male	-0.00718	-0.0787	0.0208
	(0.0753)	(0.112)	(0.100)
age	0.0129	-0.000258	0.0317
	(0.0152)	(0.0213)	(0.0226)
gametheory	0.0230	0.0267	0.0519
	(0.0945)	(0.135)	(0.132)
Prisoners_dilemma	-0.0167	0.167	-0.181
	(0.0918)	(0.124)	(0.126)
Observations	182	84	98

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Also, as A15 depicts, there is a positive effect of sympathy on the coordination rate which is significant at the 10%-level without including any controls. However, as soon as control variables are included, the coefficient turns insignificant. Looking at the impact of the variable English_bad on coordination, A16 shows that coordination is lower for bad English levels which is in line with the expectations. However, the difference between the bad and the good English level is not significant (A17).

7.6 Robustness Check

To check for robustness, it was only looked at the non-German participants, who did not have English as their native language. To have robust results, that comply with the hypotheses, no differences in the cooperation rates should be found between the treatments as both, German and English, were foreign languages for these participants. The results presented in A18, however, show large differences between the cooperation rates in the different treatments which contradicts the expectations. In the English treatment, the cooperation rate was about 20ppt higher than in the German treatment. Interestingly, the proficiency in German of the participants in the German treatment was higher than the proficiency in English for those in the English treatment (A19). This contradicts the hypotheses as it was expected to have a higher cooperation rate, the higher the proficiency of a language as it then approaches the native language. However, the Fisher's exact test (A20) shows that the difference between the treatments is not significant. In addition, standard deviations are quite large and there are only 25 observations, which is not representative.

8. Discussion and Limitations

The analysis shows that none of the hypotheses could be confirmed, i.e. the language chosen for a chat conversation directly before a neutrally formulated decision problem does not seem to have any impact on that decision in terms of cooperation or coordination, and sympathy also does not seem to have any effect on neither of both. On the one hand, this is surprising because strong effects were found in the experiment conducted during the EoC in 2018, as described in chapter 2. On the other hand, the results of this experiment, which was of neutral instead of moral or emotional nature, do not contradict Costa et al.'s (2014) assumption that the foreign language effect could run via emotionality.

The effects found during the EoC in 2018 might lead back to the fact that first, emotions were involved as it was a bribe setting and second, the conversation before the decision problem took place in person. This direct conversation might lead to different results than a chat, e.g. because while in a conversation people hear whether the other person has a strong German accent or a fluent English, a lot of language problems can be covered up during a chat.

The finding that the number of group words is not significant for the tested outcomes in the English sample, most probably arises because of the slightly smaller sample size in the English treatment.

Furthermore, this experiment came with several limitations.

As only 13 out of 84 participants in the English treatment classified their English as bad, it was hardly possible to test H3 as this number is not representative. Additionally, only 25 non-German students participated, which is why the robustness check can neither be considered strong nor representative. Moreover, the payoffs where not paid out in money which might have led to three kinds of distortions. First, with monetary payoffs participants might have acted more profit maximising. Second, this might have caused a selection problem, i.e. the participants might have participated only because they wanted to help the experimenter which might indicate a higher level of altruism. Both distortions might have led to a higher cooperation and coordination rate than in other samples. Third, participants might have acted differently than usual because in the other experiment in the same sessions, they could win an escape game coupon.

9. Conclusion

This experiment shows that foreign language in written communication before making a decision seems to have no effects on cooperation or coordination in a neutral setting. Hence, it can be concluded that as long as decisions and actions in international teams are of a neutral nature, e.g. cooperating with someone, which requires a subliminal decision to do so, language barriers do not hinder teamwork. However, it can be guessed, that when communicating via written messages, people might be well advised to describe the matter more thoroughly to avoid miscommunications in order to achieve a good cooperation and coordination with their team members.

Although the hypotheses in this analysis could not be confirmed, the results of this study should not be neglected as they further confirm Costa et al.'s (2014) suggestion that the foreign language effect runs via emotionality. Moreover, it is the first experimental study to look at the effect of language differences in a conversation before these participants had to make a decision concerning their payoffs.

Future research could first, conduct the experiment with a larger scope and a non-university setting. Secondly, it would be interesting to investigate different decision situations, ranging from neutral to moral ones. Thirdly, experiments that look at different native and foreign language combinations in the pre-decision conversation, as Keysar, Hayakawa and An (2012) did with the instructions, could lead to further insights.

References

Cavallera, M. (2016) Challenges with Working in a Cross-Cultural and Multilingual Environment, retrieved from https://www.globalizationpartners.com/2016/06/23/challenges-with-working-in-a-cross-cultural-and-multilingual-environment/, last accessed: 13.10.2019.

Costa, A., Foucart, A., Hayakawa, S., Aparici, M., Apesteguia, J., Heafner, J., & Keysar, B. (2014), Your morals depend on language. *PloS one* 9(4), e94842.

Fischbacher, U. (2007), z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental economics* 10(2), pp. 171–178.

Hemesath, M., & Pomponio, X. (1998), Cooperation and culture: Students from China and the United States in a prisoner's dilemma. *Cross-Cultural Research* 32(2), pp. 171-184.

Henderson, J.K. (2005), Language diversity in international management teams. *International Studies of Management & Organization* 35(1), pp. 66-82.

Keysar, B., Hayakawa, S.L. & An, S.G. (2012), The foreign-language effect: thinking in a foreign tongue reduces decision biases. *Psychological science* 23 (6), pp. 661–668.

Kuhn, S. (2019), "Prisoner's Dilemma", The Stanford Encyclopedia of Philosophy (Summer 2019 Edition), Edward N. Zalta (ed.), retrieved from https://plato.stanford.edu/archives/sum2019/entries/prisoner-dilemma/, last accessed: 13.10.2019.

Loosemore, M., & Muslmani, H.A. (1999), Construction project management in the Persian Gulf: inter-cultural communication. *International Journal of Project Management* 17(2), pp. 95-100.

Sharifian, F. (2013), Globalisation and developing metacultural competence in learning English as an International Language. *Multilingual Education* 3(1), pp. 7-17.

Tenzer, H., Pudelko, M. and Harzing, A.W. (2014), The Impact of Language Barriers on Trust Formation in Multinational Teams. *Journal of International Business Studies* 45 (5), pp. 508-535.

Appendix

A1: Oral Instructions

Herzlich Willkommen!

Vielen Dank für Ihre Bereitschaft, an zwei kurzen Experimenten im Rahmen des Masterseminars „Experimental Economics" teilzunehmen. Bevor das erste Experiment startet, einige allgemeine Erläuterungen vorab: Mit den Experimenten wollen wir Erkenntnisse über menschliches Verhalten gewinnen. Die Teilnehmer an den Experimenten befinden sich alle hier im Raum und nehmen an denselben Experimenten teil. Alle Teilnehmer sind anonym und können sich nicht untereinander absprechen. Auch Ihre Entscheidungen und Angaben werden anonym ausgewertet. Bitte verhalten Sie sich während der Experimente ruhig und sprechen Sie nicht mit Ihrem Nachbarn. Beachten Sie, dass es während der Experimente zu Wartezeiten kommen kann. Bitte verhalten Sie sich auch während dieser Wartezeiten ruhig und schauen Sie nicht auf Ihr Smartphone.

Bitte lesen Sie alle Anweisungen sorgfältig durch und klicken erst auf „Weiter", wenn Sie alles verstanden haben. Haben Sie einen Bildschirm einmal verlassen, kann dieser nicht erneut aufgerufen werden.

Version 1: Im ersten Experiment wird die Verlosung der Gutscheine, wie erklärt, tatsächlich durchgeführt. Die Gewinne im zweiten Experiment sind hypothetisch. Stattdessen werden Sie mit Kaffee und leckeren Snacks entlohnt. Versuchen Sie dennoch sich vorzustellen und sich so zu verhalten, als würde um echtes Geld gespielt werden.

Version 2: Die Gewinne im ersten Experiment sind hypothetisch. Stattdessen werden Sie mit Kaffee und leckeren Snacks entlohnt. Versuchen Sie dennoch sich vorzustellen und sich so zu verhalten, als würde um echtes Geld gespielt werden. Im zweiten Experiment wird die Verlosung der Gutscheine, wie erklärt, tatsächlich durchgeführt.

Auf Ihrem Platz befindet sich eine Platznummer, welche auf dem PC geklebt ist, und eine Losnummer. Weitere Infos erhalten Sie im Laufe der Experimente.

Bitte lesen Sie die Anleitungen sorgfältig durch und heben Sie Ihre Hand im Falle noch offener Fragen. Ein Spielleiter kommt dann zu Ihnen. Sie können jetzt mit dem ersten Experiment beginnen: Klicken Sie dazu auf 'Experiment starten'.

18

Written Instructions and Information (Design)
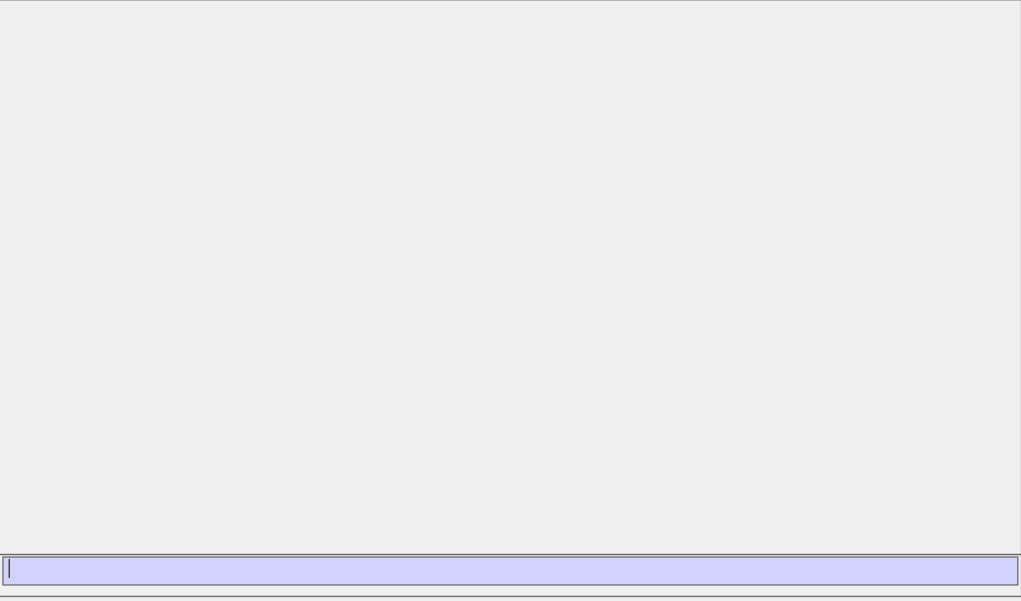
A2: Description chat – German treatment

Sie wurden zufällig in Zweier-Gruppen aufgeteilt.

In jeder Gruppe gibt es einen "Player A" und einen "Player B". **Sie sind "Player A".**

Bitte unterhalten Sie sich über das Chatfenster 3 Minuten lang mit Ihrem zugewiesenen Mitspieler ("Player B") darüber,
was Sie gerne im Sommer in Passau machen
(z.B. welche Ausflüge machen Sie gerne).

Bitte klicken Sie auf "Weiter" um den Chat zu starten.

A3: Description chat – English treatment

All participants in this room have been randomly assigned to groups of 2.

There is one "Player A" and one "Player B" in each group. **You are "Player B".**

Please use the following chat to talk to the person assigned to you ("Player A")
for 3 minutes about what you like to do in summer in Passau
(e.g. what excursions do you like to make). Please only communicate in English.

Please click on "Continue" to start the chat.

A4: Chat window

Chatfenster

A5: Decision PD

Gleich müssen Sie eine von zwei Optionen wählen. Die eine Option ist "Kooperieren", die andere Option "Nicht kooperieren".
"Player B" hat die gleichen Optionen.

Die nebenstehende Auszahlungsmatrix zeigt Ihnen an, wie viele Taler Sie in den jeweiligen Szenarien bekommen. Die blaue (erste) Zahl zeigt an, wie viele Taler Sie erhalten, die grüne (zweite) Zahl zeigt an, wie viele Taler "Player B" erhält.

D.h. wenn entweder Sie oder "Player B" "Kooperieren" wählen und der andere nicht, bekommt derjenige, der kooperiert hat **1** und der andere **7** Taler. Wenn Sie beide kooperieren, bekommen Sie jeweils **4**, wenn Sie beide nicht kooperieren, bekommen Sie jeweils **3** Taler.

"Player B" entscheidet zeitgleich mit Ihnen, ob er/sie kooperieren möchte oder nicht. Daher kennen weder Sie noch "Player B" die Entscheidung des jeweils anderen vor der eigenen Entscheidung.

Was ist Ihre Entscheidung?   ○ Kooperieren
                             ○ Nicht kooperieren

A6: Payout matrix

		Player B	
		Kooperieren	**Nicht kooperieren**
Player A	**Kooperieren**	4 / 4	1 / 7
	Nicht kooperieren	7 / 1	3 / 3

A7: Beliefs & Sympathy

Glauben Sie, "Player B" hat "Kooperieren" oder "Nicht kooperieren" gewählt?   ○ Kooperieren
    Wenn Ihre Einschätzung richtig ist, erhalten Sie zusätzlich 1 Taler.   ○ Nicht kooperieren

Wie sympathisch fanden Sie "Player B" auf einer Skala von 1 bis 10?   Sehr unsympathisch ○ ○ ○ ○ ○ ○ ○ ○ ○ ○   Sehr sympathisch

A8: Payoffs

Sie haben sich für **Kooperieren** entschieden.

"Player B" hat sich für **Nicht kooperieren** entschieden.

Sie glaubten, "Player B" würde sich für **Kooperieren** entscheiden. Für diese Einschätzung erhalten Sie zusätzlich **0** Taler.

Ihre Auszahlung beträgt daher **1** Taler.

Common Questionnaire

A9: Common questionnaire page 1

| **Fragebogen** |
| Bitte beantworten Sie zum Abschluss die nachfolgenden Fragen. Ihre Angaben werden anonym ausgewertet und haben keinen Einfluss auf das Ergebnis. |

Geschlecht
- ○ männlich
- ○ weiblich
- ○ divers

Alter [   ]

Nationalität, Herkunft
- ○ Deutschland
- ○ Anglophoner Raum
- ○ Francophoner Raum
- ○ Iberoromanischer Raum
- ○ Sonstige

In welchem Fachsemester studieren Sie? [   ]

Studiengang
- ○ BWL/VWL/Lehramt mit Wirtschaftswissenschaften
- ○ Kulturwirtschaft
- ○ European Studies
- ○ Governance and Public Policy
- ○ Medien und Kommunikation/Sprache und Text
- ○ Informatik/Internet Computing
- ○ Lehramt (ohne Wirtschaftswissenschaften)
- ○ Rechtswissenschaft
- ○ Sonstige

Wenn Sie hier alle Fragen beantwortet haben, können Sie mit den restlichen Fragen fortfahren, indem Sie auf "Weiter" klicken.

Weiter

A10: Common questionnaire page 2

Fisher's Exact Tests

A11: Fisher's exact test H1 – individual cooperation

```
. tabulate Cooperation_All English, exact
```

Cooperation_All	English Deutsch	Englisch	Total
No	28	21	49
Yes	70	63	133
Total	98	84	182

```
            Fisher's exact =              0.619
    1-sided Fisher's exact =              0.355
```

A12: Fisher's exact test H1 – group cooperation

```
. tabulate Group_cooperation English, exact
```

Group_coop	English		
eration	Deutsch	Englisch	Total
0	48	38	86
1	50	46	96
Total	98	84	182

```
        Fisher's exact =                0.657
1-sided Fisher's exact =                0.361
```

A13: Fisher's exact test H2

```
. tabulate Group_coordination English, exact
```

Group_coor	English		
dination	Deutsch	Englisch	Total
0	40	34	74
1	58	50	108
Total	98	84	182

```
        Fisher's exact =                1.000
1-sided Fisher's exact =                0.542
```

A14: Fisher's exact test H3

```
. tabulate Cooperation_All English_bad if English==1, exact
```

Cooperatio	English_bad		
n_All	0	1	Total
No	20	1	21
Yes	51	12	63
Total	71	13	84

```
        Fisher's exact =                0.169
1-sided Fisher's exact =                0.106
```

Other Results

A15: Impact of sympathy on coordination

VARIABLES	(1) Coordination	(2) Coordination
Sympathy_All	0.0334*	0.0264
	(0.0185)	(0.0191)
English		0.0243
		(0.0734)
male		0.00186
		(0.0753)
age		0.0123
		(0.0152)
gametheory		0.0271
		(0.0944)
Prisoners_dilemma		-0.0254
		(0.0916)
Groupwords		0.00161
		(0.00114)
Observations	182	182

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A16: Coordination by English classification

24
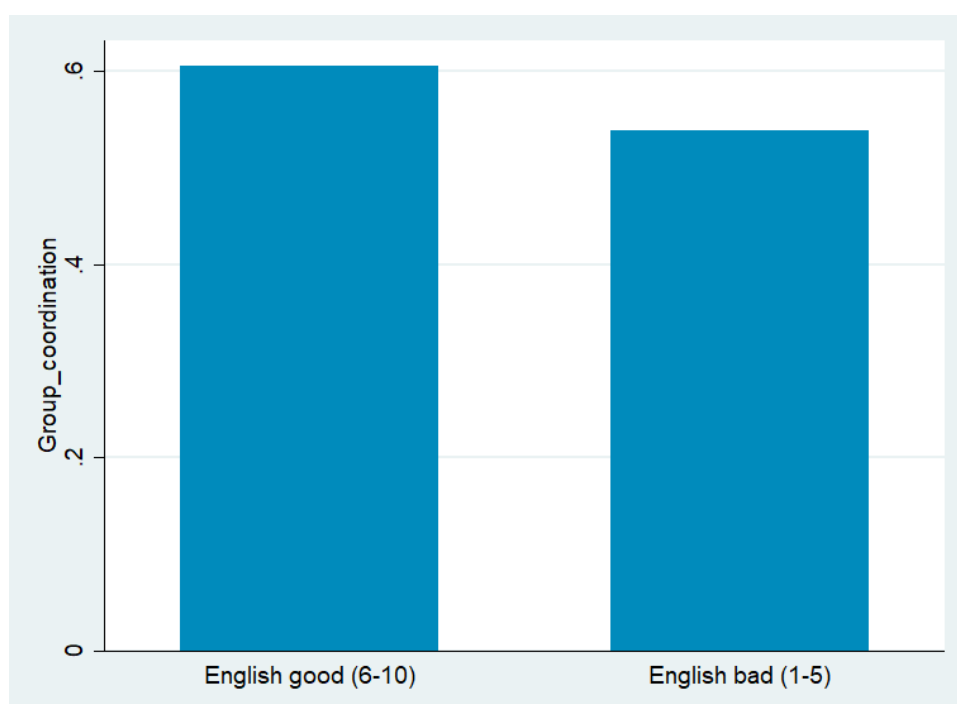
A17: Fisher's exact test English_bad on coordination

```
. tabulate Group_coordination English_bad if English==1, exact
```

Group_coor dination	English_bad 0	1	Total
0	28	6	34
1	43	7	50
Total	71	13	84

```
        Fisher's exact =              0.761
1-sided Fisher's exact =              0.437
```

Robustness

A18: Individual cooperation rate per treatment (top: English treatment and non-Germans, bottom: German treatment and non-Germans)

```
. tab Cooperation_All if English==1 & German==0
```

Cooperation _All	Freq.	Percent	Cum.
No	1	7.14	7.14
Yes	13	92.86	100.00
Total	14	100.00	

```
. tab Cooperation_All if English==0 & German==0
```

Cooperation _All	Freq.	Percent	Cum.
No	3	27.27	27.27
Yes	8	72.73	100.00
Total	11	100.00	

A19: German and English language proficiency levels of non-Germans in respective treatments

```
. sum Englischniveau if German==0 & English==1
```

Variable	Obs	Mean	Std. Dev.	Min	Max
Englischni~u	14	7.428571	2.13809	3	10

```
. sum Deutschniveau if German==0 & English==0
```

Variable	Obs	Mean	Std. Dev.	Min	Max
Deutschniv~u	11	8.363636	1.858641	5	10

A20: Fisher's exact test for differences between the treatments

```
. tabulate Cooperation_All English if German==0, exact
```

Cooperation_All	English Deutsch	Englisch	Total
No	3	1	4
Yes	8	13	21
Total	11	14	25

```
            Fisher's exact =                 0.288
    1-sided Fisher's exact =                 0.209
```

Affidavit

"I hereby affirm that I have authored this work independently and that I have not used thoughts from other than the declared references. I have cited all material which has been quoted or paraphrased from external sources.
The work has not yet been submitted to any other examination authority and has not yet been published.

Frankfurt, the 26.10.2019

Julika Stauber"