Deliberation in the Lab

The Effect of Communication on Information Sharing, Cooperation, and Consensus

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It was the summer of 2007 when I first met Katharina Holzinger. As a Bachelor student, I applied to her research project “Die Performanz kommunikativer Konfliktlösungsmechanismen” and was selected as one of four student assistants. One of my colleagues at the time was Valentin Gold. Over the years, those two have supported me most in all the efforts that finally ended up in this dissertation. I am forever thankful to Katharina for all the support, patience, discussions, disagreements, and loyalty that I experienced while working for her. And I am grateful to Valentin, who helped me a lot in understanding and working with the various measures of deliberation in addition to being an inspiration and a friend. In the final stages of writing this dissertation, they have provided valuable comments, some of which I could incorporate, some of which I had to let go.

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Does the deliberative quality of communication positively affect the sharing and processing of private information, the rate of cooperation, and the likelihood of consensus decisions? Can such an effect be isolated from personal interests? The face-to-face communication of simulated two-person conflicts in an experimental setting under laboratory control is analysed. Participants are randomly assigned to one of four two-person two-options game-theoretic conflict situations that are embedded in a conflict story. Two symmetric constellations (Prisoner’s Dilemma and Chicken) and two asymmetric constellations are used. In the asymmetric constellations one actor has a dominant strategy not to cooperate and is therefore at a strategic advantage. The participants discuss the conflict and take a joint decision. The discussion transcripts of 240 observations are used to measure the deliberative quality of the communication between the two participants in four dimensions: justification, equal participation, respect, and accommodation. Automated measures from the VisArgue project are used and combined into an index of deliberative quality of communication.

Overall, by comparing a decision that the participants take before they communicate with their joint decision after 30 minutes of negotiation, I can confirm that communication increases the level of cooperation tremendously. This effect is strongest in the Prisoner’s Dilemma. However, I cannot provide evidence that the deliberative quality overall has a positive effect on either the sharing and processing of information, on the willingness of the participants to cooperate, or on consensual decisions.

The individual dimensions provide further insights: A high level of justification of the advantaged actor negatively affects his or her satisfaction value. For the disadvantaged actors, I find higher satisfaction values when they themselves have high values of justification and lower satisfaction values when their experimental partners have high justification values. I also observe that participants in the advantaged position use more arguments, but only if they are male. Equal participation is positively correlated with the sharing of private information. In one asymmetric constellation there is also a positive correlation with the participants’ satisfaction. Respect is negatively correlated with the processing of some information. However, the disadvantaged actors’ respect values are positively correlated with their decision to continue cooperating. Higher levels of accommodation are negatively associated with the sharing and processing of private information and with the advantaged actors’ level of satisfaction. Accommodation is also negatively associated with the one actors’ decisions to cooperate in one symmetric and one asymmetric game-theoretic constellation.

Overall, I conclude that the participants had a high predisposition to cooperate in the experiment; however high levels of justification seem to lead to frustration and defection rather than cooperation and consensus. Finally, decisions to cooperate need a certain amount of disagreement at the negotiation stage in order to last.
Zusammenfassung


Generell lässt sich festhalten, dass die ExperimentalteilnehmerInnen eine hohe Kooperationsneigung vorweisen; allerdings scheinen hohe Begründungswerte zu Frustration und Defektion zu führen anstatt zu Kooperation und Konsens. Außerdem benötigt eine anhaltende Kooperation ein gewisses Maß an Widerspruch.
## Contents

*Acknowledgements* ........................................ i
*A bstract* ........................................ v
*Zusammenfassung* ..................................... vii
*List of Tables* .................................... xiii
*List of Figures* ................................... xv

1 **Introduction** .......................................... 1

2 **Reviewing Deliberation: Theory, Empirical Turn, and Measurement** ........................................ 7
   2.1 *The Classics of the Theory of Deliberative Democracy* ........................................... 9
   2.2 *Theoretical Developments* ............................................. 13
      2.2.1 *Deliberative Aspects of Today’s System(s)* ........................................... 13
      2.2.2 *Democratic Innovations* ............................................. 14
   2.2.3 *Consensus – Role and Desirability* ............................................. 16
   2.3 *Various Concepts and Definitions of Deliberation* ........................................ 19
   2.4 *Empirical Turn* ............................................. 20
      2.4.1 *Conditions for Deliberation* ............................................. 21
      2.4.2 *Deliberative Processes and Procedures* ........................................... 26
      2.4.3 *Effects of Deliberation* ............................................. 28
   2.5 *Measuring Deliberation* ............................................. 32
      2.5.1 *Manual Coding Schemes* ............................................. 34
      2.5.2 *Automated Approaches* ............................................. 37
   2.6 *Summary and Discussion* ........................................ 39

3 **Explaining the Effects of a Deliberative Quality of Communication** ......................................... 43
   3.1 *Habermas and the Theory of Communicative Action* ........................................ 45
   3.2 *Key Guideline and Empirical Claims* ........................................ 53
   3.3 *Definitions* ............................................. 56
      3.3.1 *Deliberation and Deliberative Quality of Communication* ........................................ 56
      3.3.2 *Political Decision-Making and Negotiations* ........................................ 59
   3.4 *Information Sharing* ............................................. 60
   3.5 *Norm Selection and Interests* ............................................. 64
   3.6 *Will Formation and Consensus Decisions* ............................................. 71
   3.7 *Summary and Discussion* ............................................. 73
7 Deliberative Quality as a Predictor for Consensus Decisions
   7.1 Does the Level of Deliberative Quality Affect Decision Stability?
      7.1.1 Results Testing Hypothesis H7
      7.1.2 Results Testing Hypothesis H9
      7.1.3 Interpretation of the Decision Stability Results
   7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of
      the Participants?
      7.2.1 Results Testing Hypothesis H8
      7.2.2 Results Testing Hypothesis H10
      7.2.3 Interpretation of the Satisfaction Results
   7.3 Summary and Discussion

8 Conclusion and Recommendations
   8.1 Results
   8.2 Limitations
   8.3 Contributions and Recommendations
   8.4 Future Research

Bibliography

Appendix A: The Neutral Task Description
Appendix B: The Conflict Stories of PD and CH
## List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Overview of the Indicator Variables Measuring the Dimensions of the Deliberative Quality of Communication</td>
<td>97</td>
</tr>
<tr>
<td>4.2</td>
<td>Correlation Matrix of the Four Indicator Variables</td>
<td>104</td>
</tr>
<tr>
<td>4.3</td>
<td>Goodness-of-Fit Values of the CFA Models</td>
<td>105</td>
</tr>
<tr>
<td>4.4</td>
<td>Gender Distribution</td>
<td>119</td>
</tr>
<tr>
<td>4.5</td>
<td>Age Group Distribution</td>
<td>120</td>
</tr>
<tr>
<td>4.6</td>
<td>How Likeable is your Negotiation Partner?</td>
<td>123</td>
</tr>
<tr>
<td>4.7</td>
<td>Overview of Shared and Processed Information</td>
<td>126</td>
</tr>
<tr>
<td>4.8</td>
<td>Crosstables of Shared and Processed Information</td>
<td>127</td>
</tr>
<tr>
<td>4.9</td>
<td>Patterns Across the Three Decision Points</td>
<td>133</td>
</tr>
<tr>
<td>5.1</td>
<td>The Relationship of Deliberation and the Sharing of Private Information</td>
<td>145</td>
</tr>
<tr>
<td>5.2</td>
<td>The Relationship of Deliberation and the Sharing of Private Information; Including Control Variables</td>
<td>147</td>
</tr>
<tr>
<td>5.3</td>
<td>The Relationship of Deliberation and the Processing of Private Information</td>
<td>155</td>
</tr>
<tr>
<td>5.4</td>
<td>The Relationship of Deliberation and the Processing of Private Information; Including Control Variables</td>
<td>157</td>
</tr>
<tr>
<td>6.1</td>
<td>The Relationship of Deliberation and the Probability to Agree on the Cooperative Solution</td>
<td>173</td>
</tr>
<tr>
<td>6.2</td>
<td>The Relationship of Deliberation and the Probability to Agree on the Cooperative Solution; Including Control Variables</td>
<td>177</td>
</tr>
<tr>
<td>6.3</td>
<td>Determinants of the Cooperative Solution Before Communication (T0)</td>
<td>198</td>
</tr>
<tr>
<td>6.4</td>
<td>Determinants of the Deliberative Quality at the Negotiation Table</td>
<td>203</td>
</tr>
<tr>
<td>6.5</td>
<td>The Relationship of Individual Deliberation and the Probability to Agree on the Cooperative Solution</td>
<td>208</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>6.6</td>
<td>The Relationship of Individual Deliberation and the Probability to Agree</td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>on the Cooperative Solution; Including Control Variables</td>
<td></td>
</tr>
<tr>
<td>6.7</td>
<td>The Association of the Instrument with the Deliberative Quality (First</td>
<td>237</td>
</tr>
<tr>
<td></td>
<td>Stage)</td>
<td></td>
</tr>
<tr>
<td>6.8</td>
<td>The Association of the Instrument with the Negotiation Outcomes at T1</td>
<td>239</td>
</tr>
<tr>
<td></td>
<td>and T2 (Reduced Form)</td>
<td></td>
</tr>
<tr>
<td>6.9</td>
<td>Test Statistics for 2SLS Models</td>
<td>241</td>
</tr>
<tr>
<td>6.10</td>
<td>Causal Effects of the Deliberative Quality on Negotiation Outcomes at T1</td>
<td>244</td>
</tr>
<tr>
<td>6.11</td>
<td>Causal Effects of the Deliberative Quality on Negotiation Outcomes at T2</td>
<td>246</td>
</tr>
<tr>
<td>7.1</td>
<td>Decision to Continue Cooperating at T2: Overview</td>
<td>261</td>
</tr>
<tr>
<td>7.2</td>
<td>The Relationship of Deliberation and the Decision to Continue Cooper-</td>
<td>264</td>
</tr>
<tr>
<td></td>
<td>ating at T2</td>
<td></td>
</tr>
<tr>
<td>7.3</td>
<td>The Relationship of Deliberation on the Decision to Continue Cooperat-</td>
<td>266</td>
</tr>
<tr>
<td></td>
<td>ing at T2; Including Control Variables</td>
<td></td>
</tr>
<tr>
<td>7.4</td>
<td>The Relationship of Individual Deliberation on the Decision to Continue</td>
<td>275</td>
</tr>
<tr>
<td></td>
<td>Cooperating at T2</td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>The Relationship of Individual Deliberation on the Decision to Continue</td>
<td>280</td>
</tr>
<tr>
<td></td>
<td>Cooperating at T2; Including Control Variables</td>
<td></td>
</tr>
<tr>
<td>7.6</td>
<td>The Relationship of Deliberation and the Individual Satisfaction Indicators</td>
<td>291</td>
</tr>
<tr>
<td>7.7</td>
<td>The Relationship of Deliberation and the Satisfaction Index</td>
<td>294</td>
</tr>
<tr>
<td>7.8</td>
<td>Interaction Coefficients of the Decision Combinations</td>
<td>298</td>
</tr>
<tr>
<td>7.9</td>
<td>The Relationship of Individual Deliberation and the Satisfaction Index</td>
<td>301</td>
</tr>
<tr>
<td></td>
<td>by Role</td>
<td></td>
</tr>
<tr>
<td>7.10</td>
<td>The Relationship of Individual Deliberation and the Satisfaction Index</td>
<td>305</td>
</tr>
<tr>
<td></td>
<td>by Role; Including Control Variables</td>
<td></td>
</tr>
<tr>
<td>7.11</td>
<td>Interaction Coefficients of the Decision Combinations by Role</td>
<td>310</td>
</tr>
<tr>
<td>8.1</td>
<td>Overview of the Results</td>
<td>325</td>
</tr>
</tbody>
</table>
# List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Typology of the Borderline Cases of Communicative Action</td>
<td>47</td>
</tr>
<tr>
<td>4.1</td>
<td>2-by-2 Matrices of the Four Preference Constellations over the Three Deci-</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>sions; Nash-Equilibria Underlined</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Measuring Model on the Game Level (Top) and Speaker Level (Bottom)</td>
<td>106</td>
</tr>
<tr>
<td>4.3</td>
<td>Histograms of the Predicted Values of Deliberative Quality as a Latent</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>Variable on Game and Speaker Levels</td>
<td></td>
</tr>
<tr>
<td>4.4</td>
<td>NEO-FFI: Five Factor Inventory of Personality Traits</td>
<td>122</td>
</tr>
<tr>
<td>4.5</td>
<td>Number of Solutions at the Three Decision Points Presented in 2-by-2</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>Matrices of the Four Preference Constellations</td>
<td></td>
</tr>
<tr>
<td>4.6</td>
<td>Histogram of the Predicted Values of the Latent Satisfaction Variable</td>
<td>137</td>
</tr>
<tr>
<td>5.1</td>
<td>Predicted Probability of Ricky Mentioning the Damaged Dishwasher</td>
<td>148</td>
</tr>
<tr>
<td>5.2</td>
<td>Predicted Probability of Chris Mentioning the Seminar Topic</td>
<td>149</td>
</tr>
<tr>
<td>5.3</td>
<td>Predicted Probability of Chris Processing the Damaged Dishwasher Informa-</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>tion</td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td>Predicted Probability of Ricky Processing the Seminar Topic Information</td>
<td>160</td>
</tr>
<tr>
<td>6.1</td>
<td>Predicted Probability of a Cooperative Solution at the Table (T1)</td>
<td>180</td>
</tr>
<tr>
<td>6.2</td>
<td>Predicted Probability of a Cooperative Solution After Returning to the PC (T2)</td>
<td>181</td>
</tr>
<tr>
<td>6.3</td>
<td>Predicted Probability of a Cooperative Solution After Returning to the PC Across the Range of Agreeableness Chris</td>
<td>184</td>
</tr>
<tr>
<td>6.4</td>
<td>Predicted Probability of a Cooperative Solution at the Table (T1); by Role</td>
<td>213</td>
</tr>
<tr>
<td>6.5</td>
<td>Predicted Probability of a Cooperative Solution After Returning to the PC (T2); by Role</td>
<td>214</td>
</tr>
<tr>
<td>6.6</td>
<td>The Causal Effect of Deliberation on Negotiation Outcomes</td>
<td>221</td>
</tr>
</tbody>
</table>
6.7 Association of Deliberation with Negotiation Outcomes . . . . . . . . . . 221
6.8 The Effect of Deliberation on Negotiation Outcomes Under the Condi-
tion of Interests and an Unobserved Relationship . . . . . . . . . . . . . . . 222
6.9 The Effect of Deliberation on Negotiation Outcomes Under the Condi-
tion of Interests and Personality Types . . . . . . . . . . . . . . . . . . . . 224
6.10 A Complete DAG Including All Observed Sets of Variables and All Pos-
sible Causal Relationships . . . . . . . . . . . . . . . . . . . . . . . . . . . 226
6.11 A Complete DAG with Conditioned Variables Including All Observed
Sets of Variables and All Possible Causal Relationships . . . . . . . . . . 227
6.12 Simple Model with an Instrumental Variable . . . . . . . . . . . . . . . . 228
6.13 Graphical Representations of Exclusion Violations with DAGs . . . . . . 230
6.14 Relationship of Task Descriptions and Deliberative Quality (First Stage) 236
7.1 Predicted Probability of Ricky Choosing to Continue Cooperating at T2 269
7.2 Predicted Probability of Chris Choosing to Continue Cooperating at T2 . 270
7.3 Predicted Probability of Ricky Choosing to Continue Cooperating at T2;
by Speaker . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 283
7.4 Predicted Probability of Chris Choosing to Continue Cooperating at T2;
by Speaker . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 284
7.5 Predicted Values of the Satisfaction Index . . . . . . . . . . . . . . . . . 296
7.6 Predicted Values of the Satisfaction Index for Ricky-Players; by Speaker 308
7.7 Predicted Values of the Satisfaction Index for Chris-Players; by Speaker 309
1 Introduction

In recent years, populist parties and candidates are on the rise in many Western democratic countries. People seem to be more and more dissatisfied with their political elites. Through these developments, liberal democracy is put under pressure as populist parties and their candidates try to undermine the current political systems. In order to do this, commonly accepted facts are being challenged, reports of events in the media are labelled as ‘fake-news’, distrust in the righteousness of political representatives is increasingly stirred. Some voices claim that such developments can be attributed to a deficit of representative democracy. In order to overcome these deficits, proponents of more direct participation in the political decision-making process would like to see more plebiscites and referendums while others want to increase the number of round-tables and the opportunities for lay citizens to make their voices heard before political decisions are made. Yet others are increasingly sceptical about involving a country’s population in important decisions and favour a stronger system of representative democracy.

Liberal democracy has always been criticised from various perspectives. However, most critics did this in order to improve the democratic legitimacy rather than to undermine it. The Civil Rights Movement in the United States was followed by a growing demand for more possibilities to participate in the decision-making process. In dialogue with these demands, the theory of deliberative democracy was developed (Floridia 2017). This theory focuses on legitimacy through reasons rather than through mere votes. The term deliberation refers to a process of weighing arguments before making decisions. In relation to political or democratic decision-making, the process should follow an ideal according to which all people affected by a decision should
bring forward their points of view on the given topic. They should then engage in a reasoned discussion about the best possible solution to the resulting conflict. The theory of deliberative democracy both engages in debates about creating new institutions that could make a society more deliberative, and analyses the existing political institutions in search of the role that the weighing of reasons and arguments already plays. According to Dryzek this theory “now constitutes the most active area of political theory in its entirety (not just democratic theory)” (Dryzek 2007, 237). Its theoretical foundations are built on the observation that the political system is increasingly turning into a market place of political ideas. Representatives are haggling for their interests instead of engaging in debates that could further the common good. The foundations are also built on a refusal to accept such a development. In this research field, however, normative claims for what a political system should look like in order to overcome the described democratic deficit still seem to dominate over empirical knowledge about how a more deliberative approach to political decision-making could make decisions better.

The current political developments give the impression that one central promise of the theory of deliberative democracy is being actively undermined. According to this promise, political decision-making which follows the deliberative ideal would aim for the best reasons and the best solutions in a public spirited common-good orientation in various institutional settings – be it intergovernmental organisations, parliaments, public discourse, or participatory approaches in which lay citizens are involved in the discussions. While political decision-making has been criticised for being too focused on (private) interests in the Western representative democracies already in the 1990s (compare to Dryzek 1990), current developments, which can be described as moving towards a post-factual age, work against the norm of justifying one’s positions. This is a valid threat even if such justifications were mere “spectacle” (Dryzek 1990, 13) in the parliaments. I do not claim that the established political elites have given up explaining their positions (whether or not this is done sincerely is not the question here); I rather claim that new forces are entering the political arena that work to discredit factual knowledge and reference to objective reasoning. In summary, the deliberative aspect of democracy is under attack.
Because of these tendencies, it is important to understand how argumentation and reasons actually affect decision-making and the outcomes of decision-making processes. If it were the intention to attack the deliberative aspects of democracy, it would be the justifications for specific decisions that would be undermined. Since Habermas claims that there is a “persuasive force of the better argument” (Habermas, 1983 (1990), 159), one can gain the impression that due to the persuasive force of arguments, those who do not have the better arguments but still want to push their personal interests work towards disintegrating the norm of providing reasons. Thus, the main motivation of this thesis is the “quest for the power of [arguments]” (Grobe, 2010, 22). When do reasons convince? What effects can be attributed to reasoning? Why should we communicate in the first place before taking political decisions? And how does the way people communicate with each other interact with their interests? More specifically, this thesis tries to answer the question of whether a communication that comes close to the deliberative ideal impacts decisions and the way people make these decisions. If it does, are such effects as positive as the proponents of deliberation claim? And are there certain aspects of deliberation that are more important for such an effect than others?

For my theoretical contribution, I make use of the theory of communicative action (Habermas, 1981) to provide a causal explanation on the personal level. Although the field of deliberation has advanced tremendously since Habermas published his ‘magnum opus’, it is important to return to this classic as the theoretical advancements focused on the benefits of deliberation and on societal processes but did not engage with the micro-foundation of personal persuasion and deliberative decision-making. The theory of communicative action provides some guidance for establishing such a causal explanation. The potential explanations extracted from these contributions will be phrased as several hypotheses that can be tested empirically. These hypotheses consider three important outcome variables: information, cooperation and consensus. Consensus is here not understood as unanimity but as the conviction of people to have decided in the best possible way – which is why I also talk of a ‘rational consensus’ throughout this dissertation. I assume that a higher deliberative quality of communication is beneficial for these outcomes.
1 Introduction

The empirical strategy makes use of conflict simulations in an experimental setting. Running an experiment under laboratory control with students as participants is most promising for isolating a potential effect of the communicative process, especially against the backdrop of private interest. However, I have to mix experimental with observational study elements, because the concept of deliberation is too complex for being implemented as a simple experimental treatment. Therefore, the number of observations is larger than in most experiments (N=240).

In one observation, two participants enter the lab, read a conflict story in which they are randomly assigned to one of four game-theoretic preference constellations, discuss this conflict, and come to a joint decision. Since the communication between the two participants is observed rather than experimentally induced through a deliberation treatment, it is necessary to measure the deliberative quality of the communication in each observation. This measurement is done in four individual dimensions and an index combining them: justification, equal participation, respect, and accommodation are assessed. To this end, automated measurement instruments are used which incorporate statistical text analysis as well as linguistically supported rules-based approaches.

In the analysis chapters, these communication indicators are then used as the explanatory variables in most hypotheses. The logic of the whole study therefore follows an x-centred design in which I am mainly interested in the effects of the deliberative quality of communication on various outcome variables. I intend to find out if the sharing and processing of private information is affected by deliberation. I try to identify predictors for the decision to cooperate or not at three decision points: one before communication is allowed (T0), one at the negotiation table (T1), and one after returning to a PC-equipped work station (T2). And I want to explain how rational consensus decisions come about. Consensus is operationalised in two ways: I observe whether participants who cooperated at the negotiation table continue to do so at the last decision point, focusing on the condition of cooperation at T1 for the individual decisions at T2, and I ask how satisfied the participants are with the results and the process of the negotiation.
After this introduction, I give an overview of the literature in the field and justify why the research question is academically relevant. In Chapter 2, a strong focus lies on the empirical turn of deliberation and various attempts to measure the concept of deliberation. Chapter 3 then engages with the theory and presents answers to the question of how communication can potentially affect certain outcomes. In this chapter, I describe how a higher deliberative quality of communication can theoretically produce beneficial outcomes for the three outcome variables: information sharing and processing, substantial decisions, and the question of whether decisions are being taken in a ‘rational consensus’. In Chapter 4, I first describe how I use experimental conflict simulations for the data generating process and justify various design decisions. Second, I describe the data including a description of the participants who took part in this study.

Chapters 5 through 7 contain the statistical analyses and the interpretations of the results. Chapter 5 deals with the relationship of the deliberative quality of communication and the willingness and ability of participants to share and process new information at the negotiation table. Chapter 6 mainly looks at the decisions that the participants in my study take after talking to each other. I also set these results in context by examining decisions which are made before communication was allowed and by trying to find predictors for the deliberative quality of the communication at the negotiation table. This chapter also engages with the question of causality in a final section by using an instrumental variables approach. Chapter 7 tackles the question of whether the decisions that are being made by the participants can be considered ‘rational consensus’ decisions. In the conclusion, the results of the three analysis chapters are summarised. After a discussion about the limitations of this study, I end with a number of recommendations for further research and for practitioners who engage with deliberation.
Debates about the best form of government have existed longer than the modern nation state. The role of democracy, its various types, and the respective advantages and disadvantages have been debated for centuries as well. In the modern democratic state, one can broadly distinguish between representative democracy, direct democracy and deliberative democracy. In most democracies, all three concepts play a more or less important role. Often, the citizens of a country might not even be aware of the amount of deliberative approaches that are inherent in their political system – especially when it comes to the amount of deliberation in decision-making processes of the elected representatives. The idea of finding a reasonable solution to a political problem by means of communication probably did not even start in ancient Athens but was likely to have already been developed before. While the grand theories of statehood and political philosophy evolved – Liberalism (i.e.: Locke, Mill, Hayek, Tocqueville), Republicanism (i.e.: Rousseau, Arendt, Machiavelli, (Kant), Montesquieu), Marxism (Marx, Engels), rationalisation and the bureaucratic theory (Weber) – the idea of deliberation remained in the background. Its recognition accelerated in the 1980s and the “success of the deliberative turn was confirmed in the 1990s when the leading continental European philosopher (Habermas [...] and the most important Anglo-American political philosopher (Rawls [...] both described themselves as deliberative democrats” (Dryzek and Dunleavy 2009, 216). The term deliberation was first coined by Bessette (1980). By now, the theory of deliberative democracy has arguably become one of the most influential political theories in the early 21st century (O’Flynn 2006).
2 Reviewing Deliberation: Theory, Empirical Turn, and Measurement

A complete book is dedicated to describing how the theory of deliberative democracy developed in the later parts of the 20th century through the early 21st century (Florida 2017). There, the roots from participatory democracy and other influences like political philosophy and historical developments at the time are discussed. The idea of approaching the task of generating binding rules via dialogue has also entered the field of International Relations. In Germany the so called ZIB-Debatte (summarized for example in Schäfer 2007; Saretzki 2007) juxtaposed the modes of arguing and bargaining in international negotiations. Risse (2000) introduced this debate to the English speaking research community.

In this chapter, I outline the state of the art in deliberative democracy research. A brief summary of some classical works sets the stage for an understanding of political decision-making that is based more on rational discourse than on self-interest and bargaining over the decisions. I then cover some major discussions that aim at theoretically advancing the field in Section 2.2. I first look at systemic approaches that reinterpret the performance assessment of existing institutions in light of the new theoretical considerations. I then turn to the call for new institutions that should help to establish a more deliberative political process. Finally, in this second section, I look at the process of decision-making as such, contemplating the role and desirability of consensus. After these theoretical considerations, I look at the mushrooming number of empirical studies in deliberation research. In order to critically assess these findings, I first take a closer look at the diverging conceptualisations of deliberation in Section 2.3. I then identify the main empirical findings in terms of conditions for deliberation, deliberative processes and procedures, and the effects of deliberation in Section 2.4. Finally in Section 2.5 different strategies for measuring deliberation in the empirical research are presented. In the discussion section of this chapter, I elaborate on the gaps in the literature which I intend to address and develop the research question, while warranting its relevance to the field.
2.1 The Classics of the Theory of Deliberative Democracy

In this section, I give a short summary of some of the most influential texts that form the basis of what can now be summarized as the theory of deliberative democracy. I do not claim this to be a complete list (and I have already referred to Floridia (2017) for a much more thorough geneology of deliberative democracy). I rather focus on selected works that help identify the research gap that I will address in the following chapters.

In 1980, Mansbridge juxtaposes adversary and unitary democracy. "[T]he central assumption of unitary democracy is that, while its members may initially have conflicting preferences about a given issue, goodwill, mutual understanding, and rational discussion can lead to the emergence of a common enlightened preference that is good for everyone" (Mansbridge 1980, 25). She does however conclude that in a nation state, unitary democracy may reach its limits. Floridia describes Beyond Adversary Democracy as marking "a break with the previous participatory model and [prefiguring] some elements of the deliberative theoretical paradigm to come" (Floridia 2017, 51).

In the same year, Bessette (1980) establishes the term deliberation in the field of political science. He writes of the American Constitution that two principles have been introduced by the Founding Fathers: an Athenian type of face-to-face decision-making and a representation of the people that are governed. He sees the representatives in Parliament as the authorised agents with the mental, financial and temporal capacity to fulfil the task of political conflict management that can only be achieved in face-to-face interaction. Unlike most other theorists in the field of deliberative democracy, he considers the biggest threat to deliberation to come from the movement that favours direct democracy, since the community-wide deliberation, accompanying initiatives and referenda, would be “influenced profoundly by slick advertising campaigns, the most immoderate voices on each side of the controversy, and the passion of the moment” (Bessette 1980, 115).
One year later but by and large still independent of the developing literature on deliberation, Jürgen Habermas (1981) publishes his widely acknowledged work on the Theory of Communicative Action. He juxtaposes instrumental rationality and communicative rationality. While instrumental rationality refers to citizens’ actions that are intended to work towards a predefined (individual) goal, communicative rationality emphasises a mode of decision-making in which not the predefined individual goals but the exchange of validity claims should determine actions. The justifiability of such claims is supposed to be decisive. Unlike Kant who, according to his categorical imperative, is in favour of individual reflection of ones actions (Kant 1882), Habermas sides with Mead (1964, 1934) by emphasising the communicative interaction of several participants of a debate to legitimise actions (Habermas 1983, 1991). For Habermas, this is a process in which all society partakes. Habermas draws the rules of procedure for a practical discourse that he suggests in his works from Alexy (1978). Alexy introduces such rules in his endeavour to find a legitimate justification for value judgements or judgements over moral obligations that appear in discussions.

Besides Habermas, another political philosopher has influenced the development of the theory of deliberation without at first referring to the term: John Rawls (1971, 1993) bases the legitimacy of a state on the liberal school of thought. Under what circumstances is a state allowed to interfere with the personal freedoms of its citizens? According to Political Liberalism (Rawls 1993), a state can only legitimize its actions if they are subject to public reason. Only if rules are based on reasons that can be accepted in general are these rules allowed to bind the constituents of the state. As a reference point for public reason within a reasonably pluralist society, three public political values are mentioned: freedom, equality, and fairness. Non-public reasons (such as religious texts) can influence the legitimacy at the most as proviso, when one can assume that public reasons will follow (Rawls 1997).

Dryzek (1990, 2000) emphasises that the mere aggregation of preferences that occurs in voting does not sufficiently legitimize a democratic decision. He demands that authentic deliberation, with the aim of reaching consensus among all affected by the decision, should predominate in the political decision-making process. For him, it is
not enough to have only elected representatives within the political system to take part in the discourse and give their consent. Decisions can finally be attained by voting but only if a consensus cannot be reached and if all participants are willing to abide by the voice of the majority.

Gutmann and Thompson (1996) focus on moral disagreements and reciprocal deliberation over the morality of political decisions. The question of whether states should regulate abortion is used as an example for moral disagreement, since both those in favour of legitimizing abortion and those against such regulations argue from a moral point of view. According to the authors, deliberation is strongly categorized by reciprocity, not only in order to “enable citizens to resolve disagreement but also to enable them to learn to live with it. Certainly, citizens should welcome agreement when they can agree that what they can agree on is morally right. But given the intractable sources of disagreement, citizens cannot expect to reach mutually justifiable agreement over the whole range of significant issues in politics.” (Gutmann and Thompson 1996, 360)

Bohman (1996) takes up the challenge of defending the theory of deliberation against critics that claim that the implications of the theory are idealistic and practically unattainable. He sees the greatest challenges coming from “cultural pluralism, which undermines the possibility of a general will, a unitary common good, and a singular public reason; social inequalities, which may produce a vicious circle of exclusion from effective participation in deliberation; social complexity, which makes it necessary for deliberation to take place in large and increasingly powerful institutions; and community-wide biases, which may restrict public communication and which also narrow the scope of feasible solutions to social conflicts and problems” (Bohman 1996, 238). In suggesting answers to these challenges, he positions himself between Rawls (1971, 1993) and Habermas (1981, 1983, 1991). He claims that the way forward should be an acceptance of the deliberative processes already existing in today’s public and a strengthening of the institutions and procedures that contain such processes by reforming them in such a way as to defend them against the criticised problems.

In *The Voice of the People*, Fishkin (1997) asks when people can speak best for themselves, since he assumes that every individual is best equipped to defend his or her
own interests. His answer is that the "public can best speak for itself when it can gather together in some way to hear the arguments on the various sides of an issue and then, after face-to-face discussion, come to a collective decision." (p. 4)

In contrast, Goodin (2003) argues that discussion alone does not help with achieving better outcomes. Although it does not hinder decision-makers in their task of finding the best solution, he claims that an internal reflection over the advantages and disadvantages of a decision should be the basis for political decisions. He calls his approach reflective democracy, which resembles Kant’s approach much more than any of the other deliberative ideas described so far. He emphasises that both the voters and elected officials should make it their duty to reflect on an issue from all sides by imagining the effects a decision would have on all the different people affected by their decision. Communication will be able to help identifying the problems, but in the end, it is the internal process of accepting new information and reflecting upon its consequences that would make the difference. He elaborates on this point by emphasising the interests of the mute: animals, future generations or even in some cases the socially deprived do not have a chance to voice their opinions and needs. It is thus the responsibility of those that are part of the decision-making process – elected officials as well as those people eligible to vote – to reflect on the consequences of their decisions from the standpoint of others, before they come to a conclusion of how they should act.

With all the differences among the cited authors, one important aspect unites the above classics: they perceive a lack of legitimacy in the mere aggregation of preferences, and (apart from Goodin) focus on the communicative interaction between decision-makers that is supposed to overcome differences of interests in order to reach a common good. They claim that such an approach would be more legitimate. For now, pending a discussion on various definitions in Section 2.3, this kind of interaction is called deliberation.
2.2 Theoretical Developments

Recent developments in the literature that conceptualises deliberation focus on three points: deliberative aspects of today’s political institutions and societal decision-making processes, democratic innovation, as well as the role and desirability of consensus decisions. Those three aspects are mentioned here in a way that moves from more ‘macro’ forms of deliberative democracy to more ‘micro’ forms of deliberative processes, as distinguished by Parkinson (2006). In the discussion of this chapter (Section 2.6), I explain why this dissertation primarily engages with the ‘micro’ form.

2.2.1 Deliberative Aspects of Today’s System(s)

According to Bessette (1980), legislatures are the dominant forum for deliberation. This statement is still valid, primarily when focussing on justifications. The rhetoric, eloquence, and argumentative consistency of parliamentary speeches is generally only rivalled in courts. However, as Dryzek and Dunleavy (2009) argue, there is (growing) frustration about the ‘spectacle’ aspect of such debates: due to party discipline and pre-discussion certainty about the outcome of the parliamentary vote, the citizens can only witness the final argumentative chain. They cannot retrace the claims and counter-claims that influence the final decision. The process of political negotiation takes place within the parties first and in closed-door committees thereafter. But it is the voters who have to decide after the legislative period whether they want to reward or punish their elected representative with another vote for or against them. This leads to a dilemma of transparency which is well described in Warren et al. (2015): it is a necessary condition to accept arguments from the other parties that were not part of one’s own initial position in order to come to a decision. However, members of a political party or advocates of certain particular interests (lobbyists) are evaluated by their ability to convince others of their own position. This is only one example of a deliberative ideal that stands in contrast to another.
As a consequence to such ambiguities, Parkinson and Mansbridge (2012) suggest that a truly deliberative democracy can only exist when looking at deliberation within a system of institutions. Different deliberative tasks have to be achieved by different institutions. Parliament explains and justifies. Commissions negotiate and accommodate. The media and (where available) deliberative mini-publics (which are described in the next subsection) enable the participation in the discourse of lay citizens or certain interest groups. This is to mention just a few tasks and their respective institutions. However, “it may well be that we cannot have both good deliberation and deliberation that matters” (Parkinson 2006, 138) at the same time and place. Neblo (2015) is right to point out that this systemic approach does in fact not describe a ‘Deliberative System’ but rather the ‘Political System’. What is done here is paying attention to the already existing deliberative aspects and pointing out where there is space for development in each institution if one is willing to take the deliberative ideal seriously.

2.2.2 Democratic Innovations

The term democratic innovations incorporates many suggestions of how new institutions could facilitate a more democratic society. In countries where participatory democracy is not a rule, referendums are even considered democratic innovations. In this section, however, I focus on those innovations that have a deliberative component. Thus, when deliberative scholars talk about democratic innovation, they suggest improvements to or a supplementation of the predominant representative democratic institutions. They experiment among others with citizen juries, Deliberative Polls®, mini-publics, and discussion groups. They try to analyse the effect on the populace, opinion change, and the role of group processes. Some of these innovations have actually been implemented. Thus, there is also empirical knowledge. In this subsection, I focus on the theoretical explanations for such innovative institutions.

Ackerman and Fishkin (2002) and Fishkin and Luskin (2005) started a complete agenda of deliberative polling. In so-called Deliberation Day events, randomly selected lay citizens are invited to come together at a venue, where they get expert input,
are allowed to ask questions to experts and policy makers, and are given the opportunity to discuss in small groups different points of view about the given political topics. This is generally done under the eyes of impartial mediators who facilitate the process by ensuring the possibility of everyone participating and by upholding certain standards of polite communication. The authors claim that opinions are only meaningful once the respondents have actually discussed the issue and weighed the advantages and disadvantages of the possible decisions. This is important when looking at opinion polls that might be influential in the decision-making process in a representative democracy – because in classical opinion polls, it is impossible to know how much thought has been given to answering a question and opinions might be formed in the moment of reading the question. This might not reflect the true opinions of the respondents. This concern is even more serious when citizens are given the opportunity to vote on specific topics in referenda or other direct democratic participation opportunities (compare to Fishkin et al. 2015). Deliberative Polls\textsuperscript{®} have been developed in the US but have been used since then in places such as Northern Ireland (Luskin et al. 2012), China (Fishkin et al. 2010), Europe (Isernia and Fishkin 2014; Fishkin et al. 2014) and Africa (Fishkin et al. 2017) to just mention a few of the more recent works. Luskin et al. (2017) offer a defence against criticism that deliberative polling events would homogenise or polarise attitudes and would lead to domination of those members of society that are already most favoured.

While deliberative polling could cynically be described as an academic playground when it was developed, there have also been attempts to involve the citizenry in actual political decision-making. In fact, deliberative polls have managed to achieve much wider recognition also by policy makers which make frequent use of this method. In Mongolia, the new constitutional process is accompanied by deliberative polling (Fishkin 2018). In earlier attempts to incorporate deliberative ideas into the decision-making process, the executive, which is planning to implement certain new regulations or projects, involves citizens in order to tap on their knowledge and ideas but also in order to give space for grievances and criticism to be uttered. Such citizen hearings exist in various forms. In the academic literature, they have been merged into one term: deliberative mini-publics. In a volume edited by Grönlund, Bächtiger and Setälä (2014)
deliberative mini-publics are investigated in numerous facets. Depending on the definition, Deliberative Polls® can also be subsumed under this label (An early overview of the different approaches can be found in Gastil and Levine 2005). Here, I focus on the difference between Fishkin’s work and other forms. In the former, the individual opinion of the participants is assessed and no collective decision needs to be taken. In the latter, the participants are at least asked to come up with a common resolution or recommendation. They are often asked to justify their decisions with the reasons that were decisive for the final recommendation. So, there is some need for coming to a mutual decision.

However, the influence of deliberative mini-publics on political decision-making is normatively contested. The main reason is the problem of selecting the participants. If lay citizens are invited, how can representation of the general population be guaranteed? When the few invited participants change their opinion about the topic at hand, is that still representing the opinions of those citizens who have not participated? So, at least, one has to maintain that “micro processes might perform very useful and valuable roles within a macro-deliberative system, but they cannot solve all the legitimacy challenges at once” (Parkinson 2006, 133). More pithily, Lafont (2014) argues that “deliberative democrats should endorse the use of mini-publics for shaping public opinion, not public policies” (2014, 60).

2.2.3 Consensus – Role and Desirability

Consensus used to be an integral part of deliberation. For Dryzek (1990), as mentioned above, the definition of deliberation includes the aim of reaching consensus. Also Habermas (1981) prioritises consensus in his early work. The result that is attained in an ideal discourse is defined as consensus. Accordingly, once no validity claims are rejected any more, true consensus has been reached. However, this focus on consensus has evoked a lot of criticism – especially from supporters of pluralism. Not only is consensus as an ideal aim time-consuming, if it is attainable at all, but critics
also reject the idea of consensus to be a normative ideal at all. Once there is consensus on the rationale of a decision, the diversity of opinions can no longer be maintained.

Dryzek and Niemeyer (Dryzek and Niemeyer 2006; Niemeyer and Dryzek 2007) therefore proclaim a new aim for deliberation: Meta-consensus and Inter-subjective rationality. The clue to this approach is the suggestion that certain disagreement is accepted, as long as the participants of a discourse are able to identify a set of acceptable options to choose from. They also have to understand how and why preferences or the normative backbone of positions influence the options at the table. Even Habermas (1992) “concedes that where there is no hope of reaching a rational consensus, bargaining and compromise are acceptable outcomes, legitimate to the extent that they can be tested in moral discourse” (Friberg-Fernros and Schaffer 2014, 100).

Moore and O’Doherty propagate “a kind of tacit consent” (2013, 302) which can be reached when all participants allow a solution to stand as the result of the group even if they do not personally agree. In a very Habermasian understanding, such tacit consent is legitimate according to the deliberative idea if everyone was given the opportunity to refuse consent. “The normative potentials of such consent are realized to the extent that it is achieved in a context in which each participant has an effective veto. Furthermore, the absence of opposition or dissent must follow a process in which there were real opportunities to question, object, scrutinize, and oppose” (Moore and O’Doherty 2013, 302).

However, a lot of criticism is not resolved with these suggestions. For example, Morin and Gold (2010) use the example of a WTO negotiation on medication policies to describe how actors decided to agree to a solution that they knew would not work because they considered it preferable to agree on a bad solution than to acknowledge that they cannot agree on a consensus solution. The authors blame the normative commitment to a procedural norm of consensus-seeking for this inferior result. More examples are the fear of polarisation (Sunstein 2003, 2007) or dominance of the already privileged (Sanders 1997; Young 2001). More recently, Schkade et al. (2010) describe how deliberation among like-minded people leads to consensus but simultaneously reduces the diversity of opinion and shifts participants’ views towards more extreme
positions. This can however be reduced. Participants of an experiment by Fernbach et al. (2013) shift to more moderate positions when they are asked to explain policies. Being asked to give reasons for a preferred policy in contrast had the above-mentioned effect. In this group, the researchers also found that reason-giving was permeated by simplistic causal models and a (false) illusion of explanatory depth.

Meanwhile, there has been even more empirical evidence and theoretical elaboration that suggests that consensus in certain specifications is in direct contrast to (other) deliberative ideals. Friberg-Fernros and Schaffer (2014) describe the Consensus Paradox: deliberative opinion formation aims towards consensus but consensus impedes conditions for renewed rational public discourse. It works against the pluralism of opinions, positions, and claims that have to be put on the table for deliberation to reach the ‘better results’ that are promised by the theory. Neblo (2015, 98 – 102) describes a similar problem that he denominates the discursive dilemma. Due to a pluralistic society, many different viewpoints enter the discourse. According to the Habermasian ideal, the aim is not only to agree on a solution but to also agree on the explanation why this solution is best. However, agreement can often only be reached when the parties to a conflict are allowed to have a pluralism of explanations for the common solution. Coming to a decision is preferable to endless debate.

In summary, scholars within the whole field of deliberative democracy have accepted that consensus is no uncontested aim of deliberation. Critics of the whole theoretical framework often direct their criticism towards the normative undesirability of consensus. From the above cited contributions, I derive however that the problem with consensus is more of a problem in more macro-settings and in the comparison of several micro-setting groups. In small-group decision-making, consensus can still be seen as an ideal to strive for. The conclusion from Morin and Gold (2010) should, however, be taken into consideration also here because the threat of accepting a bad outcome for the sake of being in consensus – ostensible or not – is not specific to any setting.
2.3 Various Concepts and Definitions of Deliberation

Before the empirical turn of the research field can be assessed, a clear understanding of what deliberation actually means and how it is defined is needed. However, fulfilling the task of presenting a clear definition is almost impossible as the concepts and definitions vary substantially among the authors. Arguably, the field has to cope with a very tough challenge of bringing together the normative theoretical conceptions with empirically measurable concepts. Although this task was never entirely completed, Schaal and Ritzi (2009) and Curato et al. (2017) agree that the field has done an outstanding job already, considering the difficulties it is facing.

One major point of this difficulty is described by Steinhoff (2006), who claims that it is almost impossible to cut a clear line between the definition of communicative action and the theory of communicative action, because communicative action is to some extent dependent on a normative shading that overextends the function of a mere definition.

Another inconsistency lies in the question of whether deliberation can be defined by the institutions in which communication takes place, or if deliberation is a type of behaviour. Does a definition of deliberation need to qualify certain aspects of communication that separate deliberative communication from non-deliberative communication?

Gastil and Black (2008) attempt an all-encompassing conceptualisation of deliberation. They focus on certain tasks within an analytical process and in a social process. The tasks of the analytical process include creating an information base, prioritizing key values at stake, identifying a wide range of possible solutions, weighting the solutions, and making the best decision possible. The social process consists of equal and adequate speaking opportunities, an attempt to comprehend another’s view, making efforts to fully consider each other’s input, and demonstrating respect for each other. These tasks are further substantiated and applied to various institutions and forums: political conversation and discussion, mass media and public opinion, elections, government decision-making, juries, public meetings, and communities.
More recently, in a review of the deliberation literature, Bächtiger et al. (2010) differentiate between two types of deliberation. The first type is based on the Habermasian logic of communication. Thus, Type I deliberation focuses on the procedural component of communication. Collective decision makers exchange claims of validity over competing options in order to arrive at an agreement over the right course of action. These claims of validity follow a rationality of communication. That is, they have to be objectively falsifiable and have to be open to criticism. Thus, their validity has to be based on reason and argumentation. The interlocutors on the other hand have to be “willing to yield to the better argument” (p. 33). Validity claims have to be normatively right, empirically true, and “authentic” / sincere. This type of exchange of validity claims depends on a number of contextual factors: The discourse should be inclusive for all stakeholders, free from strategic influences, and public. Type II deliberation relaxes the sincerity criterion and incorporates alternative forms of communication. Communicative rationality is somewhat replaced by any “communicative influence under conditions of conflict” (p. 33). Among the above cited authors, clearly Habermas, but also Gutmann and Thompson, and Bohman build their theoretical framework more on the Type I understanding. Dryzek and Fishkin probably lean more towards Type II.

There are also other controversies: Is the epistemic nature of deliberation justifiable? Is consensus a valid aim of deliberation? What does rationality actually mean and do emotive contributions to the discourse qualify only for Type II deliberation or can one argue that emotions also play a crucial role in Type I? I discuss some of the issues above in Section 2.2 and touch on the rest in the following section. A workable definition of deliberation for this dissertation is provided in the Summary and Discussion section of this chapter.

### 2.4 Empirical Turn

Once deliberative democracy established itself theoretically, empirical questions have come to the forefront. If there is a normative claim for more deliberation, the question
arises, how far deliberation already takes place in today’s political world. What are the different shapes in which deliberation exists? And maybe most importantly: what are the effects of deliberation? In the following subsections, I first give an overview of the conditions, prerequisites, and stimulating factors for deliberation that have been presented in the literature so far. I then look at deliberative processes and procedures and how they can be described. I finish this section with an overview of the effects that come out of processes or experimental treatments which the respective authors claim to represent deliberation.

Before the various conditions for deliberation can be enumerated, it is important to mention that one of the unsolved problems of the ZIB-Debatte, which is mentioned in the introduction of this chapter, was that no one was actually able to find a stringent measurement concept that is able to indisputably differentiate between indicators for the concepts of communicative and strategic action. Also, authenticity – one of the Habermasian pillars of deliberation – has evaded measurement up to now. Different measurement strategies that have been used are described in the next section. Here, it is only important to keep in mind that conditions for and effects of deliberation can never be understood in separation from the respective authors’ points of view of what the concept of deliberation actually entails.

2.4.1 Conditions for Deliberation

Although this section deals with the empirical turn of deliberation research, certain prerequisites for deliberation to occur have been established theoretically. Thus, I first mention the most important contributions that theoretically establish the conditions for deliberation, before I turn to the empirical results. For empirical results, I identify three main areas of study that produce positive results for deliberation stimulation: institutions that define the setting in which deliberation is supposed to take place, the content about which people can deliberate, and the actors that are supposed to do the deliberation.
Theoretically, some ideal conditions for deliberation are suggested: “a strongly shared lifeworld among negotiators [... which is an important condition also in Habermas (1981) and Risse (2000); [...] uncertainty and lack of knowledge; [...] technical or cognitively complex issues; [...] the presence of persuasive individuals; and [...] low levels of politicization.” (Niemann 2006, 467). The role of the transparency of the process is contested. Deitelhoff and Müller (2005) consider publicity to be a condition that supports deliberation, since it “stabilises the use of public reason, limits the range of arguments that can legitimately be made and establishes a kind of external authority for assessing competing validity claims.” (Deitelhoff and Müller 2005, 174). Checkel (2001), in contrast, describes publicity as an obstruction to learning and therefore to persuasion. If good arguments are unable to persuade, deliberation comes to nothing. Yet he qualifies this view as a short-term consideration and mentions “the civilizing force of hypocrisy [and] rhetorical self-entrapment [compare to Schimmelfennig (2001)]” (Checkel 2001, 570) as potential pathways how publicity could lead to a more deliberative process in repeated encounters.

**Institutions:** Bächtiger et al. (2005) compare parliaments in different political systems with a manual coding scheme called Discourse Quality Index (DQI). They find that consensus institutions, presidentialism, second chambers, and the exclusion of publicity lead to higher values of the DQI in Parliaments - speeches or committee work. Hangartner et al. (2007) second the findings on consensus systems. Concerning transparency or publicity, Deitelhoff and Müller (2005) unexpectedly find more intense arguing in closed sessions of two Nonproliferation Treaty Conferences, while open sessions see more rhetorical action. Thus, they claim that the evidence is ambiguous as their theoretical considerations suggested the opposite. Chambers (2005) wants to bring together normative theoretical considerations with empirical evidence and draws from Steiner et al. (2004) the conclusion that indeed the effect of closed sessions is ambivalent: While respect and accommodation is more likely to appear behind closed doors, appeals to the common good as well as more qualified and sophisticated arguments are exchanged in open sessions. Gardner and Woolley (2016) measure freedom and equal participation as conditions for deliberation in a non-public decision-making forum: they use transcripts of the Federal Open Market Committee (FOMC) in order to
investigate in how far these conditions for deliberation (in their terms) are met. However, they do not investigate how these conditions affect deliberation but only look at the outcome. Arguably, these “conditions” of deliberation can better be understood as components of deliberation.

In experimental studies, certain rules also lead to a higher or lower deliberative quality – or are expected to do so without the authors providing evidence for such a relationship. For example, Grönlund et al. (2010) use two treatments in their experimental study. Participants were either asked to produce a common statement after having the opportunity to talk to each other or they were to make a decision by secret ballot. The former treatment is considered to be the deliberative treatment, which partially has the expected effects on knowledge gain and an increase in political trust. Because the treatments partially produced the expected effects the authors are convinced that enforcing the production of a common statement leads to higher deliberative quality. Similarly, Ugarriza (2016) investigates the effect of consensus and majority vote decision-making in discussion groups of leftist ex-guerrillas and rightist ex-paramilitaries in Colombia. He indeed measures the deliberative quality with an adapted DQI and finds “a greater tendency to put forward rational arguments” (Ugarriza 2016, 92) and a higher common-goods orientation in the consensus decision group. However, the treatment did not safeguard from polarising effects. In a similar study, Ugarriza and Nussio (2016) find that telling participants about the ideal of deliberation and asking them to behave accordingly has a positive effect on intervention levels, but fails to increase the discourse quality.

**Content:** If issues are complex, Niemann (2006) finds that the possibility of rational discourse is induced by the necessity of such discourse. This finding can be supported by Deitelhoff and Müller (2005), who claim that “negotiations where participants are uncertain about the nature of the problem, the options available, and so on, enhance the effectiveness of arguing” (Deitelhoff and Müller 2005, 175). Niemann also sees more rational discourse in pre-negotiations. This notion can be supported by the conclusion that deliberation is “most common when [the topic is] least important” (Naurin 2010, 31). Holzinger (2001, 2004, 2005) finds that the type of conflict affects the relative oc-
currence of arguing speech acts in comparison to bargaining speech acts: If the conflict covers questions of facts or norms, arguing is more likely than when the conflict is primarily about interest. However, arguing also appears in conflicts of interest – just to a smaller extent. Moreover, the number of bargaining speech acts is higher. Pearce and Littlejohn (1997) also find more deliberation-like communication in moral conflicts, due to the impossibility of trade agreements. In addition, Bächtiger et al. (2005) find higher DQI values among legislatures when the topic of debate is not subject to high issue polarisation.

Participants: Firstly, the participants’ private interests deserve special attention. I mention in Section 2.1 that interests have no place in ideal deliberation. However, this does not mean that the theorists imagine a world without interests. Rather, they create rules that help to overcome the negative influence of private interests for the sake of the common good. As such, interests do play a major role in deliberation theory as it is the force against which the rational discourse is supposed to work. Political decision-making is per se a coordination of interests and, thus, the expectation that actors withdraw their interests for the sake of the better argument appears unrealistic at first glance – even in moral decisions such as allowing stem-cell research or abortion, getting rid of nuclear power plants, or participating in a war.

From a different perspective, interests need to be subordinated to the ideal of deliberative communication in order to enable deliberation to actually take place. Landa and Meirowitz (2009) show in a game-theoretic model that there are always incentives to hide or misrepresent information; whatever the situation. The relationship between interests and deliberation can therefore be described as parasitic: the open dialogue falls prey to strategic communication (White 2008). According to Niemann (2006), this relationship is most dangerous when negotiation partners only pretend to participate in candid deliberation, even though they are in fact letting themselves be guided by instrumental logic. The question is whether deliberation is in fact defenceless to these parasitical influences of interests. With this question in mind, Grobe (2010) proclaims the beginning of a quest for the power of words. Elgström (2005) concludes from a case study of the negotiations for the Cotonou Agreement between the European Union
and the ACP-countries\footnote{The ACP-countries are a group of 71 countries in 2005 in Africa, the Caribbean and the Pacific} that in an asymmetric power constellation the disadvantaged party is able to show considerable success, which he traces back to the ability of the ACP states to base their negotiation strategy on norms, morals and identity. Reinhard et al. (2013) find that references to normative arguments in EU constitutional negotiations have a positive effect on outcomes.

One can therefore conclude that a deliberating party might be able to sway the interest-based negotiation style into a more deliberative style, if the self-interested party is forced or convinced to give reasons and arguments for their respectively preferred options; even if these arguments are used strategically in the beginning. Thus, under certain conditions, the deliberation of one actor impels the interlocutors to reciprocate. These findings justify the assumption that negotiating partners are indeed able to disengage from their pure interests so that the results from such negotiations can be influenced by other forces than the predefined interest as well. McLaverty and Halpin (2008) provide a case study example in which such a deliberative drift occurred.

An influence of position power that defines a participant’s role in the debate can also be found in Myers (2017): he asks how influential arguments are, depending on the person providing an argument and finds that members of the minority in terms of interests are less influential than members of the majority using exactly the same argument. Hangartner et al. (2007) find a difference of deliberative quality between members of government and opposition parties. De Dreu et al. (2008) find that “in asymmetrical structures [in which one party wants to change the status quo, while the other wants to preserve it] challengers engage in more problem solving and more contending, have less of a loss frame and perceive less control than defendants, and are perceived to be less successful” (De Dreu et al. 2008, 331).

Deitelhoff and Müller (2005) conclude that people with high expertise or moral authority are more successful with deliberative behaviour and therefore engage more in deliberation. And Pedrini (2014) finds a difference in terms of justification levels and levels of respect in a comparison of discussions by political elites and ordinary citizens. While political elites are much more acquainted with the necessity to justify
their demands than ordinary citizens, the second group scores significantly better in the measures of respect.

Ugarriza and Nussio (2016) find that participants’ perceptions of the discussion to be constraint-free and the perception of the other participants to be honest and authentic correlates with a higher deliberative quality. Unfortunately, the causal direction is not clear here, as the deliberative quality might affect the perceptions, and it is not clear, whether the questions on these perceptions are answered in the pre-discussion or the post-discussion survey. An effect of gender and gender distribution in the group on deliberation is reported by Hangartner et al. (2007), Gardner and Woolley (2016), and Ugarriza and Nussio (2016). The first also reports an effect of age and the last an effect of the participants’ educational backgrounds. Jennstål and Niemeyer (2015) look at personality types and find that they not only affect the willingness to participate in a deliberative setting but also what this participation looks like. Different personality types are more prone to talk or to reflect. Higher scores in the two aims are achieved by different personality types. For some, high values of the one even correlate with low values of the other.

2.4.2 Deliberative Processes and Procedures

The question of what kinds of behaviour are part of deliberation is mainly a question of theoretical conceptualisation and operationalisation. The former is described in Section 2.3, the latter in Section 2.5. However, certain empirical contributions have been made as well. Pedrini et al. (2013), for example, study the role of structural minorities in deliberative decision-making. They introduce a revised deliberative model in which the ‘burden of reciprocity’ lies with the majority – they favour a deliberative decision-making process in which minorities are allowed to be adversarial when defending their interests, while majorities should be willing to place themselves in the minority positions when debating potential outcomes of political decision-making. In a comparison of three debates in Switzerland, the authors find that the German-speaking majority was actually willing to be reflective of the other language minority positions.
This again led to less adversarial behaviour of the minorities, who also considered the majority positions and their needs. The study was conducted under very favourable conditions, however, as the language groups in Switzerland are considered legitimate minorities and a country-wide consensus exists ascertaining that the four language groups have to live together in a multicultural society.

The role of emotions is highly contested. One side of the argument stems from a (potentially false) interpretation of Habermas: emotions have no place in rational discourse, as they would distract the process of weighing the arguments at the table. The other side reflects on the ability of a reference to emotions and emotional speech to make legitimate grievances heard. In a study on a US Senate debate on abortion, Schonhardt-Bailey (2008) juxtaposes an emotive battle with a battle over the constitutionality of the bill. In her analysis, however, the emotive side consists of words that are “evocative, graphic, personal and undeniably disturbing” (Schonhardt-Bailey 2008, 401), and the strategic use of such language becomes evident in her analysis. The role of emotions might therefore need to refer more clearly to the authenticity criterion of Habermas’ ideal discourse.

Scudder (2016) contributes to this debate by looking at empathy. She looks at the ability of citizens to engage in perspective taking and to feel empathic concern for others. This sort of emotional reflexivity can be considered important for being able to give in to the viewpoints of other participants in a debate and therefore for being able to let others convince oneself. Theoretically, she establishes that achieving empathy faces several limits – among them the problem that people are psychologically more likely to empathise with like-minded people, which might have a polarising effect. Empirically she finds a problem among those cases that successfully reach empathy: they are less likely to behave according to the deliberative ideal. She therefore concludes that a greater focus on differences rather than commonalities furthers greater openness and better listening practices of citizens.

Gillespie (2017) and Lee and Jang (2016) take a more pro-emotions stance. They look at the role and influence of political satire. Gillespie focuses on online advocacy in Vietnam. Lee and Jang argue with television broadcasting in the US but base their
results on evidence from an online experiment and a mail survey. They both paint a positive picture of satire. The former argues that “satire and ridicule can change regulatory outcomes when reasoned debate fails” (Gillespie 2017, 106). The latter maintains that “political satire can help to paint a sanguine picture of a healthy deliberative democracy mainly through an affective rather than cognitive route” (Lee and Jang 2016, 128).

2.4.3 Effects of Deliberation

The normative demand for deliberation in the political decision-making process is theoretically based on the legitimacy argument. However, several positive effects of deliberation are also assumed. The empirical turn of deliberation research focuses to a large part on the assessment of such effects. The argument is that if certain positive outcomes can be attributed to a deliberative decision-making process the normative demand for more deliberation does not only rest upon the legitimacy argument but can also be supported by more practical considerations. Much of the literature has therefore focused on the effects of various deliberative procedures.

**Effects on Participants:** Ackerman and Fishkin (2002) and Fishkin and Luskin (2005) have established a way to analyse public opinion, which they call Deliberative Polls® as is already described in Section 2.2.2. Following the idea in *The Voice of the People* (Fishkin 1997) – people need to deliberate in order to become truly aware of their own preferences – the researchers randomly select citizens for a first standard survey and then ask some participants of the survey, randomly selected among them, to participate in a Deliberation Day event. As a general result, a significant difference between the participants’ responses to the questionnaire before the event and the one after the event can be found. Using counterfactual logic, the authors conclude that the participants reflect a political opinion which the public would have, if citizens were actually receiving enough information and generally showing more interest in political questions. In these Deliberation Day events, Ackerman and Fishkin (2002) can show
that, indeed, participants change their opinions and become more aware of their own preferences (also among others: Fishkin and Luskin 2005, Fishkin et al. 2010).

Chambers (1996) as well as Gutmann and Thompson (1996) also conclude from case studies that deliberation leads to an increased understanding of the participants’ own preferences and that participants accumulate knowledge that enables them to justify those very preferences. Niemeyer (2011) finds that participants in two deliberative mini-publics had policy preferences that were much more consistent with their individual political attitudes after the deliberation event. While attitudes did not change substantially, policy preferences did. The author concludes that the effect on preferences after deliberation is even able to overcome pre-existing distortions that come from symbolic politics caused by either active manipulation or passive emphasis on certain issues that are conducive to peripheral processing (i.e.: forming positions based on partial or incomplete information and inconsistent logic). However, Barker and Hansen (2005) test if systematic processing of information increases the consistency of attitudes and find the opposite. Again in contrast, Grönlund et al. (2010) show that deliberation enables participants to understand complex relationships of facts. Lascher (1996) finds cognitive advantages such as a decrease in erroneous judgements to be a result of deliberation.

**Effects on Other Participants and Society as a Whole:** A number of positive effects for deliberating individuals could be identified: increased empathy (Mendelberg 2002), increased tolerance for others’ points of view (Roberts 1997), and the recognition of mutual dependency (Chambers 1996, Pearce and Littlejohn 1997, Yankelovich 1991). Regarding society, deliberation supports people’s faith in the democratic process (Fishkin and Luskin 2005), helps participants to develop a self-awareness as citizens of the European Union in addition to their individual member states (Fiket et al. 2014), it increases political trust and deliberating citizens’ willingness for collective action (Grönlund et al. 2010), and it leads to a higher commitment to political participation (Barber 1984). Political decisions tend to be more profoundly based on relevant reasons and evidence (Chambers 1996). Social capital increases in constituencies that allow more possibilities for deliberation (Fishkin 1997, Putnam 2000). Public mistrust
concerning the reduction of health care costs and other values-based dilemmas can be overcome (Richmond et al. 2017). In online debates which were designed to follow the deliberative ideal, Strandberg (2014) also finds greater coherence of opinions, increased efficacy and an increased trust for political institutions, compared to online discussions that were left to themselves without specific deliberation rules.

Boulianne (2018) and Ingham and Levin (2018) look at the effect of mini-publics on public opinion. In survey-based experiments, they informed the treatment group about the results from a mini-public. Boulianne (2018) finds higher support for some policy issues but not for others. Yet, members of the treatment group reported higher levels of political efficacy and had a stronger sense of legitimacy of the political system. Ingham and Levin (2018) also report some evidence for an influence on public opinion. They qualify this finding by suggesting that relatively uninformed respondents were more likely to be affected.

Baccaro et al. (2014) suggest that there is a trade-off between opinion change and good procedural deliberative quality. When asked to take a stance before discussion and give reasons, participants in their study showed a higher deliberative quality but taking a stance discouraged opinion change and the participants had a lower influence on the opinions of others in the debate. Asking them “not to take a stance […] facilitated opinion change but reduced knowledge gains, lowered epistemic deliberative quality and led to strong social influences on individual opinions.” (Baccaro et al. 2014, 14). Gerber et al. (2014) juxtapose deliberative to non-deliberative persuasion. They find that opinion change occurs. Depending on the topic of discussion though, this change can be attributed either to the quality of argument (deliberative) or to the argument that is repeated most often (non-deliberative). More critical voices mention a polarising effect on political opinions that is believed to have an opposing effect on the ability to find consensus (Sanders 1997; Sunstein 2003). Mercier and Landemore (2012) review such empirical results and compare them to more favourable results. They provide a psychological explanation for when reasoning has a more polarizing effect and when it causes depolarisation. They focus on the question of how the institutional setting provides for initial disagreement between the deliberating actors and
claim that disagreement is necessary for depolarization while like-minded people tend to polarize.

**Effects on Actual Outcomes:** Chambers (1996) finds that decisions are more elaborate and informed. Schei et al. (2008) find that participants in their experiment that are given a cooperative motivation instruction are more satisfied with the results they achieve. The joint gains are lower, however. Sulkin and Simon (2001) and Hibbing and Theiss-Morse (2002) find fairer results, both in terms of fair distribution and fairness perceptions. The latter also conclude that deliberating participants are more likely to comply with their results at a later point in time. Both articles can, however, be criticized for talking of deliberation but looking at nothing but general communication. Again in contrast, enduringly stable agreements (Niemann 2006) as well as more consensual (Bächtiger et al. 2005) are also described as being the result of deliberation in contributions that take greater care in not stretching the concept of deliberation too far (compare to: Steiner 2008). However, more consensual decision-making can already be achieved by an exchange of information about preferences without any discussion (Gaertner et al. 1999).

**Conditions Mediating the Effects:** Lorenz et al. (2015) look at the epistemic value of deliberation and conclude that groups are able to find relatively close results to questions concerning vaguely known facts. However, groups were closer to the true results when they either had to decide unanimously or had no decision rule at all. If they were to decide by majority, the results were worst. Druckman and Olekalns (2008) summarize the results of the papers in a special issue of *Group Decision & Negotiation* dealing with the influence of emotions on the course of negotiations. It becomes apparent that emotions have an impact on the coordination of strategic action. The direction depends on some scope conditions, however. These scope conditions are reflected by a variety of process and context variables, that are tested in the various articles. In a dated review of the deliberation literature, Delli Carpini et al. (2004) conclude that “the impact of deliberation and other forms of discursive politics is highly context dependent. It varies with the purpose of the deliberation, the subject under discussion, who participates, the connection to authoritative decision makers, the rules governing inter-
actions, the information provided, prior beliefs, substantive outcomes, and real-world conditions.” (Delli Carpini et al. [2004] 336).

To conclude this review of the empirical investigations of deliberation, one warning has to be repeated: Mutz (2008) points out that the theory of deliberative democracy is in its entirety not falsifiable, since there are too many aspects that need to be considered. She calls for mid-range hypotheses in order to approach the empirical investigation piece by piece. This warning is now widely cited, yet even after she published Is Deliberative Theory a Falsifiable Theory?, there are still contributions to the field that talk of deliberation as one phenomenon and do not manage to clearly distinguish how specific conditions, specific procedures, and specific effects of deliberation can be theoretically connected with a credible causal chain and empirically investigated by isolating other potential influences.

2.5 Measuring Deliberation

In Section 2.4, various ways of conceptualising deliberation are described that have been used in the field. When looking at the effects of deliberation, most of the time certain conditions that are assumed to be conducive for deliberation are used to test if they have an effect on certain outcomes. Most studies assume deliberation to take place as soon as people are given the opportunity to gather new information and discuss political issues. The understanding is more of a Type II deliberation as described in Section 2.3 (introduced by: Bächtiger et al. 2010). In the Deliberation Day experiments, the way in which the forums are set up is an example of such an institutional condition. In other experiments, participants are asked to follow certain task-descriptions in the treatment group(s). However, there is a scarcity of studies that actually look at the behaviour of participants in order to derive causal effects from such deliberative behaviour. As David Ryfe puts it: “Researchers have been less interested in deliberation itself than in measuring its effects” (Ryfe 2005, 54).
2.5 Measuring Deliberation

However, when looking at the conditions for deliberation, several measures have been used to test if higher values are the result of such conditions. Most common is the Discourse Quality Index (DQI), developed by Steenbergen et al. (2003). In order to develop the DQI they first establish four criteria as benchmarks for what constitutes a good measurement instrument: “(1) it should be theoretically grounded, (2) it should tap into observable phenomena, (3) it should be general, and (4) it should be reliable” (Steenbergen et al. 2003, 23).

Other measures include a measurement of arguments or argumentation in different negotiation contexts: Holzinger (2001, 2004) developed an instrument for comparing arguing and bargaining speech acts on the basis of the theory of speech acts by Searle (1969) that is also used in Landwehr and Holzinger (2010). Kotzian (2007) uses an approach of frames, in which he builds on the same distinction. However, the operationalisation of these frames remains vague. Thus, some attempts of measuring deliberation are based on the spoken word. These attempts will be reviewed in the next subsections – differentiating between manual coding and automated measurement. A good overview of data-collection techniques and their application for measurement approaches to several important aspects of deliberation is provided by Kasap (2013) and applied to online discussions.

Other approaches that are not primarily based on the spoken or written word exist as well. Naurin (2007, 2010), for example, uses interviews with members of the EU Council of Ministers, asking them when and for what reasons they explained their country’s position in negotiations. With this approach he intends to juxtapose arguing and cooperative bargaining. Gastil (2006) uses standard survey research to measure a balanced expression of different viewpoints. He asks whether respondents perceive conversations or public meetings as being dominated by people who are in favour of one specific position. Nabatchi (2007) takes this approach further and uses ten 5-point Likert scale items in a survey to identify several factors of deliberative quality. Participants in a 21st Century Town Meeting responded to questions about how they perceived the process of that meeting concerning, among others, indicators such as diversity of people, working towards consensus, being able to express one’s view, and
whether or not the subject considered the discussion as helpful in order to be able to think more critically about the given topic.

Mannarini and Talò (2013) integrate concepts from Rowe and Frewer (2000, 2004) with categories from Edwards et al. (2008), Gastil (2006), and Stromer-Galley (2007) among others, some of which are discussed in the next subsection. The results here depend on survey methodology. Participants of Open Space Technology (OST) meetings, in which a minimum of facilitation is provided, were asked to assess how they perceived their participation in reference to the criteria set by the authors to measure the deliberative quality of the meetings. McLaverty and Halpin (2008) report from a case study a phenomenon they call deliberative drift, namely a move from an interaction that began as a bargaining process towards a decision-making process in which delegates from interest groups set aside their predefined preferences and decided in line with the most convincing arguments. The evidence provided is based on questionnaires from the evaluation process.

The highest level of aggregation in measuring deliberation is the inclusion of a deliberative component to the Varieties of Democracy (V-Dem) dataset. They use Bayesian factor analysis of expert responses “attempting to measure the extent to which political elites offer public justifications for their positions on matters of public policy, justify their positions in terms of the public good, acknowledge and respect counter-arguments; and how wide the range of consultation is at elite levels” (Coppedge et al. 2016, 583).

2.5.1 Manual Coding Schemes

Among manual coding schemes, an early attempt to measure deliberation was conducted by Gerhards (1997), who measures the quality of political debate on domestic politics on the basis of contributions to daily newspapers. He distinguishes between four indicators: the representativeness of actors, the degree of respect towards others, the degree of justification of claims, and the rationality of discourse quality (i.e. an integration of values). The above-mentioned contributions by Holzinger (2001, 2004).
2.5 Measuring Deliberation

and code utterances by distinguishing whether they belong to the semantic ‘fields’ of arguing or bargaining. They conclude that arguing appears in all negotiation situations. However, conflict type and the institutional setting affect the ratio of arguing speech acts versus bargaining speech acts.

The Discourse Quality Index (DQI) assumes the quality of a discourse to be a latent variable, which can be observed in several dimensions and measured by using a number of different indicators. The instrument aims at representing the three basic criteria of deliberation, as brought forward by Habermas: truth, rightness and sincerity. The instrument (introduced in Steenbergen et al. 2003; Steiner et al. 2004) uses the following 7 indicators: participation, level of justification, content of justification, respect towards groups, respect towards demands, respect towards counterarguments, and constructive politics (applied among others in: Hangartner et al. 2007; Bächtiger and Tschentscher 2007; Bächtiger and Hangartner 2010). From these 7 indicators an index is created, but analyses very often focus on the individual indicators rather than on the overall index. The DQI was originally used to find out under what institutional conditions deliberation is most likely to take place. Only recently has the DQI been used as a dependent variable, explaining inter-group appreciation in Belgium (Caluwaerts and Reuchamps 2014) or opinion change in a European deliberative poll on third-party migration (Gerber et al. 2014). In these and other contributions, a challenge of adopting the coding instructions becomes apparent: the DQI was optimised for parliamentary debates. It needs to be adjusted when used in other types of negotiation settings and therefore has to accept a weaker comparability. The unit of analysis is generally an individual speech. This is easier to code in long contributions of plenary debates of parliaments than in face-to-face conversations such as in a deliberative poll.

Further adaptations to the DQI come from Monnoyer-Smith and Wojcik (2012), Ugarriza and Nussio (2016), and Ugarriza (2016) for example. Monnoyer-Smith and Wojcik (2012) essentially adapt the criteria according to which the deliberative quality can be assessed. They invoke both Type I and Type II deliberation and use different coding schemes such as survey answers, on-site observation, and some coding of tran-
scripts in order to compare the debates in an online forum with debates in face-to-face meetings on the same topics. Ugarriza and Nussio (2016) and Ugarriza (2016) work with transcripts and ensure they only use dichotomous measures in order to increase inter-coder reliability while making the DQI applicable to face-to-face discussions.

Stromer-Galley (2007) develops an alternative coding scheme that aims at identifying deliberative processes in face-to-face and online discussions. She assesses the following elements of deliberation: “reasoned opinion expression, references to external sources when articulating opinions, expressions of disagreement and hence exposure to diverse perspectives, equal levels of participation during the deliberation, coherence with regard to the structure and topic of deliberation, and engagement among participants with each other” (Stromer-Galley 2007, 4).

Edwards et al. (2008) aim at identifying an evaluation framework for deliberative events. They clearly distinguish between input, process, and output criteria. As to the process criteria, senior student assistants observed the procedure on-site for the discussions in the case study and five-point Likert scales were used to assess in how far the deliberative process corresponded to the evaluative criteria. “Process criteria were evaluated through the daily deliberative elements. Criteria, to reiterate, measured participant attendance and inclusion, information access and translation, participant understanding and learning, the free consideration of proposals and creative solutions, ownership of the daily agenda, building of trust, and participant awareness and understanding of each others’ thinking and reasoning” (Edwards et al. 2008, 9, italics in the original). Friess and Eilders (2015) also use the three-phases framework of input, process (throughput), and outcome for their review of various measurement approaches. Their contribution is an adaptation to online deliberation. In terms of throughput they concentrate on the following six indicators: rationality, interactivity, equality/inclusiveness, civility, common good reference, and constructiveness.

De Vries et al. (2011) look at a Deliberation Day type of event on a topic of bioethics. Learning from Fishkin and his collaborators, they assume that the deliberative event is able to lead to opinion change. Yet they are not satisfied with just looking at the institutional setting and assessing the outcome. They have a closer look at what is
2.5 Measuring Deliberation

actually going on. They look at the process (facilitation, equality of participation, participation engagement, and respect), the role of information (use of on-site experts, use of incorrect information, learning new information, understanding and application of information, and the impact of information on opinions), and reasoning (justification of opinion, openness to complexity, and an adoption of a societal perspective). They triangulate on-site assessment, a survey about the process, and an analysis of the discussion transcripts. Although it would have been very interesting to compare the different participating groups according to their respective performances on these indicators, the authors limit themselves to presenting anecdotal evidence from the transcripts and data from the survey which is aggregated to the whole process in order to state their conclusion that indeed the general process could be described as by and large following the deliberative ideal.

Bonito et al. (2014) juxtapose input and process indicators of group performance. According to the former school of thought, processes would be very similar if the same input was provided and outcomes can therefore be assessed in reference to the input only. The latter view claims that process can diverge extensively even if inputs are the same. Therefore, an assessment of the processes is important to make meaningful predictions of outcomes. The contribution of their paper is a convergence model of these two approaches. The measurement simply counts the number of thoughts uttered in group discussion as a dependent variable and the participants’ sex and their pre-discussion preferences (study 1) or various different tasks and their discussion role (study 2) as independent variables.

2.5.2 Automated Approaches

Manual coding schemes, as described above, can be very useful when attempting to establish a strong connection between codes and the concepts of deliberation. However, training of coders that produce reliable results can be intricate. The reported reliability tests are generally acceptable. However, the extent to which differences between coders are decisive for results derived from deliberative procedures is very difficult to
assess. In addition, sometimes the amount of text that needs to be coded is simply too large for feasible manual coding. Thus, some researchers have produced automated coding schemes that do not need human intervention or at least limit it to a feasible workload.

Among such approaches, Schonhardt-Bailey (2008) uses “automated content software (ALCESTE) to analyse Senate debates” (Schonhardt-Bailey 2008, 384). An advantage of this approach is that it “does not require any pre-coding [but it cannot] analyse very large corpora or corpora containing multiple discrete topics” (Schonhardt-Bailey 2008, 393f.). The idea of ALCESTE is to place utterances in different categories and allow comparison of the topics of these different dimensions of a debate. It was developed by Reinert (1983, 1987). The connection to deliberative quality is achieved by an assessment of the topic dimensions and sorting them into emotive contributions and rational or publicly reasonable arguments. They conclude in their study that the arguments that were considered more rational were decisive for the decision they analysed. Weale et al. (2012) use the same method to assess UK parliamentary debates on abortion policies. They observe a discrepancy between parliamentary procedures and the norm of reciprocity and test to see if references to each other’s speeches occur more frequently in a favourable condition, such as a free vote on conscience issues. Their findings are ambiguous.

Wyss et al. (2015) use cognitive complexity as a measurement instrument for deliberation in order to compare the parliamentary speeches of both chambers in Switzerland. Cognitive complexity is a psychological concept developed by Suedfeld et al. (1992) and Tetlock (1983, 1984) that looks at the way people speak and how they build their sentences in face-to-face interactions. Brundidge et al. (2014) elaborate on the conceptual ties to the deliberative ideals. Wyss et al. (2015) claim that cognitive complexity can not only be used “as a proxy for epistemic quality, but also for capturing essential elements of consensus orientation” (Wyss et al. 2015, 642).

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2 Weale et al. (2012) no longer report problems with the amount of data that can be processed by ALCESTE. Schonhardt-Bailey (2008) also recognises that future versions of the software might be able to process larger corpora.
Finally, Gold et al. (2017) report on a research project (VisArgue) that aims not only at measuring deliberative quality but also at visualising the analysis so that researchers are provided with a better understanding of the text corpora on which they base their analyses. Visualisation is supposed to have a double-function: First, the interaction with the visual tools provides researchers with the opportunity to generate interesting hypotheses on the face-to-face discussions of interest. Second, researchers can go back and forth in the level of abstraction in order to scrutinize how measures on the level of single utterances reflect on the aggregated measures. The cited paper uses data from a German public mediation event on a highly politicized issue. The presented measures cover the four dimensions participation, respect, argumentation and justification, and accommodation. The various indicators are based on statistical ‘bag-of-words models’, topic models, deep computer-linguistic analyses and combinations thereof.

### 2.6 Summary and Discussion

Between 1980, when Bessette introduced deliberation as a term, and today, the field of deliberation research has developed substantially. In this chapter, I have reviewed the classics, selected theoretical developments, and various conceptualisations, before looking at the empirical turn of deliberation research. The bulk of empirical research is divided into literature that looks primarily at conditions for deliberation, literature that deals with processes and procedures of deliberation and how various components interact with each other, and literature that emphasises the effects of deliberative institutional settings or processes. In the final section I took a closer look at various attempts of measuring the concept.

Overall, I can concur with Curato et al. (2017) that several results in the field can now be considered established knowledge. They identify twelve key findings:

1) “Deliberative democracy is realistic” (p. 29).
2) “Deliberation is essential to democracy” (p. 29).
3) “Deliberation is more than discussion” (p. 29).
2 Reviewing Deliberation: Theory, Empirical Turn, and Measurement

4) “Deliberative democracy involves multiple sorts of communication” (p. 30).
5) “Deliberation is for all” (p. 30).
6) “Deliberative democracy has a nuanced view of power” (p. 31).
7) “Productive deliberation is plural, not consensual” (p. 31).
8) “Participation and deliberation go together” (p. 32).
9) “Deliberative transformation takes time” (p. 32).
10) “Deliberation is the solution to group polarization” (p. 33).
11) “Deliberative democracy applies to deeply divided societies” (p. 33).
12) “Deliberative research productively deploys diverse methods” (p. 34).

By and large, Mutz’s demand for medium-range hypotheses has been met by the empirical literature. Still, this literature was again criticised by theorists who are in search of a parsimonious normative theory of society. The systemic approach can be seen as a solution that fits into both worlds. However, I argue that moving towards more systemic empirical research is premature since certain theoretical assumptions are still not empirically substantiated.

The epistemic understanding of deliberation claims that through deliberative institutions or deliberative behaviour one can expect to reach better results even when interests are involved in the decision-making process. In the reviewed literature, I cannot identify contributions that satisfactorily support such a claim. The recent development of a three-stage model of input, throughput and output does go in the right direction, but results that are successfully based on this model are scarce. In the Effects of Deliberation subsection, the effects on participants are dominant, especially because of the many studies by Fishkin and his collaborators. Another strong focus lies on opinion and opinion change of participants as well as on the public. In the few studies that actually look at certain criteria to decide whether decisions are actually better, the procedures either did not include interests or the concept of deliberation is stretched so far that one can hardly consider these contributions as deliberation research.

Among the few exceptions that address the question of whether the power of the better argument is able to overcome the influence of private interests is the study by
Niemann (2006), who finds more stable agreements to be the result of a deliberative process. Still, the actual throughput remains vague, and thus, little can be learned about how the black-box of deliberation can be penetrated. For this reason, I claim that it is important to return to a more ‘micro’ form of deliberation research which helps to understand the mechanisms that are actually in process when deliberation happens and when potential effects can be observed.

The role of interests in deliberation theory turns out to be neglected in the empirical literature with the few exceptions mentioned in the Conditions for Deliberation subsection. Theoretically, interests and deliberation seem to be contradictory to each other. Except, it is one of the great promises of the normative deliberation theory to be able to sideline or even overcome differences of interests. I therefore argue that interests are an essential part of deliberation, since it is the power of interests that is supposed to be overcome by the rational discourse. This argument has not been sufficiently considered in the literature, as of now. In addition, if the theory of deliberative democracy is supposed to become relevant for the analysis of actual political decision-making, one cannot close the eye to the ubiquity of private interests of those who take part in the decision-making process. An interesting finding in that respect is the claim of Landa and Meirowitz (2009), derived from game theoretic analysis, that there will always be incentives to withhold private information. This result is a considerable challenge for deliberation, as it emphasises the influence of interests not only on the results, but also on the process of deliberation.

Therefore, I ask in this thesis how communication affects decision-making and the outcomes of decision-making processes. I place a special focus on the role of interests as the backdrop against which the effects of deliberation on outcomes are assessed. In order to answer this question, I need to define the term deliberation slightly differently than it is done in other research. Deliberation in this endeavour is understood as a quality of communication that refers to the ideal of communicative rationality in a decision-making process that directly affects the private interests of its participants.
3 Explaining the Effects of a Deliberative Quality of Communication

The theory of deliberative democracy propagates a style of political decision-making which is based on reason rather than interests or power (Dryzek 1990, 2000; Mansbridge et al. 2010; Gutmann and Thompson 1996, 2004). A decision should be based on the better argument in an all-inclusive debate over all possible options (Habermas 1981, 1983, 1991). The review of the field in Chapter 2 suggests that the following research gap should be addressed: An empirical answer to the question of HOW communication affects decision-making outcomes is not sufficiently given, and the theoretical micro-foundation of these effects is still weak. I therefore ask: Are better (i.e. collectively more valuable) outcomes, which are predicted by the theory of deliberative democracy, actually attainable empirically – especially when the decision-makers have material interests that conflict with such outcomes? If these outcomes can be attained, what role does deliberation play in helping them emerge? In other words: Is the power of the better argument able to sideline individual interests and does deliberation in a decision-making context affect the substantial results?

The theory of deliberative democracy is considered a normative theory. As such, it gives behavioural guidelines about how politics should be organised. Such a question

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1 This is the term used by Habermas. I will use it so that the theoretical origins are still recognised. I do not put value on the word better in such a way as measuring the goodness of an argument. Thus, I do not claim that a researcher can decide what contents constitute a better argument. The better argument is rather defined as the most convincing argument in every individual interaction.
3 Explaining the Effects of a Deliberative Quality of Communication

evades an empirical investigation. However, normative theories can be turned empirical by scrutinizing the behavioural guidelines in order to separate the value measures (What is good? What is bad?) from empirical claims. Some empirical claims can be claims of existence (A certain behaviour is possible and / or does appear in the real world.) and claims of causal relationships (If actors behave in a certain way, certain outcomes can be expected.). While the normative theory holds that a certain outcome is good or bad and that, therefore, a certain action should be taken, the empirical investigation aims at clarifying if these specific actions are feasible and actually appear under the set conditions and if a causal relationship between action and outcome can be identified. This approach is suggested by Patzelt (2007).

However, the theory of deliberative democracy cannot be turned in its entirety. The contributing authors do not always agree on their specifications of deliberation, and they also emphasise different outcomes. Their level of abstraction differs as well (For an overview, see: Gutmann and Thompson 2004, Chapter 1). So, in order to do an investigation of the role of deliberation in decision-making processes, it is important to set limits to its scope. I, thus, return to the question of how communication affects decision-making by emphasising the micro-foundation of deliberative democracy. Among the cited classics in the first chapter, Habermas is the one author who does substantiate his claims of a societal process of communicative action on a micro-level of a communicative process. I will therefore focus on his works in this theory chapter. It is important to stress that I do not use the theory of communicative action as an analytical framework that helps to explain the effects of communication processes. Rather, I identify those aspects of the theory of communicative action that propose a causal path between a certain type of communicative behaviour and beneficial outcomes. These aspects become themselves the subject of the investigation, with the aim of testing if the identified claims of existence and of causality can be warranted empirically.

This chapter now serves as the theoretical basis for an investigation of that kind. Section 3.1 consists of a summary of the theory of communicative action (Habermas 1981, 1983, 1991), and an introduction of several key terms. In Section 3.2 I extract
3.1 Habermas and the Theory of Communicative Action

from that summary a behavioural guideline which is the essence of the procedural micro-foundation of the theory of communicative action. This guideline is taken apart into several empirical claims, which are assumed if the power of the better argument is supposed to actually have a convincing effect. It is then important to define the terms deliberation and deliberative quality of communication for this research in Section 3.3.1 before the context in which this sort of deliberation takes place is defined (Section 3.3.2). As the empirical claims, identified in Section 3.2 can be grouped into claims that concern information sharing and processing (1), claims that concern norm selection and substantive outcomes (2) and claims that concern will formation and consensus decisions (3), Sections 3.4, 3.5, and 3.6 each deal with the identification of hypotheses that could explain how the deliberative process affects these different outcomes.

3.1 Habermas and the Theory of Communicative Action

Three building blocks of the theory of communicative action can be differentiated: a theory of rationality, a theory of action, and a theory of society. In addition, an expansion and clarification of the theory of action – the discourse ethics – is needed for understanding the intuition. These building blocks are intertwined and cannot be described independent of each other (Brunkhorst et al. 2009). This way of organising the many aspects of Habermas’ work is useful for the purpose of this study, as it helps to emphasise those parts of the theory which substantiate the micro-foundation of the theory of communicative action. I give an overview of these building blocks in order to make a coherent description of the theoretical foundations before introducing the relevant behavioural guideline and the associated empirical claims in the next sections. I separate these empirical claims from the normative values, which are originally attached to the empirically appearing phenomena.

I talk of a single guideline even though the theory of communicative action has several normative suggestions for organising society and the political sphere. However, this one guideline summarizes the point that is made concerning the micro-level of individual behaviour and collective decision-making.
3 Explaining the Effects of a Deliberative Quality of Communication

For establishing a theory of rationality, Habermas asks how rationality or reason is grounded in society and what effect it has on societal development. To further this aim, he tries to develop a universal measure, according to which societies can be criticised (Habermas 1981 I: 15ff.). Thus the concept of rationality needs to encompass more than the idea of an instrumental rationality, as is known from the rational-choice literature. It is even not enough to show that moral points of view can be rationally reasoned for. Rather, Habermas aims at identifying a concept of rationality that can be reconstructed independent of culture and societal structures in such a way that, across cultural borders, the same measure can be applied when asking whether an action, an opinion, a wish, an utterance, or any human behaviour is considered rational. Habermas finds the way towards such a concept in the role of argumentation. He focuses on pragmatic entities (speech acts) that allow a process of communicative coordination (Habermas 1981 I: 44ff).

Accordingly, verbal communication is based on the connection of speech acts (Austin 1962; Searle 1969) with validity claims. By uttering x, I claim that the conditions for the validity of x are met. By doing y, I claim that there is a causal connection between my action y and the intended effect. Validity claims are the key towards what Habermas considers valid. So what is validity? Validity can be found under the conditions that one is aware of the way a claim can be justified as well as the grounds on which the same claim can be criticised: justification and criticism are the key components of rationality (Habermas 1981 I: 27). Three types of validity claims are distinguished: (factual) truth, (normative) rightness, and (authentic) sincerity. Any claim can affirm communicative rationality, if the justification, according to these three types of validity conditions, is generally known and if the way the claim can be criticised is equally obvious. The degree of rationality of any claim depends on the credibility of the knowledge that is represented by that claim (Habermas 1981 I: 25ff.).

Thus, the concept of rationality is distinguished from a utilitaristic understanding of this term, in which an action is rational if it can be expected to lead to a predefined aim, or at least the best attainable outcome, when considering all available information. Habermas’ concept of rationality, on the other hand, focuses on the process of
3.1 Habermas and the Theory of Communicative Action

justifications. An action is rational if it remains justifiable, even if it has been put under great strain from opposing validity claims. It is the process of exchanging validity claims and their mutual scrutiny which makes an action rational.

The theory of action describes human behaviour as being pervaded by a communicative rationality. Habermas distinguishes three concepts of action (Habermas 1981, I: 126 - 141), which reflect those aspects of behaviour that can be rationalised: 1) In teleological action, the actor refers to the objective world. The rationality of opinions and actions can be assessed by its truth and effectiveness. 2) In norm-regulated action, the actor refers to the social world. The rationality is assessed by the legitimacy of motives, actions and norms. 3) In dramaturgical action, the actor refers to the subjective world. He differentiates between an interior and an exterior world, but cannot distinguish the objective and social worlds. The rationality of feelings and wishes is assessed by their sincerity.

![Diagram showing the typology of the borderline cases of communicative action]

Note: Relationship of the three concepts of action, distinguished by Habermas (1981, I: 126 - 144) as borderline cases of communicative action

Figure 3.1: Typology of the Borderline Cases of Communicative Action
3 Explaining the Effects of a Deliberative Quality of Communication

It is the ability of modern actors to relate to the three worlds (objective, social and subjective) simultaneously and to justify and criticise any behaviour according to each of them. Thus, Habermas describes these concepts of action as borderline cases of communicative action (see Figure 3.1 for a diagram of how they relate). The well remarked distinction between strategic and communicative action, which has been substantiated in debates on international relations, is derived from a focus on the question of how actions can be coordinated: Habermas’ theory of action does not emphasise the single actor, but tries to understand the social relationships between actors (Habermas 1981, 150f.).

Strategic action is accordingly defined as the coordination of actions through interests, while communicative action is the coordination of actions through normative agreement. In strategic action, coordination is achieved with coercion, power asymmetries or the coincidental agreement of interests, while in communicative action, the actors coordinate by consent in reference to the three worlds (Brunkhorst et al. 2009, 224). Since private interests are supposedly able to stabilise agreement, the concept of strategic action does not need to explicate a binding force for the coordination. In communicative action, however, the binding force is derived from the rational motivation of the actors. They gain the consent, which coordinates their actions, by agreeing to (or negating) validity claims. Once an actor does no longer negate a validity claim, he accepts that he has no other reasons for not taking the desired action (Habermas 1981, I: 114). The other side of the coin is that he has to bring forward any reason against the desired action while still in the process of coordination. By not acting according to the consented way, the actor does not only risk criticism from the peers, but also from himself – his bad conscience (Habermas 1991, 135).

However, only situations that are initially ambiguous need such an open coordination and communication process, which is labelled discourse within the framework of the theory of communicative action. In contrast to Rawls, who assumes that actors

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3 The so called ZIB-Debatte, which was carried out in the Zeitschrift für Internationale Beziehungen, was introduced by a disagreement between Müller (1994) and Keck (1995) but involved many scholars who engaged in a more than decade long debate. Summaries can be found in Grobe (2007), Saretzki (2007), and Schäfer (2007).
3.1 Habermas and the Theory of Communicative Action

have to be impartial and should act according to a norm that is the best solution for everyone as identified by self-reflection, Habermas does not assume that actors should have no interest by themselves. He states that whoever acts pursues an objective. But, in communicative action, the mechanism of coordination depends on the communicatively achieved consent (Habermas 1991, 151). Interests play a role in the coordination process but will no longer be decisive for choosing which action to take.

For creating his theory of society, Habermas rejects the idea that societal contexts can be understood by an analysis of actions. Two reasons are given: 1) society functions as a resource for actions and 2) the development of social structures cannot be put down to individual actions. Thus, Habermas introduces the concept of a lifeworld. As a resource for action, the lifeworld is conceptualised as the background knowledge of everything that is self-evident for a group of people. Three societal resources have been identified: meaning, solidarity and abilities. As soon as any expression of these resources becomes problematic - it is no longer self-evident - it transforms into the subject of conscious realization, and is no longer part of the common lifeworld of that group. The lifeworld then consist of three components which are each related to one of the three resources. 1) Culture is fed by meaning and knowledge. 2) Society is fed by solidarity, social order, and group affiliation. 3) Personality is fed by abilities, competences, and the strength of self. The process of justification and criticism defines the common ground, which feeds into the lifeworld. Thus, the three components of the lifeworld are reproduced by communicative action. (Habermas 1981, II: 171ff.)

In the move towards modernity, societies have learned to demystify ritual practices and learned to differentiate between the three worlds (objective, social, and subjective) – a process that allowed the potential of rationality to develop. Habermas calls this process linguistification of the sacred (Habermas, 1981(1987), 77). The downside of the increase of rationality and autonomy is an increased risk of disagreement. In the process of rationalisation, societies are able to turn the mechanism of communicative reproduction of the lifeworld into mechanisms that are consistent with strategic action. By introducing formal laws, the system of state and economy can be integrated into the reproduction of society. Communication media, which are no longer based on lan-
3 Explaining the Effects of a Deliberative Quality of Communication

guage, are supposed to be able to coordinate the actions of success-oriented actors. Two such media are prominent in the theory of communicative action: administrative power and money (Habermas 1981, II).

Administrative power is created by the formalisation of political and administrative positions that are allowed to tell people what to do. Money is created by the guaranteed freedom of ownership and the freedom to engage in contracts. This adjustment is able to relieve pressure from the requirements on communication. Habermas claims that the symbolic reproduction of society is dependent on communicative action, because meaning, solidarity, and abilities cannot be ordered or paid to exist, but can only be created on the basis of agreement. Administrative and economic functions, on the other hand, can easily be substituted. Due to the legal constitution of state and economy, the communicative rationality has been deprived of its foundations.

The normative demand, built into the theory of communicative action, refers to the relationship of formal law and the lifeworld. Habermas demands that the laws, which integrate the systems (state and economy) into the common lifeworld, should guarantee that the maintenance of the systems should be submitted to the normative restrictions of the lifeworld. However, according to this diagnosis, modern societies tend to allow that the economic-administrative complex lets the systematic compulsions of material reproduction to subjugate and thus mediate the lifeworld. This process is called colonization of the lifeworld.

It has to be made clear that strategic action as such is, accordingly, not the starting point for criticism, especially since strategic action is important for an efficient coordination of actions. However, with the colonization of the lifeworld, the two media, power and money, penetrate and take over the public and the private spheres because those actors which are driven by their interests can always fall back to coordinating their actions through these media, without having to comply to the imperative of justifying their planned actions. Since money and power displace the possibility of communicating, the affected members of society will apparently no longer be able to challenge illegitimate figures of social power. This bears the threat of following societal imperatives without any rational motivations to do so.
In the discourse ethics, Habermas (1983 [1991]) substantiates the normative claims for his theory of action. He does so by clarifying the rationality concept in the social world: trying to answer what is normatively right - or rather, on what basis this question can be answered. Habermas tackles the question of what is moral. Rather than putting yourself in some other persons shoes, as in Kant’s categorical imperative, where you have to ask yourself if you consider your actions right if they were a universal law (reflexive examination of moral maxims), Habermas focuses on the idea of practical discourse. Only by using arguments and agreeing to the validity claims of normative rightness will one be able to answer the question of what is moral. He emphasises the importance of real dialogues that actually have to be carried out and cannot be substituted by quasi-dialogic monologue (Habermas 1981, II: 145). Under conditions, which are to be assessed according to the ideal of a speech situation which eliminates all distortions of communication, free and equal discourse participants should be able to reach a consensus which is able to motivate for rational norm adherence.

The practical discourse is, accordingly, the alternative draft of ideologies: In an ideology, proponents falsely assume that generalizable interests are already existent in a society. According to the principle of universalisation U, every norm has to fulfil the following condition:

“(U) All affected can accept the consequences and the side effects its general observance can be anticipated to have for the satisfaction of everyone’s interests (and these consequences are preferred to those of known alternative possibilities for regulation)” (Habermas, 1983 (1990), 65).

This principle has been introduced as a rule of argumentation for practical discourse. The principle of discourse ethics D then says:

“(D) Only those norms can claim to be valid that meet (or could meet) with the approval of all affected in their capacity as participants in a practical discourse (Habermas, 1983 (1990), 66).

Acting according to the discourse-ethically justified moral norms is then considered rational, as these norms have a backing reserve of good reasons (compare to Habermas
3 Explaining the Effects of a Deliberative Quality of Communication

The rational justification of moral norms is supposed to be done in such a way that all norms have to be excluded that cannot find the qualified agreement of all potentially affected persons (Habermas 1991, 73). Habermas defines an ideal discourse situation by describing the conditions under which a qualified agreement of all potentially affected persons is most likely to come about. The aim of discourse is to find shared or shareable reasons for a decision, rather than a compromise of interests. In fact, the actors have to yield their interests to these reasons.

An agreed upon norm can only be considered justified if the agreement is the result of argumentation. That means that the process of decision-making has to follow the pragmatic rules of discourse. Primarily, the process has to secure that every participant to the decision-making process has got a chance to consent to the final decision out of free will. The form of argumentation should prevent that some participants suggest or even dictate to others, what is in their best interest. The idea is not to guarantee impartiality, but to guarantee the autonomy of will-formation, meaning that the formation of one’s intentions should not be subject to manipulation. The normative content of these discourse rules then lies in neutralising power imbalances and providing equal chances of adopting the respective own interests (Habermas 1983, 81 f.). Habermas calls the moral core of these essential requirements of communicative action the idea of noncoercive intersubjectivity.

Habermas draws from a list of conditions for argumentation, which was put forward by Alexy (1978). He distinguishes three levels of conditions: logic, procedure, and process. The following examples for the logic level were important for Habermas (1983, 97): (1.1) No speaker is allowed to contradict himself. (1.2) Every speaker who uses a predicate F onto an item a must be willing to use F onto any other item that equals a in every relevant way. (1.3) Different speakers may not use the same term for different meanings. On the procedure level the following rules are used as an example (p. 98): (2.1) Every speaker may only utter, what he believes himself. (2.2) Whoever challenges a statement or a norm, which is not subject-matter, must give a reason for

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4 Habermas differentiates the ideal from real discourse, which is actually happening. He claims that any form of idealisation can be compared with a vacuum in physics, which is assumed for many explanations, but can hardly ever be achieved in empirical investigations (Habermas 1991, 160).
3.2 Key Guideline and Empirical Claims

In this section, I explicate the behavioural guideline from the above summary in order to withdraw the normative value measures that are explicitly and implicitly grounded in the theory of communicative action. What remains are empirical propositions that either claim existence of certain phenomena or causal relationships between phenomena.

The major general behaviour guideline hides behind the term of rationality: Implicitly, Habermas demands that one should act according to moral norms – because they are considered rational. Only by using arguments and agreeing to the validity claims of normative rightness will one be able to answer the question of what is moral. According to the discourse principle D, only those norms may claim validity which are able to achieve approval of all persons affected by the decision as participants of a practical discourse. Achieving approval should be done in such a way that all norms have to be excluded which cannot find the qualified agreement. Finally, a decision can only be considered justified if the process of decision-making follows the pragmatic rules of discourse: Access to the decision-making process is open (A), the participation

5 Although the theory of communicative action is considered a normative theory by many scholars, actual behaviour guidelines are quite rare. I would rather like to describe the essence of the theory of communicative action as a description of empirical (or would-be empirical) phenomena, which is derived from looking through a specific set of theoretical lenses. Once one accepts the existence of a common lifeworld, separated in three parts of an objective, social and subjective world, which can be influenced by three distinct types of action and assessed according to three differentiated conditions of validity, what remains is an analysis of our society and the possible actions we can take to influence the world around us. By using the term rationality, Habermas tries to objectivise the normative value measure of morality.
Explaining the Effects of a Deliberative Quality of Communication

is free (B), and no strategic or other than argumentative influences should take away the rights and possibilities to participate (C). In addition, the discourse should aim at identifying shared reasons rather than finding a compromise of interests and should guarantee the autonomy of will-formation rather than impartiality (D).

The normative value measure in this guideline is morality, which is supposedly achieved by an empirical obedience to the pragmatic rules of discourse. This is the phenomenon that the micro-foundation of the deliberative process focuses on. Since ought implies can, I derive of the above behavioural guideline empirical claims of existence (*) and causality (**). The most basic among them is:

(*) Actors ARE ABLE to follow the pragmatic rules of discourse.

As outlined above, four aspects are important for the pragmatic rules of discourse that serve to justify the decision at hand: open access (A) and free participation (B) touch upon the actors’ ability and willingness to share and process information. The focus on argumentative influences on actors’ participation (C) enables the creation of a backing reserve of good reasons for the justification of moral norms. And the intended identification of shared reasons rather than a compromise of interests (D) reflects the building of consensus that comes about, only if the actors’ will-formation is autonomous.

In terms of information sharing, four claims of existence could be identified. First:

(A*) Access to the decision-making process CAN be open.

Proposition (A*) claims the possibility of open access to the decision-making process. The behavioural guideline states that institutions have to be created in such a way that no-one who wants to participate can be denied their involvement. Thus, the causal claim would be in general that (A’) certain institutional frameworks, which are supportive of deliberation, lead to an open access to the decision-making process⁶. In the following three statements, the claims of existence leave behind the institutional settings and emphasise individual behaviour:

⁶ I will not go into further detail on this topic, as it has been researched to a sufficient extent in Bächtiger and Steenbergen (2004) and others.
3.2 Key Guideline and Empirical Claims

(B.1*) Everyone CAN challenge every statement.

(B.2*) Everyone CAN introduce any statement into the discourse.

(B.3*) Everyone IS ABLE to utter his or her attitudes, wishes, and needs.

Since participation is not limited to informing others of one’s own knowledge but also gaining knowledge from others, free participation includes the receiver perspective. The following claim of existence touches both upon the passive part of listening and the more active part of actually making use of the gained information:

(B.4*) Actors ARE ABLE to listen to and process information that is provided in a practical discourse.

The focus on justification leads to a condemnation of any strategic influence on other participants’ rights to speak. In addition, the aim of justifying moral norms, in order to base the final decision on these norms, also condemns any strategic behaviour to further one’s interests – not only the sort of strategy that influences other people’s mode of participation at the discourse. The following claims of existence can, thus, be identified:

(C.1*) Actors ARE ABLE to refrain from any strategic measures to further their interests.

(C.2*) Actors ARE ABLE to base their decisions on the agreed upon norms.

Since Habermas suggests that actors should refrain from strategic measures in order to base their decisions on agreed upon norms, the following claim of causality can be derived:

(C**) If actors refrain from any strategic measures to further their interests, then they are more likely to be able to base their decisions on agreed upon norms.

Finally, Habermas considers consensus as vital. He defines consensus as gained unanimity due to shared reasons after a process of autonomous will-formation. Thus, the role of consensus is reflected in the following claims:
Explaining the Effects of a Deliberative Quality of Communication

(D.1*) Actors ARE ABLE to aim for the identification of shared reasons.

(D.2*) Actors ARE ABLE to guarantee an autonomy of will-formation.

(D.1**) If actors aim for the identification of shared reasons, they will be able to decide in consensus.

(D.2**) If actors guarantee an autonomy of will-formation, they will be able to decide in consensus.

In the following sections, I take a closer look at the three aspects information sharing (B), norm selection and interests (C), as well as will formation and consensus decision (D) and conceptualise these aspects as dependent variables. I introduce the causal claims that can be derived from the above claims of existence, explain the causal path, according to the theory of communicative action, and will end with formulating several testable hypotheses in the three areas.

3.3 Definitions

3.3.1 Deliberation and Deliberative Quality of Communication

Before I can take a closer look at the three aspects information sharing (B), norm selection and interests (C), as well as will formation and consensus decision (D) and at the way they are influenced by deliberation, it is important to define the term deliberation and the variable deliberative quality of communication.

I define deliberation as a process in which people come together in order to find common justifications for the decision they take if they can, and remain open for revised communication if agreement on the reasons might not be possible at the moment.

It is important to emphasise that deliberation is not a synonym of mere communication. Rather, it relies on certain (normative) attributes concerning the institutional setting, the way of communication and the individual behaviour. According to Haber-
3.3 Definitions

mas’ conception, deliberation aims at decisions (or recommendations) on collectively binding rules or public projects. The overall goal is the common good and a universality of rules.

A number of institutional and procedural preconditions are necessary for deliberation: (a) public access or transparency, (b) inclusive participation, (c) equal rights to all participants (concerning their rights to speak, criticise, disagree, and suggest other options). In addition, a set of behavioural standards accompanies these preconditions: (a) Actors should speak the truth (authentically and factually) and should only suggest options that they perceive as normatively right. (b) They should talk impartially. (c) They should show respect to other persons and their positions, demands, proposals and arguments. (d) They should be open to change their minds if faced by a more convincing argument. And (e) they should be willing to sacrifice their individual preferences for the common good. In addition, the most important aspect of this type of deliberation is the focus on reason, implying a full set of information, argumentative justification of positions, and conclusions that should only be based on the better argument.

Other authors have similar standards, which differ in some aspects but are essentially tapping on the same concept. Here, I only want to briefly mention two authors who add some essential points: Fishkin and Luskin (2005) include substantive in their list of attributes describing deliberative communication: arguments should be considered on their merits, and not on how they are made or who is making them. Gutmann and Thompson (2004) add to the debate the aspects of binding decisions and a dynamic process. They emphasise, and Fishkin and Luskin disagree here, that the process leads to a decision which will be implemented and does not serve the purpose of deliberating for deliberation’s sake or for personal enlightenment only. The term dynamic reflects the understanding that sometimes decisions cannot be based on the better argument as people will not agree. Therefore participants must keep open the possibility of changing their minds and thus continued dialogue should be able to challenge previous decisions (Gutmann and Thompson 1996).
3 Explaining the Effects of a Deliberative Quality of Communication

The term deliberative quality of communication stresses that deliberation is an ideal, and that an empirical investigation requires a concept that captures instances of high or low accordance to that ideal. I describe the ideal process of deliberation in reflection of four dimensions of deliberative quality: participation, respect and atmosphere, justification and norms, and accommodation.

(1) Participation means that everyone affected by a decision is supposed to be able to take part in the process. This means that not only are people allowed to listen, but they are also allowed to utter their own beliefs, opinions and reasons. Being allowed to speak also means to have the right to be heard – other people are supposed to listen.

(2) The dimension respect and atmosphere refers to the respect of the participants for each other, the opponents’ opinions and their (counter-)arguments and an atmosphere that ensures the participants’ security to take part in a discourse. The focus on respect and atmosphere should help the participants to realise, accept, and deal with the existence of differences. It is very important so that disagreements can be dealt with, without waking negative emotions that would obstruct the process of finding a common solution.

(3) The core of Habermas’ theory of communicative action is the focus on communicative rationality: that is the justifiability of taken decisions. Accordingly, the process of exchanging validity claims as well as their assessment is the only way to objectivise the solutions. One aspect of dialogue is the testing of any of the proposed solutions for their logical consistency. In addition, offering reasons for one’s claims also invites criticism. When actors agree on certain claims but disagree on their justifications, they might realise that they actually meant different things in the first place. This again leads to better scrutiny of the arguments (Gutmann and Thompson [2004]). As normative justifications are vital for moral actions and the creation of rules, the extent to which validity claims refer to generalizable norms increases the deliberative quality.

7 Using the term quality might be misleading to some extent. I do not put a normative value to the term, stating that a high quality is good. Rather, a high quality reflects the idea that it is close to the deliberative ideal.

8 The role of emotions in this dimension is contested. Some, Habermas included, consider emotions as negative to the deliberative ideal, as they would interfere with the rational process of justifying validity claims. Others (for example Stokkom [2012] argue, however, that emotions allow points of
3.3 Definitions

(4) Accommodation is the dimension that follows Gutmann and Thompson (1996, 2004) more than Habermas. It replaces Habermas’ notion that due to the common lifeworld there would always be a solution to a conflict, if only one would just dig deep enough. On the surface, conflicts might just appear intractable, and thus, the participants’ means to accommodate each other’s positions is the only way to create new options for finding a common solution.

The description of the four dimensions of deliberative quality has focused on the positive side, meaning how a high deliberative quality would look like. The conceptual counterpart is generally the lack of deliberative quality, but can also surface by explicit disrespect or actions that prevent others from participating in the discourse.

3.3.2 Political Decision-Making and Negotiations

In this research, I want to assess the power of the better argument, when decisions have to be made. The term decision-making process reflects this idea. I look at instances, where a group of people come together in order to coordinate their actions or create institutions for coordinating future actions. This decision-making process becomes political if the actions that have to be coordinated affect the regulation or the behaviour of several people, who might or might not be present at the decision-making process.

Such a decision-making process can come about in several ways. Political theory generally distinguishes between hierarchical decisions, majority decisions and negotiated decisions (Scharpf 1992). Each of them have their legitimacy, and the first two are commonly viewed to be more efficient in their process, but might not be able to reach optimal solutions. On the other hand, negotiated decisions might produce better outcomes, but generally at the costs of high interaction costs. Within this research, a negotiation is defined in accordance with Scharpf (1992, 16) as a communicative process in which egoistic actors try to coordinate a decision making process in such a way that they will maximize their personal pay-off.

view to emerge that would not have surfaced in a purely rational discourse, improving the sincerity of the arguments. I will deal with this ambiguity when operationalising the deliberative quality.
3 Explaining the Effects of a Deliberative Quality of Communication

3.4 Information Sharing

When considering the claims of existence $B.1^*$, $B.2^*$, and $B.3^*$, one needs to ask: Is there a general ability to share information? Could such an ability be prevented from surfacing? And is shared information actually received and processed, as claimed in $(B.4^*)$? Fritz Scharpf (1992) introduced the negotiation dilemma. He claims that in the normal situation in negotiation theory (i.e. when the participants of a decision-making process are only interested in their own benefits, without necessarily wanting to hurt the others), welfare-efficient outcomes are possible, but generally come with high friction loss. Since welfare-efficient results need a problem-solving attitude, and actors in negotiations tend to favour their own positions in distributional conflicts, sharing information, and thus trying to constructively work for the common good in a problem-solving mode, is very easily exploited. Sharing information is thus not rational in the instrumental meaning of the word.

Further insight is offered in the field of social psychology. The works on the hidden profile (Stasser and Titus 1985, 1987, 2003) are relevant. In the hidden profile, participants either choose not to reveal their private information or, even if they do, the other participants very often fail to take the information into account. The objectively best solution is rarely selected. The most important explanations for this phenomenon are the collective information sampling bias (Stasser and Titus 1987; Larson et al. 1994).

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9 At least this is theoretically assumed.
10 In the hidden profile experiments, three participants are asked to decide on the best of three candidates for a job. Information about the candidates is shared in such a way that every participant has more positive statements about one candidate, and more negative statements about the other candidates. Because some statements are given to all participants, and other statements are only given to one participant, the overall number of positive statements favours another candidate than the one, the individual participants would choose from their knowledge alone.
11 Information that is shared by many people is more likely to be uttered, compared to information that is only held by one participant. In fact, the probability of a commonly known argument to be uttered increases with the number of people who are aware of that argument, while the probability of private information to be uttered decreases simultaneously. In principle, if there were no lack of time, every piece of information could be shared, but people tend to make decisions before that happens. So the space for information-sharing is limited - not only but even more so when time pressure exists.
3.4 Information Sharing

pre-defined beliefs\[12\] (Dennis\[1996\]), and the confirmatory bias\[13\] (Pavitt\[1994\]), as well as belief perserverance\[14\] (Anderson et al.\[1980\], Greitemeyer and Schulz-Hardt\[2003\], Greitemeyer\[2013\]). Other reasons could be compromise orientation\[15\] (Janis\[1972\]) (also compare to: Pruitt\[1971\]), public audience\[17\] (Stewart et al.\[1998\]), or considerations of cost efficiency, since a suboptimal solution now might be preferred to an optimal solution after laboriously challenging all options that might receive a majority. Interestingly, including the role of experts on certain topics increases the probability of solving the hidden profile (Dennis\[1996\], Stasser and Birchmeier\[2003\]). Schulz-Hardt et al.\[2006\] also emphasise the resolving power of pre-discussion dissent.

To summarize the described findings, there is little support for the actual ability of deliberating groups to effectively share, receive, and process information in such a way as demanded by the ideal discourse situation. The only points that encourage information sharing are expertise and pre-discussion dissent. Yet the first even runs counter to the ideal of substantive deliberation, which claims that any argument should be considered equally, indifferent to the person who brings forward that point.

What happens when a political decision is conceptualised as a hidden profile? Several participants have private information and some pieces of information are common knowledge. In addition, the best solution is hidden most of the time, because actors might not be able or willing to take other opinions into account. If an agreement is

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12 People prefer to share information that is consistent with their pre-defined believes – and even more so their preferences. To make this point clear: A participant on the hidden profile experiment who receives information that points at candidate B will first bring forward pro-arguments for that candidate and counter-arguments for candidates A and C. Thus the pro-arguments for A will not be heard, even though A is the objectively best candidate.

13 Members of a decision-making group that have not decided for one side or the other will listen to and process arguments, but only up to the point where they decide for one side. Once this decision has been taken, they only bring forward confirmatory evidence, leading to polarization of the group.

14 Once people have accepted a causal explanation for the relationship of two phenomena, it is very difficult to make them belief something else, even if they are made to understand that their initial belief is grounded on completely false or invented data or explanations.

15 The phenomenon called group think refers to groups making suboptimal decisions, because members of a group do not wish to challenge their illusion of unanimity by offering conflictual information.

16 According to the social-comparison theory, members of a group tend to adapt to people that behave according to the normatively most desirable traits. If compromise orientation is such a trait, critical voices are seen to be undesirable and will not be uttered.

17 Groups tend to focus on irrelevant details by showing agreement and repeating the same arguments when speaking in front of a public audience. The study expected participants to share more private information due to accountability reasons, but had to conclude the opposite.
found, inferior decisions come about even though a better solution were possible, if only everyone were willing to share all the (private) information. According to the theory of communicative action, the best solution is defined as the one that follows from taking all information into account, just like in the hidden profile experiments. However, this best solution is not predefined, as is done in the hidden profile. Rather than looking at all information that is available, and summing up the number of positive and negative statements, in a political decision the pieces of information are not determined to be either positive or negative: people might favour the one or the other. So the value of each claim is assessed by the deliberative process. In addition, the salience of each piece of information is disputed as well. If this were to be reflected in a hidden profile experiment, the participants would have to discuss each piece of information, deciding together, what solution it supports and how important it is for making a decision. It would be important to have all relevant actors included in the decision-making process, since otherwise a situation of complete information would not be possible. All this is of course compared to the deliberative ideal rather than actual political decision-making.

Even though these statements make political decision-making more complicated than the hidden profile experiments, the issue remains the same, conceptually. If this analysis were to stop here, one should conclude that deliberation is psychologically implausible (compare to: Krupnikov et al. 2007). However, instances of solving the hidden profile do exist. Therefore, I conclude that information-sharing might not be the most intuitively common behaviour in political decision-making, but it does occur.

Since the overall aim of this research endeavour is to investigate the effects of communication that comes close to the deliberative ideal, I ask if the theory of communicative action suggests ways to enforce or enable information-sharing. Although the core principle of the theory of communicative action is the exchange of validity claims, this does not limit the meaning of the term deliberation to information-sharing. The four dimensions of deliberative quality in the definition subsection might be able to explain the different rates of sharing private information. I argue that the deliberative quality of the negotiation process reinforces itself. By showing respect, substantially
justifying one’s point of view, and simultaneously asking others to challenge the given justifications will participants be able to increase the share of private information on the negotiation table.

When considering participation (1), if all participants contribute equally to the discourse, the debate is unlikely to be dominated by only one topic, allowing different views to come to the forefront. On the other hand, if participation is skewed, some participants might be discouraged to give away the information that does not seem vital at the moment. Creating a good atmosphere and being respectful and considerate to all participants (2) does encourage to speak ones mind freely. Only if participants are treated disrespectfully, or are emotionally attached in a negative way, are they more likely to withhold as much information as possible. Like in the negotiation dilemma, trust for not being exploited is crucial, and high levels of respect might be able to create the kind of trust needed for private information to be uttered. The level of justification (3) should influence the willingness to bring forward more information by providing targets for further agreement or disagreement. Agreeing to a claim does not mean that one considers all the reasons for this claim as valid. If the participants exchange their views about the reasons as well as the original claims, the discussion diversifies and more information emerges to become common knowledge. Challenging the claims and asking for reasons might thus increase the number of points mentioned.

Summarizing these statements, I can turn the claims of existence $B.1^*$, $B.2^*$ and $B.3^*$ into the hypothetical statements $B.1'$, $B.2'$ and $B.3'$: (B.1') A high level of deliberative quality of communication increases the probability of statements being challenged. (B.2') A high level of deliberative quality of communication increases the number of statements introduced into the discourse. (B.3') A high level of deliberative quality of communication increases the number of utterances about the actors’ attitudes, wishes, and needs. This leads to the testable Hypothesis H1:

$$\textbf{H1: A high level of deliberative quality of communication increases the probability of private information to be articulated.}$$
3 Explaining the Effects of a Deliberative Quality of Communication

The hidden profile teaches that sharing information does not determine that the shared information is actually processed. I argue that the deliberative quality is also able to affect information processing. (1) If actors can be sure that they will be listened to in turn, they might not need so much mental capacity to prepare for getting the right to speak. This would free their minds to actually consider other peoples’ points of view. (2) A person who creates a good atmosphere is also more likely to receive attention from those listening to him. (3) If the highest value in the group is not conformity to a fast solution of the problem but the tendency to criticise statements and justify that criticism, one has to be attentive to other people’s arguments in order to scrutinize them. Thus the claim of existence $B.4^*$ is turned to the hypothetical relationship $(B.4')$: A high level of deliberative quality of communication increases the probability of information that is provided in a practical discourse to be listened to and processed. I will test the following Hypothesis H2:

H2: A high level of deliberative quality of communication increases the probability of private information to be processed.

3.5 Norm Selection and Interests

The empirical claims $(C.1^*)$ and $(C.2^*)$ state that refraining from interest based influence on other actors’ possibilities to participate and deciding according to agreed upon norms is possible. There might actually be a causal relationship between the two $(C^{**})$. Two questions arise: Under what conditions do actors refrain from influencing the discourse towards furthering their interests and making decisions that support only their own benefits? And when do actors decide according to shared norms?

I first need to define the terms interests and norms. Interests are best described as the regard for one’s own benefit or advantage. In economics, the term utility, defined as the ability of a commodity to satisfy human wants, is often used to reflect the different values which different people place on the same benefits.
Norms on the other hand are no individualistic assessment of one’s utility, but a result of living in a social group. I side with Bicchieri (1990) who defines “a social norm (N) in a population (P) [...] as a function of the beliefs and preferences of the members of P if the following conditions hold: (1) Almost every member of P prefers to conform to N on the condition that almost everyone else conforms, too. (2) Almost every member of P believes that almost every other member of P conforms to N.” (p. 842). She asserts that conformity is not a dominant strategy. The preference to abide by a norm is based on the condition that everyone else does. If this condition does not hold, actors would prefer to do something different. The utility of norm abidance is not necessarily derived from the individual benefits gained by cooperation, but also from the sense of belonging to P and thus appreciation by that group, even at the costs of individual material benefits.

So, how do people make decisions? The most basic model of human decision-making in economics is the model of homo economicus. It assumes that every individual has a predefined set of goals and a rank order of transitive preferences. It is assumed that people act rationally to attain their goals.

The field of behavioural economics has emerged because people do not always act according to the predictions of a pure homo economicus model. Especially if communication is allowed, very few actually follow that model. A good example are Ultimatum Game experiments (Güth et al. 1982), in which one group of participants - the proposers - are matched with one each of the remaining participants - the responders. The proposers are each given an amount of money - the pie - that has to be distributed between themselves and their respective responder. If the responder accepts what was offered to him, they both get their share of the pie. If the responder rejects, both get nothing. Following the pure model of homo economicus, the proposer would be expected to offer the smallest non-zero amount possible, which the responder would be expected to accept since it is better than gaining nothing. The results differ. Offers up to 50% are frequent and offers below 30% are often rejected. Even in a dictator game,

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18 The meaning of the term rationality differs between the rational choice literature and the theory of communicative action. Here, it means that an individual acts as if balancing costs against benefits in order to arrive at an action that maximizes his personal advantage (Friedman 1953).
Explaining the Effects of a Deliberative Quality of Communication

in which the responders’ choice to reject does not exist, proposers do offer substantial shares. So, other mechanisms must play a role.

In various experiments, behavioural economists have tried to isolate other considerations on which participants might base their decisions: fairness and reciprocity (Rabin 1993), altruism and spite (Dufwenberg and Kirchsteiger 2004), absolute and relative gains (Bolton and Ockenfels 2000), assumed intentions (Falk and Fischbacher 2006), and the possibility of diverting responsibility for seemingly unfair results (Dana et al. 2007; Bartling and Fischbacher 2012) are examples. By isolating the effects of those different preferences, the researchers do however only test specific norms against the standard model of the *homo economicus*. If they do test certain norms against each other\(^{19}\), conclusions are that one norm or the other is the driving force that explains their results, assuming that one of the norms is dominant among all participants. This does not explain, why some actors should abide by one norm, while others abide by a different norm. Winter et al. (2012) show that the participants in their subject pool follow different norms. By creating an ultimatum game style decision problem in which the subjects could either behave selfishly or follow one of two norms (egalitarian or meritocratic) few were behaving selfish. When participants met, however, who followed one of the two norms each, rejections were quite frequent. Winter et al. call this phenomenon *normative conflict*. No communication was allowed in these experiments.

According to the theory of communicative action, decisions are not made in individual self-reflection of a cost-benefit analysis or of the norms one considers valid. Rather, the decision depends on a common process of finding the norms appropriate for the given situation. This process is done by exchanging validity claims and reasons, i.e. justifications for the claims. Because of the exchange of validity claims, the participants of the decision-making process are forced to assess all the claims made by others. If they disagree with the validity of any of the claims, they need to challenge these claims, and justify their decision to challenge. In the end, only those decisions that are no longer challenged are considered to be valid. If actors are no longer able

\(^{19}\) For an example, see Engelmann and Strobel (2004), and a comment on that paper by Fehr et al. (2006)
to give reasons for why they disagree, they will have to accept that the claim is valid, creating a binding effect of the communication.

The construct of a common lifeworld lets us assume that in general all people who belong to the same population are aware of a set of commonly known values. This does not mean that people of the same cultural background will always decide in the same way. Each individual values the various norms differently and thus is more likely to follow one norm, while another actor might intuitively follow another norm, as can be concluded from Winter et al. (2012). This is where communication has to be considered. The first role of talking to each other is to coordinate in such a way that if there is a normative conflict, this does not lead to inferior outcomes. In addition, Habermas emphasises that language does not only transfer and update the commitments that have existed before communication, but increasingly also induces commitments that are motivated by the process of reasoning (Habermas 1981, II, 163).

According to that idea, a large variety of norms can potentially be activated, if validity claims and justifications are offered in their support. This activation of norms works via mutual and honest agreement to act under the assumption that all actors are willing to abide by the obligations that they have assumed with their speech acts. This is only possible if all actors are aware of the different norms and might, in general, be able to accept them.

Some such norms might be inherent in the topic, even though there are no material interests involved – protecting animal rights might be an example. Other norms focus more on the distribution of benefits. Two of the latter type are welfare-efficiency and fairness, which will be used as examples for norm selection in this study. If all participants in the conflict have to agree on a given decision, as is one of the principle of deliberative decision-making, they will not give away any of their interests for nothing. They might hand over some of their interests for good arguments, i.e. for reasons

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20 Cultural differences exist, and the intersection of these values is likely to shrink, the more the actors differ.

21 It should be mentioned that self-interest can serve as an applicable norm in some situations as well. Actors who belief in the values of self-interest might need powerful arguments for being swayed to consider another norm as applicable to the situation at hand.
3 Explaining the Effects of a Deliberative Quality of Communication

d that others might fare better, if they refrain from following their interests. But this is less likely to happen, if they have to give more than the other might receive. Thus, the process of exchanging validity claims should end in a welfare-efficient result. In addition, if several possible outcomes are similarly efficient, the actor that fares worst with a given result has incentives to still argue for a fairer option – an option in which not one party has to carry the costs for another party, if this can be avoided. Thus, both welfare and fairness play a substantive role.

How is the deliberative quality supposed to affect the decision in such a way that welfare-efficient or fair results are more likely? Looking at participation (1) equal engagement ensures that actors may bring forward all their concerns. If structural restrictions exist that effectively sideline specific actors, their justifications for rejecting other actor’s claims will go unheard. This will lead to a smaller influence over the decision-making process, and their power to make others realise that they are treated unfairly by the decision, or that they would pay more than can be justified with good reasons, diminishes. The influence of respect (2) can be assumed to be the same. Disrespect, on the other hand, could effectively discourage some actors to continue to contribute to the discussion, and therefore force important arguments out of the debate. As these arguments will not be considered in the decision-making process, the awareness of the complexity of the decision declines and the decision cannot reach the optimal solution. The level of justification (3) greatly affects the decision, as all options that are no longer justified are set aside, even if they were still justifiable. This happens if those with the knowledge to bring forward the argument refrain from doing so. This could be a strategic act, if the option that is supported by this argument is opposing that actor’s interests. It could also be the inability to utter the important reasons, leaving a supportive actor worse off. In addition, only by justifying the various validity claims is it possible to assess them properly. Criticism is drawn by the elaborate display of all reasons, why a certain position should be supported. If these reasons do not enter the discourse, inferior solutions are more likely to remain unchallenged and could end up being the chosen result. Accommodation (4) finally ensures that a decision will at some point be taken, even if normative agreement cannot be found.
3.5 Norm Selection and Interests

The causal claim \( C^{**} \) is thus reformulated to a hypothetical statement: \( C'' \) The higher the deliberative quality of communication (i.e. the more actors refrain from any strategic measures to further their interests), the more likely do actors base their decisions on agreed upon norms. This leads to the following hypotheses that will be tested in this research:

**H3a:** The higher the deliberative quality, the more likely is a welfare efficient result.

**H3b:** The higher the deliberative quality, the more likely is a fair result.

In some cases, the preference orders of the different actors are asymmetric. They differ in such a way that the choice of defection and increasing one’s private pay-off is less risky for one actor: The only outcome in equilibrium is the best option for the advantaged actor. In addition, the dominant strategy of this actor forces the other actors to choose between cooperation or their worst outcome: They have no credible option to punish dominant selfish behaviour without paying for it. In such a situation there are no incentives for the advantaged actor to follow the dominated strategy, unless a norm binds him to follow it, even though it is against his material interests. In accordance with the compilation of two-actors-two-options games by Holzinger (2008) who follows Zürn (1992) in calling such constellations *Rambo games*, I call the advantaged player *Rambo*. As there are no material costs involved for following the private interests, such asymmetric preference constellations might be an even bigger challenge for the norm selection mechanism. This should be especially apparent if selfish behaviour is more likely in situations, where communication is not allowed. To establish if this is actually the case I will test the following hypothesis:

**H4:** The probability of a cooperative solution without communication is lower in *Rambo games*.

If Hypothesis H4 holds, another problem arises: Assuming that the disadvantaged actors are aware of this situation and realise that the advantaged actors would only decide according to a norm, if they actually feel bound to it, the disadvantaged actors have an incentive to find reasons which could sway the opponent. In this case, such ac-
3 Explaining the Effects of a Deliberative Quality of Communication

tors would not set aside their interests for the power of the better argument, but it would be in their interests to create the most powerful argument which is able to bind the other actors. Although the authenticity criterion can be strained to a large extent, the dimensions of the deliberative quality are most likely to be affected by rhetorical action, as this strategic use of norm-based arguments is called by Schimmelfennig (2005). Hypothesis H5 will be tested to establish such a connection.

H5: In Rambo games, the deliberative quality - focusing on justification - is higher for the disadvantaged actor.

Assuming Hypothesis H5 to hold, one would expect a high level of deliberative quality from the disadvantaged actors. Remaining variance in the results might thus be explained by the advantaged actor’s choice of communication mode. Do they ensure participation of the other actors, create an atmosphere that brings forward challenges to their points, and to what extent do they engage in justifying their own positions and scrutinising the other actors’ claims? If the disadvantaged actors are able to ‘infect’ them with the deliberative quality, the Rambos might end in rhetorical entrapment (compare to: Schimmelfennig [1997, 2001], where they bind themselves to their words rather than their interests). They would be bound to an agreed upon norm, and thus swayed from selfish decisions to a cooperative outcome. Thus, the following hypotheses will finalise the set of tests concerning the effect of deliberative quality on the substantive outcomes:

H6a: In Rambo games, a higher deliberative quality of the Rambo player is decisive for a greater probability of a welfare efficient result.

H6b: In Rambo games, a higher deliberative quality of the Rambo player is decisive for a greater probability of a fair result.

I have to mention that the advantaged actors might actually be genuinely interested in deliberative behaviour and do not need the other actor to trap them so as to reach a high deliberative quality. Due to the rhetorical entrapment argument, however, one can assume that even more people show a high deliberative quality. The influence on the decision would be the same, regardless of the advantaged actors’ reasons for why they show a high deliberative quality.
3.6 Will Formation and Consensus Decisions

In Section 3.2, I define consensus, according to Habermas, as gained unanimity due to shared reasons after a process of autonomous will-formation. This ensures that the decision is based on every participant’s conviction that the taken decision is the best option among all available alternatives. The claims \( D.1^* \) and \( D.2^* \) state that an identification of shared reasons is possible and that actors can guarantee an autonomy of will-formation. These claims have been transformed to claims of causality \( D.1^{**} \) and \( D.2^{**} \), stating that shared reasons and autonomous will formation do lead to consensus.

I need to emphasise that consensus does not mean compromise or unanimity. Rather consensus is defined as a decision that is based on every participant’s conviction that the taken decision is the best option among all available alternatives. Following this definition, it is important to notice that agreement to the decision must be based on free will and not on institutional pressure or other sources of power. Thus a unanimous decision can only be a sign of (true) consensus, if a ‘consensus decision’ is not an institutional requirement. In ‘consensus decisions’ as an institutional requirement, participants of a decision-making process would have to weigh the costs and benefits of bringing down a decision, which they do not agree to. Their veto power can be used to sway the decision, but it can also be a curse of too blunt an instrument for making one’s criticism heard. So, only if participants are able to choose freely whether they want to give their consent to the decision at hand can they base their consent purely on their conviction. Bächtiger et al. (2005) indeed find that unanimous decisions of the German Vermittlungsausschuss (VA) are linked to the discourse quality of the previous debate. Other reasons can however inflect the need of consensus - or rather unanimous decisions. They claim that the role of the VA is one of mediation between the two chambers of parliament. Any decision that is based on a simple majority would be torn to shreds by the conflicting chambers. So, in fact, the decision to agree to a certain outcome or not, if one is not completely convinced, will never be truly free from goal oriented considerations.
Explaining the Effects of a Deliberative Quality of Communication

Habermas claims that the discourse principle D, which is here analogous to a high deliberative quality, enables true consensus. Moreover he claims that a half-baked compromise is not possible after a genuine debate. Thus, the following hypothetical relationships exist: $(D.1')$ A high level of deliberative quality increases the probability of actors aiming for the identification of shared reasons. $(D.2')$ A high level of deliberative quality increases the probability of actors to guarantee an autonomy of will-formation. This can be summarized to $(D')$: A high level of deliberative quality increases the probability of actors to decide in consensus. The problem is the circular argument that a consensus, according to Habermas, is defined as coming out of genuine debate rather than proposing a causal relationship. I try to break through this circle by separating the phenomenon of deliberative quality of communication, as defined in Section 3.3.1 and the phenomenon of consensus that can be observed by asking the participants if they are truly convinced that they have decided in the best possible way and by observing if they stick to the agreed upon choice of action after they leave the negotiation table and have to implement their decision. This leads to the following hypotheses:

H7: The higher the deliberative quality of communication, the more likely are the actors to stick to the agreed upon norms.

H8: The higher the deliberative quality of communication, the more likely are participants truly convinced to have decided in the best possible way.

Similar to the substantive results from the negotiation, asymmetry of interests might influence the probability of reaching consensus as the advantaged actor might be caught in rhetorical entrapment. Especially the disadvantaged actor is very likely to turn to rhetorical action, due to his interests in convincing the other to cooperate. I will therefore also test another set of hypotheses regarding the influence of asymmetry on the relationship between deliberative quality of communication and consensus decisions.
3.7 Summary and Discussion

H9: In Rambo games, a higher deliberative quality of communication of the Rambo player is decisive for a greater probability of both actors sticking to the agreed upon norms.

H10: In Rambo games, a higher deliberative quality of communication of the Rambo player is decisive for participants to be truly convinced to have decided in the best possible way.

3.7 Summary and Discussion

In this chapter, I have provided a theoretical answer to the research question: Does deliberation (actually) generate better, collectively more valuable, outcomes? After an overview of the theory of deliberative democracy and the review of current research in Chapter 2, I have placed my analytical lenses on Jürgen Habermas and his theory of communicative action, as his work substantiates his normative claims also on the level of communicative processes. A short description of the general idea of the theory of communicative action has introduced the key terms communicative rationality, validity claims, lifeworld as well as the principles of universalisation U and discourse ethics D. I have then made use of the theory of action to explicate the assumptions on how communicative action is supposed to work, if it was to affect the outcomes of decision-making processes in groups. To that end, I have defined deliberation and conceptualised a variable of communication that I call deliberative quality.

I have identified three aspects that are accordingly influenced by the deliberative quality of communication: information sharing, norm selection and consensus decisions. For each of them, I have summarized the knowledge of neighbouring research fields so that I can introduce the deliberative quality of communication as an additional factor that might enhance already existing explanations. I provided (quasi-) causal explanations for the effect of deliberative quality on each of these aspects, arguing through the theoretical lenses, and phrased hypotheses which state a dependence of these aspects on the deliberative quality of communication.
Explaining the Effects of a Deliberative Quality of Communication

Since the idea of this research is to empirically test the theory of communicative action, the causal argument had to be derived from this theoretical background. As the hypotheses are statements of correlations and probability, however, they will not be able to actually confirm the causal path that is drawn here. Although I will approach causality with the Rubin-Causal-Model in the design and analysis of this dissertation, I will not be able to empirically validate the causal path more than what can be done through qualitative case analysis. If the hypotheses hold, however, it might be very conducive to make researchers in the fields of social psychology and behavioural economics aware of these finding, in order to encourage them to pursue more fine-grained answers to why such correlations could be found. How does the communicative process create obligations that work as a force that is able to bind – but not bend – (Habermas 1991, 144) the will of participants? How does the bad-conscience, or the criticism from others, shape our behaviour? These questions are better answered by the real experts on intra-human decision-making: the psychologists. Moreover, can behavioural economists make use of their strengths in isolating different norms in order to assess conditions which make people choose one norm over another?

For political science, the task is rather to establish the micro-foundation in order to draw from these results implications for political decision-making processes. How can political decision-making be more thoroughly legitimized when one can conclude that the deliberative quality of communication actually affects negotiation results, especially also when interests are involved? Does this only work in small-group decision-making, as it happens in local councils or parliamentary committees? Or can the results be expanded to international conferences, such as Deitelhoff (2009) claims it happened with the adoption of the Rome Statute and the creation of the International Criminal Court (ICC)? And how can the move to more participatory democracy, which would involve much larger groups of people as well as the media for providing information, be supported (or discouraged) with these findings? The task of answering such questions might benefit significantly from the results created by research that first establishes the micro-foundation of deliberative democracy as is attempted in this dissertation.
4 Design and Data

In Chapter 2, I present an ever-growing literature which claims that deliberation has certain effects on individuals and on the outcomes of decision-making processes. There, I point out that a very important question has not yet been answered: Is communication that comes close to the deliberative ideal able to overcome personal interests in (political) decision-making on conflictual issues? Put in other words: Is the non-coercive power of the better argument able to overcome sub-optimal decisions that are driven by decision-makers who are inclined to follow their own private interests? In Chapter 3, a transformation of the theory of communicative action (Habermas 1981) is presented that allows to give a positivist answer to the above question and that suggests hypotheses on how information-sharing, substantial outcomes, and unanimity of decisions can be influenced by the deliberative quality of the communicative process which accompanies a decision. These answers are purely theoretical, however.

In this chapter, I present a strategy that allows an empirical examination of the question of whether the theoretical answers can be substantiated. Two important concepts have to be assessed, measured, and examined in reference to their respective influence on decision-making: (the deliberative quality of) communication and interests.

First, (the deliberative quality of) communication is a concept that needs precise assessment. In order to maintain any comparability, the operationalisation of deliberative communication is important. In the theory chapter, I present an overview of the different dimensions of deliberation. In the literature chapter, many examples of how deliberation can be conceptualised and used in empirical studies are described. In this study, I accept that I cannot externally enforce a (randomised) level of delib-
4 Design and Data

erative quality. Therefore, enough time for communication is provided and the level of the deliberative quality is measured by making use of computer assisted language analysis.

Second, the identification of the decision-makers’ private interests is vital to making any claims about how these interests affect the influence of deliberation on collective decisions. However, interests are so manifold that any attempt to thoroughly assess and classify them in a meaningful way for this study is doomed to fail. A worthwhile attempt to limit the number of options and at the same time retain precision is to look at decision-makers’ preferences over a clearly defined set of options. Therefore, one of the most important tasks in this chapter is to argue how such a clearly defined set of options can be attained and how I control for the preferences which the subjects of this study have over the possible outcomes. Here is the short answer: I use financial incentives to induce preferences and randomly distribute different preference constellations to the subjects of my study.

To my knowledge, there has never been an attempt of testing the influence of deliberative communication and interests against each other. Maybe the reason for this lack can be found in the fact that real world decision-making processes, which combine both the negotiation of interests and the deliberation on the best way to go, are very complex. In a field study, one would need to be very fortunate to find two comparable cases, where outcomes reflect the substantive issue in relation to the participants’ interests. One could easily compare cases, when asking if the group that is being studied found a solution or not. However, such a yes-or-no dichotomy does not reflect the actual solutions and is therefore not helpful in answering my question. I am not primarily interested in the question of whether or not actors can come to an agreement. Instead, I hypothesise that the outcome that actors can agree on is fair and / or efficient if they engage in a communication that follows the ideal of deliberation. In addition, even if two comparable cases were to be found, the general conclusions one can draw from a comparative study with two cases only are very limited. Therefore, this research project follows another approach. I create an artificial setting, in which the preferences of the participants can be induced and the number of possible outcomes is limited.
This approach can best be achieved in a laboratory controlled environment, using the logic of experiments to isolate the influence of different preference constellations. In such a setting, the number of comparable cases can be substantially increased so that statistical analysis with a medium-to-large-sized number of observations becomes possible.

The field of behavioural economics has successfully worked with such an approach for several decades. This study builds on this tradition but differs in an important aspect: although the approach ensures that the institutional setting in which communication takes place remains the same, I cannot restrict the communication to the very simple signals that are being used in behavioural economics (if communication is allowed at all), while simultaneously satisfying the criteria that are suggested by the theoretical foundations of deliberation. My solution to this challenge is the use of simulation games.

Thus, I run 240 observations of one experiment. In this experiment, I use very basic game-theoretic models in which two actors can decide between two options each. Since the choices are strategically connected, I induce a preference order over the four possible outcomes by offering different amounts of money for the four different solutions. All preference orders given to the different participants are chosen in such a way that a conflict of interests exists – but the level and type of conflict varies. Mere coordination games are excluded. Furthermore, since I assume that negotiations without interests do not exist, there is no control group without preference order. Rather, the constellation of preference orders is randomly assigned in four different ways, which makes it possible to compare the different preference constellations against each other.

In order to test the influence of deliberation against the influence of the different preference constellations, the two participants in each observation are given 30 minutes to come up with a solution to their problem. This amount of time should suffice to be able to assess the deliberative quality of their conversation. However, mere communication about the money they can earn would not give enough material for a 30 minute discussion. Also, the idea of deliberation to be able to deal with topics that require claims of normative rightness, factual truth and sincerity is dependent on more
4 Design and Data

complex topics for discussion. Therefore, the participants are given a conflict description which confronts them with a situation that they have to solve together. Within that conflict description, participants are given a role with a certain preference order as well as reasons explaining why certain outcomes are preferred over others. The content of the conflict stories reflects the most likely world of experience of university students\(^1\) so that participants would not feel like preparation or awareness of topical media stories would have helped them to perform better. The participants could use the given reasons as the main resource for their arguments, but they were also explicitly allowed to embellish their positions in any plausible way.

Looking at the conflicting potential explanatory variables described above (i.e.: interests and deliberative quality of communication), I aim to assess the influence that they have on certain outcomes. Hypotheses H1 and H2 state that information is more likely to be shared and processed in a discussion that comes closer to the deliberative ideal. Hypotheses H3 through H6 suggest that the probability of the substantial outcomes of the conflict to be either fair or welfare efficient is influenced by the deliberative quality of communication. For both types of outcomes, the preference constellations are created in such a way that at least one actor has to move away from his or her strategically best choice concerning the given preferences in order to ensure a fair or welfare efficient result. This is tested in symmetric and in asymmetric games – the first uses mirroring preference orders, while in the second type, the preference order reflects that one actor has a clear strategic advantage. I want to test if the promises of deliberation theory hold for both these norms, only one, or neither of them. Finally, I hypothesise that the deliberative quality of the discussion affects the likelihood that the participants actually persuade each other towards the best outcome in such a way that they are convinced that they have achieved the best solution and feel no need to deviate from their choice, once they are given a second chance. This is what I understand when using the term *consensus* in this study. In order to test this notion, the participants of the experiment are asked for their decision three times: once before

\(^1\) Although not all of the participants were actually students, since visiting guests and employees of the university were also allowed to participate in the study, the thematic focus of the background stories was mainly aimed at the largest group of potential participants. However, the scenario also took into account that non-student participants could relate to the story.
communication, once right after communication, when they can still see each other’s choices, and a final time after having returned to their computer work stations, which they use for filling in a pre- and post-discussion questionnaire.

The remainder of this chapter is organised as follows: I begin with introducing the research design. Here, an overview of the procedure of the experimental observations is provided in the first subsection. Then more thorough debates on the topics described above follow in Sections 4.1.2 through 4.1.4 justifying the most critical decisions that have been taken when designing the experiment. I go into further detail by asking three questions: "Why go to the lab?", "Who is to be studied?", and "Under what conditions can an effect of the deliberative quality on negotiation outcomes be identified?". Once these design choices are justified, I introduce the data. How are the key variables operationalised? And what are the actual values over the 240 cases? I begin with deliberative quality. After the general approach to measuring language and more precisely the deliberative quality of the communication, the theoretical dimensions of deliberation are reintroduced and endowed with indicator variables. These indicator variables are explained and described, before I create an overall index of deliberative quality. After having clarified the deliberative quality, I present the way interests are introduced to the conflict stories, and I justify the use of the specific preference constellations. A short subsection on the control variables then precedes the subsection that describes the outcome variables: first I introduce the number of informations that have been shared within the experiment. Then I present the substantial outcomes. Finally, an assessment whether participants have decided out of true conviction is presented. In the concluding section, I summarise the findings that can already be observed from the description of the variables and place these findings into perspective in reference to the hypotheses that are being tested thereafter.
4 Design and Data

4.1 Research Design

4.1.1 The Procedure of each Observation

Between August 2014 and March 2016, 240\(^2\) experimental sessions were conducted at University of Konstanz with 2 participants each, totalling to 480 students, employees and volunteering guests from the university. One session was designed to last approximately 90 minutes. In the following paragraphs, I describe the procedure of these sessions. In total, 10 student assistants worked as experimenters over the course of the data collection.

Before the participants arrive at the laboratory, the experimenter uses a dice-roll to randomly determine the preference constellation that is being used in this experimental session - see Figure 4.1. If the target number of the assigned preference constellation is already fulfilled, the dice-roll is repeated. Upon entering the lab, the participants are asked to sign an informed consent form, before the experimenter explains the process of the session to the participants. The participants are randomly assigned to one of the two roles by drawing name cards, and they then take a seat at their respective computer work stations. Here, they receive another explanation of the process in written form so that they can always refer back to this sheet of paper if some questions arise.\(^3\) This task description can be found in Appendix A. Once having read the explanation, the participants answer a questionnaire on their socio-demographic background (age, studies, years of studying, a personality test (Borkenau and Ostendorf 2007), and their level of acquaintance to the other participant\(^4\)) so that variables which I cannot hold constant in this laboratory setting can be controlled for.

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\(^2\) Three additional sessions had to be deleted and repeated because the recording of the debate was defective due to some technical problems.  
\(^3\) In the second half of the data collection, I also include an instrumental variable. Details about the instrumental variables approach will be described in Chapter 6.  
\(^4\) Due to the small size of University of Konstanz, it was impossible to eliminate the possibility of the two participants knowing each other by chance. In addition, the more active the research assistants went out to recruit participants directly on campus, the more people who knew each other decided to participate only under the condition of being allowed to do it together. Hence, the decision was made to ask the participants how well they know each other and control for this information in the analysis rather than disallowing them to participate in the same experimental session.
After the participants finish answering the first set of questions, they receive a role description in which the conflict and their positions are explained: Chris and Ricky each work in a coffee shop in town. They are given the opportunity to work an extra shift at a nearby conference centre, which would establish a long-term cooperation between the conference centre and the two coffee shops. Because they both have something else to do, they do not want to work on the given date – although they are both interested in the long-term cooperation: they would be able to earn well-needed money in the future. Ricky wants to revise for the last exam of her studies on the next day and does not want to risk failing, as this would prolong her studies for another semester. Chris wants to prepare for a rock-climbing trip with a group of young kids which he has volunteered to lead in the following week. If they decide to work, they will have no time (if working alone) or very little time (if working together) for their intended other tasks. If they both decide not to take the offer, an external catering service will be hired for this time and the future as well, leaving the two without the option of future earnings. Two example role descriptions can be found in Appendix B.

The conflict has four possible solutions: they both work, Ricky works alone, Chris works alone, or they both decide not to work. The conflict descriptions reflect the preference constellations which give a rank order of the preferences over these four possible conflict solutions. Four different preference constellations were used to test the importance of fairness and efficiency norms, as well as the influence of asymmetry: see Figure 4.1 for an overview and Section 4.2.2 for a discussion on the choice of constellations. Slight adaptations of the background story reflect the different preference constellations. Each step up on the preference order (with 1 being the worst outcome for the respective actor, and 4 being the best) is rewarded with 5,- € in the fi-

5 The names are chosen as gender-neutral names so that it does not matter if a male or a female participant receives the story description. The participants are informed in a footnote that the names are supposed to be gender-neutral. Still, some have reported problems with identifying with their own gender in the given role: irrespective of the role name, some male participants reported having drawn the "female role" as some female participants had identified as male. Unfortunately, there is only anecdotal evidence of this phenomenon.

6 For example, in the Chicken game, Ricky prefers to work alone over none of them working at all, while in all other constellations, Ricky prefers that the external catering service does the job over him working alone. This difference in the preference order is translated to the story by Ricky’s risk to fail in the last exam. In the Chicken Game, Ricky is confident enough to pass with a bad mark and is really dependent on the money, while in the other constellations the risk of failing is increased. If Ricky would fail, she would not be able to make use of the extra money, because her studies would
Figure 4.1: 2-by-2 Matrices of the Four Preference Constellations over the Three Decisions; Nash-Equilibria Underlined

nal disbursement of the experiment, so that the participants (not the roles) can receive a minimum of 5,– € (the basic payment) and a maximum of 20,– €.

Once the participants read and understood the conflict description, they are asked to answer a couple of questions about the conflict and how they relate to it. In the last question, they are requested to imagine that they are not able to contact the other person and need to make their decision whether or not they agree to work at the conference centre without being able to coordinate with the other person: they make their pre-discussion decision (T0). Up to this point, about 40 minutes have passed. Thereafter, the participants are invited to move to a conference table, where they are seated face to face. They are now given exactly 30 minutes to come to a solution of the conflict. At the end of the 30 minutes, the participants mark their decision (to work or not) on a
common sheet of paper, which they both sign with their role names. This decision is referred to as the decision at the table (T1). The discussions are recorded for transcription. The transcripts are used for measuring the deliberative quality.

In the final part of the experimental session, the participants are asked to return to their computer work stations. The very first question to answer is a third decision on whether to work or not. The participants are reminded on screen that their agreement at the table does not necessarily predefine their decision to actually turn up at the conference centre. In addition, they are (only at this point) told that the disbursement of the experiment depends solely on this very decision (and the decision the other participant takes at the very moment). The experimenter makes note of this post-discussion decision (T2) in order to prepare the final disbursement. In the final minutes, the participants answer questions about their perception of the discussion process and are then individually disbursed and bid farewell. The experimenter takes care that the first participant to leave the room has gone, before paying the second participant, so that the two participants do not meet each other again outside of the lab. If feasible, the participant to receive the greater amount is the first to get paid.

4.1.2 Why Go to the Lab?

By using this design, I take a number of decisions that need justification. The reasons are provided in the following subsections. The first decision I need to defend refers to the deliberative setting: What sort of decision-making processes should best be analysed in order to be able to establish the coexistence of the mentioned variables (information-sharing, decisions, and consensus, as well as interests, and deliberative quality) and their causal relationships? I answer this question by going to the lab.

There are uncountable numbers of decision-making processes happening every day. Depending on their scope, many of them could be observable. For example, researchers are able to work with parliamentary debates as well as with local council meetings and debates. If problems of confidentiality can be overcome it might even be possible to analyse the interactions in closed-door committee work. However, in real-
world decision-making, no two settings are the same. Yet, since the aim of this study is to isolate the effects of the deliberative quality of communication and the effects of interests in order to test the effect of deliberation when controlling for interests, the task of controlling for all the different settings would overstrain any statistical model that also includes an analysis of the spoken word. This study, therefore, follows another approach: I create a large number of decisions under laboratory control in such a way that these decisions are comparable while simultaneously holding constant most institutional settings.

Since an answer to my research question cannot be produced by observing real-world deliberative processes, I turn towards experimental methods. Such methods are not ideal either, however. The reason for this is the complexity of the construct: deliberation cannot be approached with simple experimental treatments, unless splitting the whole construct into many small aspects and testing each of them individually. Yet, in this study, I focus on the complexity of deliberation in face-to-face interactions - investigating not only how the individual aspects might have an effect, but also how they work together. The reason for doing this is theoretical: since the hypotheses created by the transformation of the theory of communicative action refer to a whole bundle of ideals simultaneously, and since, theoretically, the suggested effects appear only in their combination, these hypotheses cannot be tested when opening up the bundle to individual aspects of the concept - testing each individually in its own experimental setting. The option of limiting the participant’s possibilities to interact would also limit the scope of the tested hypotheses. However, in the theory chapter, no reasons are identified why different ideals of deliberation should have different effects. In fact, this can be one of my main contributions to the theory. By measuring many different aspects of the deliberative quality of communication, I can not only use the overall index for testing the hypotheses, but I can simultaneously disambiguate the measure into its dimensions and testing the effects of the dimensions against each other. Such an approach would not be possible in individual experiments, where each experiment only isolates one aspect of deliberation and tests it individually. Furthermore, I can ask if the different dimensions support each other so that high values in one dimension can compensate low levels in another dimension? Can the different dimensions be unified
4.1 Research Design

to a one-dimensional scale? Or do individual dimensions have enough explanatory power by themselves to explain the outcomes? If the last is true, which dimensions are important, and which are negligible?

In order to be precise, I should briefly deal with terminology before repeatedly using the term *experiment*: According to Morton and Williams (2008), an experiment is defined by the fact that “a researcher intervenes in the [data generating process (DGP)] by purposely manipulating elements of the DGP” (p. 42). In addition, “subjects are recruited to a common physical location called a laboratory and the subjects engage in behaviour under a researcher’s direction at that location” (ibid). Therefore, I use the term laboratory experiment when referring to this study. However, it is important to keep in mind that in contradiction to the above-mentioned definition, the term *experiment* is commonly used more restrictively, following a definition by Shadish et al. (2002, 12): “[An experiment is a] study in which an intervention is deliberately introduced to observe its effects”. A randomized experiment is an “experiment in which units are assigned to receive the treatment or an alternative condition by a random process such as the toss of a coin or a table of random numbers”.

I already pointed out that the communicative process that is hypothesised to influence the various outcomes cannot be randomly induced on the one hand and measured in its complexity on the other hand. Due to the decision to focus on the complexity of deliberation rather than on simple instructions that can be randomly assigned, this project’s research design is not experimental according to the definition by Shadish et al. (2002). If the way people are allowed to communicate with each other is not artificially limited, and if that communication is the main explanatory variable (also called treatment), the treatment cannot be manipulated by design. Neither the researcher nor any natural occurrence can determine how people interact with each other, even though there are stronger and weaker attempts to manipulate the interaction.

Moreover, I now turn to interests - the alternative explanation. The interests in this study are randomly assigned via various constellations (see Section 4.2.2) so that in this respect, the study is experimental even in the stricter sense. In addition, as will be explained in Chapter 6, the use of instrumental variables reintroduces an element
of experimentation to the deliberation-outcome-link that leads this study back to the more restricted understanding of experimentation by Shadish et al. (2002).

According to these considerations, the best approach to go forward is to use the experimental approach for assessing the role of interests - since they are more easily induced following the example of behavioural economics. Assessing the effect of deliberation then requires the methodology of observation studies – observing the communicative interaction of the participants of the study, measuring to what extent their behaviour approaches the deliberative ideal, and using statistical models to investigate relationships of the deliberative quality with the outcome variables.

4.1.3 Who is to be Studied?

With the decision to run an experimental study - in the way defined by Morton and Williams (2008) - the next question in this chapter’s introduction is: what group of people should participate in the (simulated) deliberative process? I side with most experimental studies in social psychology and behavioural economics and recruit mainly university students from campus by advertising (with leaflets and in person) at the university lobby and cafeteria as well as in some lectures. Some visitors or university staff are also included in the sample. Due to this limited subject pool, I have to accept the resultant downside of reduced representativeness - and, hence, the reduction of the external validity of the study. Yet the decision of going to the lab already implies the focus on internal validity and the aim of examining the causal relationship in order to enhance the theoretical propositions. As a consequence of this decision, however, I cannot exclude the possibility of a selection bias. In fact, using university students, their communicative skills and decision-making behaviour is most likely not representative to any populace to which one might like to generalize the findings. However, I want to find out if differences in communication have an effect. Therefore, university students can be considered a hard case, because if I find an effect here, it is most likely even easier to find an effect in a more representative group, in which the communication skills would probably vary even more.
4.1 Research Design

The diverse ways in which the participants of a deliberative process interact also play an important role when considering the unit of analysis. On the one hand, two participants communicate with each other before making individual decisions. On the other hand, I observe one communicative process with one result that is generated by these individual decisions. When looking at the former perspective, one has to keep in mind the interdependencies of the two participants. I would have to theorize why the deliberative quality of the actor himself, or of the experimental partner should influence the decisions.

The formulation of the hypotheses in Chapter 3 suggests the latter perspective, however. Since the different measures of deliberative quality use the individual statements as their unit of analysis, they can be aggregated to both an individual and a dialogue level. It is, thus, possible to consider the whole experimental session as one observation. Depending on the specific questions that I ask in the analysis, this is my standard unit of analysis and level of aggregation. I will only deviate from this standard to the individual level when the hypotheses make an explicit claim about the effect of one role’s behaviour. For example, I suggest that the decisive reason for an effect on the outcomes in asymmetric games is the deliberative quality of only one actor - the one who is described as the Rambo player in Chapter 3. On this level of analysis, however, the two participants are interdependent.

In general, one could think of influencing some of the interdependencies of the participants by manipulating the recruitment mechanism. For example, it would be possible to recruit only same gender - or only mixed gender - pairs in order to hold constant the influence of gender on the deliberative quality as well as on the results. Nonetheless, since finding subjects for the experiment has proven to be very tedious, the decision was made to restrict the recruitment of participants as little as possible, and to control for such interdependencies by enquiring these variables in the questionnaire that the participants complete in the lab and by using that knowledge in the

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7 Due to the university's small size and a surprising reluctance of students to participate in the study, it took 16 months of active recruitment and data collection between September 2014 and March 2016, with three months in which the lab was not accessible, in order to reach the target number of 240 experimental sessions.
statistical analysis to control for the effects. Moreover, although gender is a variable that might still be easy to manipulate in the recruitment process, for other variables, such as the personality types or the number of semesters, it would be a lot more time-consuming to assess their values beforehand and to coordinate matched pairs to come to the lab at the same appointed time.

One question remains: How many observations are needed? Following calculations suggested by Agresti (2007, 161) concerning the power of statistical models depending on the number of cases, the target number of observations is 240. 480 students, thus, had to be convinced to participate in the study. This amount of cases is considered an appropriate compromise between the costs and the potential to receive interpretable results. I aim at enough cases to discover significant differences between the groups that have a high deliberative quality and the groups that have a low quality. When calculating the number of cases, I assume that approximately half of the observed groups can be placed in a highly deliberative group, while the other half has a low deliberative quality. I than allow a standard of $\alpha = .05$ (0.95 level of confidence) and $\beta = 0.1$ (a power of 0.9). If 80% of observed units with a high deliberative quality succeed on the dependent variable and (only) 60% of the observed units with low deliberative quality do so, the minimum number of cases to find the influence of deliberative quality to be significant is 216. For allowing a slightly smaller effect, I decide to move to a round number that is still dividable by the number of different preference constellations. To simplify this calculation, a dichotomous measure of deliberative quality needs to be assumed. As I use a continuous measure for deliberative quality, however, this number of cases is a preliminary estimate of the time when the data generation was planned, in order to determine the target number of observations before the experiment was conducted.

4.1.4 The Institutional Setting as a Constant Condition

I now turn to answering the third question that I pose in this chapter’s introductory section. I ask for the appropriate conditions under which an effect of the deliberative

---

8 For these calculations, I use the bsamsize function of the R-package Hmisc (Harrell Jr, Dupont, et al. 2015).
quality of communication can be identified. According to the dominant literature discussed in Chapter 2, a set of institutional preconditions exist for deliberation to be able to take place. Since the communication that happens within these institutional settings does not necessarily follow the ideal of deliberative communication, as I argue in Chapter 2, there is no necessity to examine the effect of these institutional conditions. The effects of the conditions have been studied before, but the effect of the deliberative quality of communication has not. However, it is to be assumed that varying conditions most likely interact with the deliberative quality of the discussion. As my primary aim is to examine the effect of the communication, I decide to control for as many institutional settings as possible by holding them constant. Thus, I make the most from going to the lab. Future work might then build upon the results and introduce some variance into the institutional settings in order to examine if there really are interaction effects as I have just suggested.

The first constant on the list of institutional settings is the topic of discussion. All 240 observations have the same background story. The stories are written in very similar ways, but differ slightly in order to accommodate for the different preference constellations. For example, if Ricky prefers to work alone over not working at all in the Chicken game but prefers it the other way round in the Prisoner’s Dilemma, the two sentences that provide the reasons for this preference order are changed in the conflict description. This is achieved by downplaying the importance of the opportunity to earn some more money in the future in the Prisoner’s Dilemma, while downplaying the importance of the final exam in the Chicken game. This does not change the overall setting, and the conflict on the story level remains the same - even if the strategic constellation on the interest level changes significantly.

Secondly, I hold constant the decision space by using simple 2-by-2 matrix games. This is done, because the financial benefits of the participants, which are used to induce the preferences over the possible outcomes (representing their interests), have to be translated into a background story if the participants are supposed to talk more than a couple of minutes about the decision they are supposed to take. This translation is more likely to fail and thus more likely to not affect the participants, the more complex
the decision becomes; as long as one Euro does not represent one natural unit of whatever scale is used in the story. A dichotomous decision, however, can be translated easily, and the strategic nature of the decision is also simply conveyed to those participants who do not have a background in basic economics. In addition, a dichotomous decision emphasises that there are no options for side-payments or gradual truths that participants would try to find when given the choice. Such decisions would be very difficult to measure.

Apart from the topic and the decision space, the structuring of the discussion is held constant as well. The participants use a conference recording system. The microphone is set to one participant at a time. So, this system structures the discussion to some extent. The speakers have to switch off their microphones after having completed their statements before the other participant is allowed to start his or her statements. Therefore, interruptions are heavily reduced. This technical detail serves to support the mundane realism of the experiments, when compared to political decision-making, as many real-world political decision-making processes also follow a set of procedural guidelines concerning the right to speak that the actors generally (have to) adhere to.

Finally, in deliberation theory, the point is made that discussants need to have enough time to thoroughly debate the decision at hand. After allowing a maximum of 45 minutes of discussion in a round of pretest, it is apparent that a discussion time of 30 minutes is sufficiently long for every pair to cover all the points they could think of. In addition, the pretests show that participants’ patience is a source of power, as some participants are swayed to cooperate just for being allowed to finish the experiment early. As a result, the discussion time is set to exactly 30 minutes and the participants are told that the rules of the experiment are such that they cannot continue with the final questionnaire until this time is up.

9 Before the experiments were conducted, four different background stories were tested with 12 observations each – 3 observations for each preference constellation. In addition, the level of payment for each step on the preference order was randomly manipulated among the three options, so that every setting produced one data point.
4.2 Data: Operationalisation and Description

In this section, I describe the data that is used for the empirical examination of the presented hypotheses: it is used to show to what extent the answers to the research question can be substantiated when looking at real people. As the design of the study is X-centred – the aim is to examine the effects of deliberative communication on different outcomes – I first present the measures of the deliberative quality of communication. I then introduce the experimental treatments of different preference constellations, providing the reasons, why certain game theoretic models are used, and why the set number of experimental observations is conducted for each of these constellations. In a short subsection, I then introduce some socio-demographic and psychological data of the subject pool in order to assess to what extent the selection process might bias the results. Some of these data are also included as control variables in the statistical models of Chapters 5 through 7. In the final part of this section, I describe the operationalisation and actual data of the outcome variables that are hypothesised to be affected by the deliberative quality of communication.

4.2.1 Deliberative Quality

In this subsection, I describe a newly developed, computer-assisted, and automated measure of deliberative quality\(^{10}\) – the core variable in my empirical investigation – and describe how it is adapted to the dataset. In Chapter 3, I define deliberation as a process in which people come together in order to find common justifications for the decision they take if they can and remain open for revised communication if agreement on the reasons might not be attainable at the moment. Accordingly, I describe deliberative quality as a continuum that is captured in four dimensions: justification, participation, respect, and accommodation, as is conceptualised in the VisArgue project that developed the described measure (Gold and Holzinger 2015). Higher values on each

\(^{10}\) The toolbox for measuring deliberation, of which I use a number of indicators, was developed by the VisArgue Project (VisArgue: Wie und wann überzeugen Argumente? — Analyse und Visualisierung von politischen Verhandlungen) between 2011 and 2016 and is partially presented in Gold and Holzinger (2015).
Design and Data

dimension reflect the communication partners’ behaviour to come close to the ideal of deliberation. This means that high values are attained in instances which support the process of finding common justifications, while simultaneously ensuring that the decision-makers will be able to return to a renewed process of decision-making without being negatively affected (in their willingness or ability to participate) by the previous interaction. Each of the dimensions partially works towards both aims, but they usually focus on either of them. The justification dimension, for example, primarily focuses on the process of reason giving. The respect dimension does not only measure to what extent people’s negative emotions interfere with their ability and willingness to exchange points of view. It can also capture the actors’ acceptance of the dialogue with the respective discussion partners in such a way that they agree to engage in a new round of debate when new information has surfaced.

The choice of indicators from the VisArgue toolbox for each of the four dimensions depends mainly on the question of whether reasonable explanations can be given for higher or lower values in the measured indicators to actually refer to greater proximity to or distance from the deliberative ideal. I therefore neglect measures that give a great overview of the individual dialogues but cannot be situated on a high quality – low quality continuum. In addition, I propose that a combination of indicators is able to describe the explanatory variable. Thus, only those indicators are used that do not lead to a significant difference between the theoretical model of measuring deliberative quality and the actual data when the indicators are combined to a single latent variable of deliberative quality.

The notion of a continuum emphasises the possible occurrence of communication processes that do not subdue to the deliberative ideal. Considering the logic of instrumental rationality the perception is defensible that some actors just want to achieve their best solution and use power or persuasion to that end, without even intending to find justifications that can be universally accepted or with the aim of striking the deal once and for all - leaving no option for revision. Such behaviour also has to be captured by a measure that is created to assess the deliberative quality of communication in decision-making processes, such as is presented in the remainder of this section.
4.2 Data: Operationalisation and Description

As described in the study design, I compare 240 two-person discussions, which each last approximately 30 minutes. The process of transcribing the oral discussions results in a large amount of text, which is no longer feasible to be manually analysed. The corpus of all 240 discussions consist of 1,033,792 words or punctuation marks in 10,693 utterances. I therefore turn to a computer-assisted approach, as was developed in the VisArgue project. Although computer-assisted measures might not be able to capture all semantic and pragmatic details within the transcribed texts of a decision-making process, their use is a reliable way to produce the values of deliberative quality. The following two reasons explain why these tools are more reliable and are preferred over manual coding.

First, the basis of the analysis is the spoken word as has been put on paper through a transcription process. Although, conceptually, the distinction between communicative and instrumental rationality refers to an interior process within each actor, I assume that oral expressions portray several cues for an actor’s stance on the spectrum between the two. While, theoretically, the deliberative ideal is strongly influenced by the former concept, a low value of deliberative quality might represent the later concept. However, it is important to maintain that the conscious use of language allows self-interested actors to instrumentally use language in such a way that the automated measures as well as the discussion partners of these actors would describe it as of high deliberative quality.

Since it is impossible to look into the participants’ minds, an analysis of the words that are actually uttered reflects the actors’ interactions. The reason for the decision to only analyse the spoken words is the notion that the interlocutors can only react on

---

11 For creating the corpus, some utterances in the observations are deleted as some pairs manage to come to an early conclusion and engage in random small-talk to fill the time until the 30 minutes have passed. If they do not return to the actual topic at hand, the conversation after having signed the agreement sheet is not included in the analysis.

12 Potentially, to that end, one could use video-recordings in order to assess body language or analyse eye-movements, but this would require expert-knowledge that has not been available to the researchers on the project of which I take my data. Besides, although such measures might get closer to the actors’ real intentions, they are still only cues that are portrayed to the outside world and depend on measurement concepts that can be as false as measuring the spoken word might potentially be. The use of electroencephalography might allow to look into participants’ brains, but the lack of measurement theories explaining how brain waves are supposed to interact with the deliberative ideal still remains and cannot be alleviated in this endeavour.
Design and Data

what the other actors say (or do) and cannot react on the other actors’ interior processes. Although the validity criterion of sincerity (as is described in the theory chapter) cannot be assessed by merely looking at language, it is possible to observe if such claims of validity are actively contested by the other actor(s). If people’s ways of communicating with each other are supposed to affect their behaviour or their decisions, it is the language that is sent and received, rather than the intra-personal process, that is supposed to cause the effect. In fact, the hypotheses that I propose in Chapter 3 predominantly use the dialogue, rather than the individual participants, as the unit of analysis, and this dialogue manifests itself more thoroughly by the spoken words rather than the silent intentions.

Second, for some items presented in this section, I use a rule-based analysis of the language, which requires deep linguistic knowledge: I make use of a rule-based analysis tool wherever it is feasible and thus incorporated in the VisArgue toolbox. In contrast to statistical methods of text- or argument-mining, of which Grimmer and Stewart (2013) maintain that “[a]ll Quantitative Models of Language Are Wrong – But Some Are Useful” (p.269), the rule-based approaches tend to increase the validity of the measures; and the researcher can assess the validity of the measures due to knowledge of the specific rules that apply. With statistical approaches, which often might be right enough and can be applied more broadly, one often still cannot know exactly why their categorisation task was successful and can therefore not derive any behaviour recommendations from them.

In summary, the argument for automatic language assessment is not only pragmatic due to the large number of cases. Potentially, such problems could be overcome with the right resource allocation. The reason is more fundamental: as inter- and intra-coder reliability is very hard to achieve in such a complex measure, comparing 240 discussions might rather compare the coders’ diverging interpretations or their state of wakefulness when working on the different dialogues rather than the actual differences in the text. Using computer-assisted text analysis ensures that each text is coded with the same rules and comparison is made over the different texts, even if the mea-
4.2 Data: Operationalisation and Description

sures might not be able to reach the validity standards that single text manual coding would achieve.

In the following subsections, I present the different indicators that I use to measure the four dimensions justification, participation, respect, and accommodation linking them back to the theory. This is accompanied by the descriptive statistics and distributions of each indicator. In Table 4.1 I explain how the items are calculated, show a formula of their calculation and present the distributions. The concluding subsection will then deal with creating an overall index. The creation of the index pays tribute to the idea that deliberative quality should be understood as a latent variable that cannot be measured as such but reflects the underlying theoretical concept. Thus, I present the use of confirmatory factor analysis (CFA) in order to combine the individual measures representing the four dimensions and create an overall index of deliberative quality.

**Justification**

The dimension of justification focuses on formal argumentation. This dimension comes closest to the concept of communicative rationality, according to which validity claims need to be evaluated on their accessibility for justification and criticism. Since it is not feasible to analyse the content of all the 240 discussions by trying to assess if all the claims appearing in the corpus can be and actually are justified and criticised (as well as relevant to the discussion), I have to rely on a measure that reflects the formal structure of justifications. Thus, I look at the level of argumentation within the discussion. High values in this indicator refer to the actors’ performance in giving reasons for their claims.

For this argumentation indicator, the algorithm searches for causal connectors (i.e. words such as “weil” (because), “daher” (thus), “da” (since)) in the utterances and distinguishes the parts of an utterance that belong to the causal argument and those that do not. Said causal indicators identify reasons and conclusions as well as conditions and consequences and connect them to each other. This linguistically sophisticated algorithm detects 23 different causal connectors that are disambiguated in such a way
that only those words are identified which actually are used as causal connectors, even if the same word might have other meanings and uses as well (Bögel et al. 2014). For example the word “da” (since) also has a spacial meaning in the German language, analogously to the word “since” in English having a temporal meaning as well as a causal one. With certain rules, as are described in Bögel et al. (2014), only those words that actually have the causal meaning are identified. Each sentence that contains such a causal connector is considered to be an argument. With this approach, most detected arguments actually are used as causal connections. Implicit connectors cannot be detected however.

The tool then counts the number of elementary discourse units (EDUs) (Marcu 2000) that belong to an argument within each utterance and calculates the proportion of EDUs in an argument to the total number of EDUs in the same utterance. An EDU is part of a sentence – often separated by punctuation – that conveys one idea. The aggregate is the mean value of these proportions over all utterances within one discussion. This results in a higher value when more arguments are used, which can be considered to approach the deliberative ideal. On the utterance level, values range from 0 to 1 with a mean value of 0.36. On the game level (as indicated in Table 4.1) this value ranges from a minimum of 0.13 to a maximum of 0.65. The mean value is 0.37 with a standard deviation of 0.1.

Participation

The participation dimension emphasises those rules by Alexy (1978) which deal with access to the dialogue (see Chapter 3). Ideally, everyone affected by a decision is supposed to have the right to listen, speak, and be heard by all other decision-makers on all topics that are relevant for the decision at stake. Participation is of a main concern in larger groups, where single participants might take over the conversation, while others refrain from giving their opinions for various reasons. In two-person face-to-face dialogues, it is very reasonable to assume that the participants take turns in their contributions to the debate. However, certain measures are still interesting and vary over
Table 4.1: Overview of the Indicator Variables Measuring the Dimensions of the Deliberative Quality of Communication

The Justification Dimension

Argumentation counts the number of EDUs within an argument relative to the overall number of EDUs in one utterance. An argument is one (or several) sentence(s) that are connected by a linguistically disambiguated causal connector. On the utterance level: \(0 \leq x \leq 1\). The aggregated value on the game level is the mean over all utterances.

\[
\text{argumentation} = \frac{\sum_{i=1}^{\text{utt}} \text{arg}_i \text{EDU}_i}{\text{utt}}
\]

Distribution of Argumentation

mean = 0.37; sd = 0.1; min = 0.13; max = 0.65; skew = 0.28; kurtosis = 0.02

The Participation Dimension

Equal participation divides the total number of one speaker’s uttered words by the total number of both speakers’ uttered words. The result is subtracted from 0.5, which is the ideal value of equal participation when the number of speakers is two. The absolute value of this difference is than subtracted from one so that a great difference receives a low value of equal participation. On the game level the variable ranges from 0.7331 to 0.9996.

\[
\text{equal participation} = 1 - \left| \frac{0.5 - \frac{\text{wo.tot}_{(C|R)}}{\sum_{C|R} \text{wo.tot}_{(C|R)}}}{\frac{\text{wo.tot}_{(C|R)}}{\sum_{C|R} \text{wo.tot}_{(C|R)}}} \right|
\]

Distribution of Equal Participation

mean = 0.93; sd = 0.06; min = 0.73; max = 1; skew = −1.01; kurtosis = 0.74

Formula abbreviations: utt: number of utterances in one game; \(\text{arg}_i\): number of argumentation EDUs in one utterance; \(\text{EDU}_i\): number of EDUs in one utterance; \(\text{wo.tot}_{(C|R)}\): number of words in the game by the respective speaker (C=Chris, R=Ricky);
The Respect Dimension

**Sentiments** counts the number of words in each utterance which are identified as positive and negative by a dictionary. For every utterance, the log of the number of negative words (+0.5) is subtracted from the log of the number of positive words (+0.5). On the utterance level, the number of positive words ranges from 0 to 36 (mean=2.72); the number of negative words ranges from 0 to 15 (mean=0.8), leading to a range of -2.4 to 4.3 on the utterance level. The game value is the mean over all utterances.

\[
\text{sentiments} = \frac{\sum_{i=1}^{utt} (\log(spos_i + 0.5) - \log(sneg_i + 0.5))}{utt}
\]

The Accommodation Dimension

**Agreement/Disagreement** refers to speech acts of agreement and disagreement counting the number of EDUs that contain performative words of agreement and the number of EDUs that contain performative words of disagreement. For every utterance, the log of the number of disagreement EDUs (+0.5) is subtracted from the log of the number of agreement EDUs (+0.5). On the utterance level, the number of agreement EDUs ranges from 0 to 21 (mean=0.35); the number of disagreement EDUs ranges from 0 to 25 (mean=0.8), leading to a range from -3.30 to 3.76 on the utterance level. The game value is the mean over all utterances.

\[
\text{agreement / disagreement} = \frac{\sum_{i=1}^{utt} (\log(agr_i + 0.5) - \log(dis_i + 0.5))}{utt}
\]

**Formula abbreviations:** \(\log\): natural logarithm; \(utt\): number of utterances in one game; \(spos\): number of positive sentiment words in one utterance; \(sneg\): number of negative sentiment words in one utterance; \(agr\): number of agreement EDUs in one utterance; \(dis\): number of disagreement EDUs in one utterance.

**Note:** The red lines in the histograms are density functions of normal distributions with mean and standard deviation of the respective variables.
the different games. I look at an equal participation indicator which considers the actual participation in reference to the number of uttered words.

**Equal participation** was inspired by an interactivity measure that is implemented in the VisArgue project. However, since interactivity is only usefully calculated with more than two actors, this measure is a simple version and can easily be applied in the context of the analysed two person face-to-face discussions: for participation equality, only the number of words are important as the participants usually take turns in speaking and do not have an unequally distributed number of utterances per speaker – a situation in which one actor would dominate the discourse by not letting other participants take the floor. For attaining the equal participation measure, I define a deliberative ideal to be exactly equal participation. Thus the indicator will have high numbers, when the participants diverge only slightly from the ideal and low numbers, when a great discrepancy between the speakers can be observed. With two people 0.5 is this ideal. From 0.5, I subtract the proportion of the number of words spoken by one actor relative to the total number of words spoken by both actors. The absolute value is then subtracted from 1. In the dataset, the indicator ranges from 0.73 to 1 and has a mean value of 0.93.

**Respect**

The respect dimension refers to the respect of the participants for each other, for the opponents’ opinions, and for their (counter-)arguments. Furthermore, it reflects an atmosphere that ensures the participants’ security to take part in a discourse. Conceptually, respect is equally important for both aims, finding a common solution and remaining open for a revised communication. Although high respect might not necessarily lead to better solutions, low respect can have a devastating effect on any deliberative process. The respect dimension is operationalised as the level of positive sentiments.

The sentiments indicator of respect makes use of a dictionary approach. Remus et al. (2010) present a dictionary of over 30,000 words (baseforms and their inflections)
that are either positively or negatively loaded and weighted between -1 and +1. The weights and the direction of the load reflect the probability that this word co-occurred with a number of positive and negative seed words in a large corpus. Using this sentiment measure for an evaluation of respect follows the idea that how things are expressed has an effect on the atmosphere of the discourse. The same contents and points of view can be expressed in many different ways. Thus, it is possible to compare the overall sentiments value, when comparing discussions about the same topics where the points of view that will be expressed are likely to be similar. This is even more the case in an artificial setting such as the one I am examining. Although finding the best reasons for a decision might at times need some harsh or direct words, a positive sentiment value for the discussion is considered to reflect a high deliberative quality when focusing on the aim of ensuring that people remain open for further discussion. Besides, a bad atmosphere might also be able to sway those participants who would generally be willing to abide by the better argument to return to selfish behaviour as they do not consider the other party worthy of their cooperation.

The sentiments item is the difference of log values of positive and negative words occurring in one utterance. The number of positive words in one utterance ranges from 0 to 36 with a mean value of 2.72. The number of negative words in one utterance ranges from 0 to 15, with a mean value of 0.8. From these values I calculate the “tone” of each utterance by adding 0.5 to the values (in order to avoid infinity) and subtracting the natural logarithm of negative words from the natural logarithm of positive words in each utterance, leading to a range of $-2.4$ to $4.3$ with a mean of $0.8$ and a standard deviation of $0.97$. The values are further aggregated to the overall dialogue in each experimental session by using the mean value over all utterances. This aggregate ranges from $0.23$ to $1.82$. It has a mean value of $0.84$ and a standard deviation of $0.25$ on the game level.
4.2 Data: Operationalisation and Description

**Accommodation**

The dimension of *accommodation* looks at the actors’ performances to find a common solution in a decision-making process when no unanimity about the best reasons for a decision can be reached. I state in Chapter 3 that this dimension draws more from Thompson (2008) than from Habermas (1981), as it reflects the idea of moving towards a solution or compromise that all parties can accept, rather than meticulously justifying and criticising all validity claims until only one solution can no longer be rejected on the basis of valid reasons. In the theory of communicative action, the notion that every decision is always temporary and thus open for reconsideration presumes that the actors will return to the discussion table when need arises. However, such behaviour still does not assure that the parties to a conflict will always be willing or able to abide by the better argument. Decisions still have to be made (even if it is the decision that no agreement can be found and the status quo remains). The *accommodation* dimension reflects this idea, and elevates to the deliberative ideal all efforts with which the actors change their positions towards a common solution – or at least verbally consider such a change in position. As an indicator for this dimension I look at the relation of agreement and disagreement speech acts in the dialogues.

**Agreement / disagreement** as the indicator for *accommodation* is based on speech act theory (Austin 1962; Searle 1969) and makes use of a list of performative words, that can be differentiated between agreement and disagreement. Although speech acts do not necessarily depend on the performative words to be uttered, their use makes the action explicit. If I want to offer someone desert, I can say: “Would you like to have some desert?” Or I could also say: “Can I offer you some desert?”. The action – to offer – is conducted in both examples; the measure would however only pick up the latter sentence. Still, the idea of using the performative descriptions of speech acts as trigger words can be used to detect EDUs of agreement and disagreement. So, when a participant uses words as [sich einigen (to agree), anbieten (to offer), einverstanden [sein (to consent), the EDU, in which this word appears, is coded as agreement. Disagreement is coded, when the participants utter words as [darauf bestehen (to insist), ablehnen (to refuse), or zurückziehen (to withdraw). Now, there is a difficult choice to be made
Design and Data

how agreement and disagreement relate to the deliberative ideal. A certain amount of disagreement is always needed when actors criticise each other’s validity claims: thorough scrutiny of participants’ arguments can only be achieved when enough disagreement is expressed. So, ideally, an analysis in which one tries to get closer to a deliberative ideal would use a dynamic analysis, defining ideal values of agreement and disagreement at certain stages of the discourse. However, such an ideal has not yet been identified in the literature and would need its own empirical investigation. As such an endeavour is not the prime focus of this study, and can therefore not be performed, I choose to consider a high amount of agreement relative to the amount of disagreement to reflect a high deliberative quality in terms of accommodation. The participants work towards agreement, and thus any EDU coded as agreement lets them come closer to a mutually acceptable solution.

The agreement / disagreement item looks at the number of EDUs within one utterance in which performative words triggering agreement or disagreement appear. The number of agreement EDUs on the utterance level ranges from 0 to 21, with a mean of 0.35 and a standard deviation of 1.3. The number of disagreement EDUs on the utterance level ranges from 0 to 25, with a mean of 0.08 and a standard deviation of 0.6. Like the sentiments item, I subtract the natural logarithm of the number of disagreement EDUs (+0.5) from the natural logarithm of the number of agreement EDUs (+0.5) for each utterance. This results in a measure that ranges from −3.3 to 3.8 with a mean of 0.15 and a standard deviation of 0.6 on the utterance level. This measure is aggregated to the game level by taking the mean over all utterances for each game. The aggregated value ranges from −0.18 to 0.86, with a mean value of 0.18 and a standard deviation of 0.15.

An Index of Deliberative Quality

The deliberative quality of communication is conceptualised throughout this dissertation as one concept that has an effect on a number of outcomes, some of which I will test. In the previous subsections, I describe four indicators that represent the four di-
dimensions in the concept of deliberative quality. Theoretically, however, it is not the indicators that by themselves have an effect, but the deliberative quality as a whole. I therefore need to aggregate the data, as described so far, into one number for every observation. Only then can I use statistical models that assess if this measure actually affects information-sharing, substantial results, and/or argumentation consensus. In the theory as well as in the operationalisation, I assume that deliberative quality is a concept that combines the dimensions of justification, participation, respect and accommodation. In this subsection, I now aim at creating an index of deliberative quality that accounts for information from the different indicators. In addition, I test if the theoretical conceptualisation is consistent with the data.

For the first step, I need to create an index. Indices are generally used when the constructs of a theory refer to several dimensions but the theory presumes a common latent variable for all dimensions (Schnell et al. 2005). Making an index translates the multi-dimensional concept into a uni-dimensional scale. The manner of achieving this translation depends necessarily on certain arbitrary decisions, which can be empirically assessed or theoretically justified. In the previous subsections, I stress that a higher value in each item reflects greater proximity to the deliberative ideal. Thus the direction of the measures all point to the same theoretical direction. However, when creating an additive index, I have to assume that the dimensions are as independent of each other as possible (Schnell et al. 2005, 172). This evidently is not the case, as can be observed from the correlation matrix in Table 4.2: apart from equal participation and agreement/disagreement, all other variables correlate stronger than 0.1, suggesting that the four variables are not independent of each other. Therefore, I turn to confirmatory factor analysis (CFA) to model the measurement of deliberative quality and make use of the model predictions in order to create the index. In the following chapters, disaggregation into the individual dimensions again allows to test if all components are needed for certain hypotheses to hold or if only some aspects of the deliberative quality might have the hypothesised effects.

CFA is a method to assess how a theoretical measurement model fits empirical data. It combines a number of manifest indicators to a single dimension, which is theoret-
4 Design and Data

Table 4.2: Correlation Matrix of the Four Indicator Variables

<table>
<thead>
<tr>
<th></th>
<th>argumentation</th>
<th>equal participation</th>
<th>sentiments</th>
<th>agreement / disagreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>argumentation</td>
<td>1.0000</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>equal participation</td>
<td>0.1491</td>
<td>1.0000</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>sentiments</td>
<td>0.3531</td>
<td>0.1297</td>
<td>1.0000</td>
<td>–</td>
</tr>
<tr>
<td>agreement /disagreement</td>
<td>0.2812</td>
<td>0.0103</td>
<td>0.3330</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

ically referred to as the latent variable and technically called a factor. The method estimates the relationship between the latent variables described by theoretical concepts and the manifest variables that can actually be observed. Factor analysis is used in order to reduce the number of dimensions measuring the intended concept. CFA begins with a theoretical model which assigns the manifest indicator variables to the latent factors that have been theoretically identified. As such, in CFA, a model can fail to predict the data structure and should be rejected if this happens. This approach was used for predicting the values of a latent deliberative quality variable.

The first decision that has to be made for running a CFA is the choice of estimator. Even though multivariate normality cannot be assumed with the given data\textsuperscript{13}, the ML-estimator is appropriate, as was suggested by Reinecke (2014)\textsuperscript{14}. ML is a Maximum Likelihood (ML) estimator which compares the covariance matrix of the empirical data with the covariance matrix that is implied by the model. It estimates the parameters in such a way as to minimize the difference between the two matrices.

\textsuperscript{13} Three tests have been performed to test if the assumption of multivariate normality can be justified. All three tests fail to reject the null hypothesis of multivariate non-normality. The Henze-Zirkler’s test statistic is 1.887, Royton’s test statistic is 77.058, Mardia’s test statistic for multivariate skewness is 2.828 and Mardia’s test statistic for multivariate kurtosis is 27.581. All p-values are effectively zero. The individual indicators are partly normal: argumentation and sentiments are normally distributed according to Shapiro-Wilk’s normality test, while equal participation and agreement / disagreement are not.

\textsuperscript{14} According to Reinecke (2014, 111), the ML-, MLF- and MLM-estimators can be used, when the skewness is < 2 and the kurtosis is < 7 – which is the case with all variables in the model. ML can be used, when the number of cases is large. This is considered the case as the 240 cases is a bigger number than 5 times the degrees of freedom – the factor that was identified in order to assure that a model is not rejected prematurely (Reinecke 2014, 115).
4.2 Data: Operationalisation and Description

| Table 4.3: Goodness-of-Fit Values of the CFA Models |
|---------------------------------|-----|-----|-----|-----|-----|-----|
| χ²-value | df | CFI | TLI | RMSEA | SRMR | N   |
| Game Level | 3.158 | 2 | 0.984 | 0.951 | 0.049 | 0.030 | 240 |
| Speaker Level | 3.459 | 2 | 0.983 | 0.950 | 0.039 | 0.024 | 480 |

Cutoff criteria: significance > 0.96 > 0.95 < 0.05 < 0.08

Note: df = degrees of freedom; the χ²-value should show a non-significant difference between observed and expected covariance matrix (p-value > 0.05); CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Squared Residual; N: number of observations.

Theoretically, I assume that the four indicator variables combine in one factor of deliberative quality. In Table 4.3, the model fit statistics of this theoretical assumption are presented on both the game and the speaker level, making use of the following values: χ², degrees of freedom (df), the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA) and the ML-based standardized root mean squared residual (SRMR). The cutoff criteria of these fit indices, according to Hu and Bentler (1999), are presented in the second line. It should be noted that these tests do not help to find the right model or the best model. What is being tested is if the given theoretical model deviates from the data. Potentially, there are many equally good models. Thus, the measurement theory can be rejected if it does not fit to the data, but not rejecting it does not empirically support the notion that this model is the one possible theory of how the deliberative quality can be measured.

Figure 4.2 shows all estimated parameters and the structure of the described model on the game and speaker levels. In each graph, on the right in squares, the indicator variables are found. They are used to estimate the latent variable of deliberative quality (circled) on the left. The numbers above the one-pointed arrows pointing to the right are the factor scales. All factor scales are significant. On the very right, the variances of the residuals are reported. The dashed line signifies the identifier: argumentation as

15 Alternatively, I could assume a model in which many indicators form four independent factors representing the four dimensions. However, all attempts to combine more indicators from the VisArgue toolbox in such a model failed to reject the null hypothesis of no-significant difference between the model and the data. In addition, greater differences between the game and speaker levels were to be expected.
the core variable gives its scaling to the latent variable, which is why the factor loading of argumentation is 1.

The estimated factor scales are now used to predict the latent variable of deliberative quality from the indicator variables. Figure 4.3 depicts the value distribution of the 240 cases on the game level and the speaker level. On the game level, the predicted deliberative quality ranges from $-0.1$ to $0.13$. The standard deviation is 0.04 and the measure is positively skewed and a little bit more flat than normal. (The mean value is zero by design.) On the speaker level, the values are similar: the minimum value is $-0.11$, the maximum value is 0.15. The mean is again 0 by design, the standard deviation is 0.04. The skewness is slightly bigger (0.36) and the kurtosis has turned
4.2 Data: Operationalisation and Description

**Deliberative Quality on Game level**

sd = 0.04; min = −0.1; max = 0.13; skew = 0.29; kurtosis = −0.11; N = 240

**Deliberative Quality on Speaker level**

sd = 0.04; min = −0.11; max = 0.15; skew = 0.36; kurtosis = 0.41; N = 480

*Note:* The red lines in the histograms are density functions of normal distributions with mean and standard deviation of the respective variables. Further descriptive statics are shown below. The mean values are automatically set to zero by using CFA.

**Figure 4.3:** Histograms of the Predicted Values of Deliberative Quality as a Latent Variable on Game and Speaker Levels

positive (0.41) on the speaker level. These values can be used for the quantitative analysis, but they can always be disaggregated again to the individual indicators of the four dimensions if the results of the analyses provide reasons that only certain aspects of the deliberative quality actually have an effect, while others do not.

An important observation from these figures is the fact that the range and standard deviation of the latent variable of deliberative quality is much smaller than the same figures for argumentation, which is the identifying variable. Since none of the four
indicators had a natural scale (such as meters or grammes), I use the artificial scale from argumentation to identify the deliberative quality, as the justification dimension is more central to the idea of deliberative quality. The smaller range and standard deviation therefore suggest that the latent measure is loosing variance by combining the four dimensions in comparison to the individual indicators. This is natural as the correlations were not as great – pointing to the fact, that the dimensions in some cases might point to different directions: high values of respect do not always go hand in hand with high levels of justification, for example. So in the index, I assume that one indicator might be able to compensate for another indicator. However, this reduced variance also makes it even more important to disambiguate the index again in the analysis chapters in order to investigate, if certain patterns contradict each other, or if they align with each other.

Concluding Remarks on the Measurement of Deliberation

In this subsection, I describe my approach of measuring the deliberative quality of communication, providing the reasons for all decisions that have to be made. I have limited the assessment to cues that can be found in language – the oral contributions to a decision-making process. It is important to maintain that the concept of deliberation still includes many aspects which cannot be detected by this approach. Scholars working on the theoretical development of deliberative democracy might not be convinced by this measure, and would reject any findings that seriously challenge the conceptual framework and its propositions. However, I am confident that this approach is worthwhile, as it allows to use the empirical findings from the lab to reflect on the theory in order to refine and reassess some of its propositions. In their discussion on theory-driven experiments, Walker and Willer (2007) call such an approach an experiment’s dialogue with theory.
4.2 Data: Operationalisation and Description

4.2.2 Interests and Preference Constellations

The main motivation of this study is to assess the effect of deliberation when there is a conflict of interests. This motivation stems from the theory of communicative action stating that in deliberation, actors have to put aside their own interests in order to be able to yield to the better argument. I therefore disagree with Fishkin (1997) and following publications in the Deliberation Day setting, where it is argued that deliberation can only take place in an interest free forum. Rather, I make use of specific preference constellations in order to examine the influence of the deliberative quality of communication against the backdrop of interests, which might be influential by themselves.

Interests are induced by the amount of money that participants can earn. In the experimental studies of behavioural economics, such an approach is widely used (Reviews of the field can be found in: Roth 1995; Camerer 2003; Plott and Smith 2008). In this study, however, these interests also need to be translated to a story where participants act a role and argue for a solution to a fictitious conflict. Due to this fictitious nature of the conflict, the participants need to be able to relate to the externally induced interests so that the participants’ positions can be influenced by interests. Thus, the concept of interests has to be broken down to a simple operationalisation. This challenge is met by using preferences.

Preferences are not as manifold as interests: they are just a rank order over a clearly defined set of possible outcomes. However, the more possible outcomes are available, the less tangible is the preference order. For this reason, the study design does not work with fine grained decision problems such as the ultimatum game (Güth et al. 1982) but limits the number of possible outcomes to four: a number resulting from two people having to make an individual choice between two options each. The preference order of each actor incorporates not only their own choice but also the choice of the other actor. The general idea of such a 2-by-2 decision matrix is already introduced in Section 4.1.1. Here, I go into details.
The design attempts external control over the preferences by financial incentives. In addition to the basic endowment of 5 €, the participants receive another 5 € for each step in their given preference order. So they can earn a maximum of 20 €. Since each step on the preference order is translated by the same amount of money, one can argue that the incentive structure for the participants does not only follow an ordinal scale – as would be the assumption of a preference order – but can be considered continuously scaled. This allows to compare the outcomes of the two actors, conceptually equalizing one actor’s gain by 5 € to another actor’s loss of 5 €. If preferences are set up in such a way, economists speak of a utility function of the outcomes.

In Figure 4.1 of Section 4.1.1, four different sets of preference constellations are presented. In each preference constellation, each actor is given his/her own preference order. In two constellations – Prisoner’s Dilemma and Chicken – these preference orders mirror each other. In the other two constellations, the preference orders are not interchangable. This leads to strategic asymmetry between the two actors. Following Zürn (1992), these asymmetric constellations are called Rambo games. A discussion about the choice of preference constellation follows later in this section and will also be dealt with in Section 4.2.4. The point here is the random assignment of the preference constellation that is given to each pair of participants. The randomisation process is done on the level of each experimental observation, defining the preference orders of both actors in the respective observation, rather than randomly assigning the preference order of each actor individually. The random assignment is done, before the participants enter the lab.

The process of random assignment ensures that the preference constellation cannot be affected by unobserved variables which would potentially bias the results. It also ensures that the preference orders are not affected by gender, age, field of study or any of the variables that will be used as control variables in the upcoming models, which

16 Considering a preference order to be continuously scaled would require the assumption that 5 € are valued equally by all participants. Since this assumption is hardly realistic, I do not want to overrate this point even though some of the design answers depend on this assumption when considering the outcome variables.
4.2 Data: Operationalisation and Description

aim at predicting the outcome variables. If interests have an effect on outcomes, this effect is not biased (if N is large enough). Moreover, even if interests affect the effect of deliberation on outcomes, I can be confident in the influence of interests not to be biased by other effects that could not be observed. Following the discussion on the term experiment in Section 4.1.2, testing the effect of interests is truly experimental. However, a control group with ‘no interests’ is missing in this design. One could think of giving every participant the same amount of money no matter what they negotiate in order to have a zero treatment. Such a procedure would, however, also be flawed as the conflict story clearly states a position, and a translation of the financial indifference between the outcomes to the story would make the whole story obsolete and hence no longer comparable to the other treatments. Thus, I can only investigate differing effects of the different preference constellations, but cannot test each preference constellation against a situation of no interests. This limitation can be neglected, however, as I do not aim to explain the effect of interests in its own right but rather want to investigate if the deliberative quality of communication affects outcomes differently when differing preference constellations are involved.

The lack of a zero treatment imposes a challenge to the question of how the different preference constellations can be controlled for in the statistical models. There is no natural baseline that all other constellations can be compared to. Rather, the variable that consists of the four preference constellations is nominally scaled. I therefore use multilevel analysis in the next three chapters, whenever the role of interests is controlled for. With varying-intercepts models, it is possible to draw a general comparison between the four preference constellations. With varying-intercepts and varying-slopes models, it is possible to answer the question of whether the effect of the deliberative quality of communication on the various outcome variables differs according to the different preference constellations. This approach has many advantages, when assessing the influence of deliberation – most notably does it not need a baseline treatment.

Unfortunately, however, it is impossible to exclude a potential difference in the different actors’ interpretation of the induced interests. For example: how much do the different actors value an increase in the disbursement of 5 €? Does this depend on the participant’s age or gender? Although this point definitely limits the scope of the results of this study, I am here in good company with the complete field of behavioural economics.
However, it does not allow testing if the effects of interests themselves on the outcomes are statistically significant. Such a test would need to be done individually. Although such results are interesting by themselves, they nevertheless do not help in answering the research question of this dissertation, which primarily focuses on the deliberative quality of communication and its effect on outcomes.

Before I turn to the four preference constellations, providing the reasons why those four have been chosen, I turn to general ways to predict behaviour in 2-by-2 decision matrices. For now, I describe ways of predicting behaviour that exclude the possibility of communication. The most common theoretical predictions follow the logic of rational-choice. In this theory school, rationality is understood as an assessment of all options according to one’s preference order, and a prediction of individual choices that take into consideration the strategic situation of an actor. Accordingly, an actor compares all attainable outcomes which take into consideration all known factors that cannot be directly influenced by that actor (such as the most probable choice of the other actor) and chooses the action that leads to that attainable outcome which maximises the actor’s utility – i.e. the rank number within the set of preferences. In the non-cooperative game theory, the most common way to predict actors’ choices, when the outcomes depend on the choices of several people, is the calculation of the Nash equilibrium. For it reflects the best outcome that one actor can achieve if she assumes that the other actor behaves equally rational. It is informally defined as the set of strategies (i.e. potential choices) in which no actor can unilaterally change their strategy to improve his or her outcome.

The concept of the Nash-equilibrium is the backdrop against which the role of communication can be assessed. There are a number of possible 2-by-2 decision constellations in which the preference orders (i.e. utility functions) of the actors present different strategic challenges. For an overview and classification of the different constellations, see Holzinger (2008). The decision which preference constellations should be used in this study depends on two questions: 1) Should the outcome that would be predicted by rational-choice be considered inferior to other possible outcomes? 2) According to what criteria can this inferiority be assessed?
4.2 Data: Operationalisation and Description

In order to answer the first question, it is important to remember that the theory of communicative action promises that by adhering to the rules of an ideal discourse, better results can be achieved than what could be achieved if everyone only considered their individual interests. It is therefore important to choose preference constellations in which the Nash-equilibria can be considered inferior outcomes from a normative perspective.

For the second question, I rely on the theory chapter. Two norms have been identified according to which the outcomes of a truly deliberative process can be assessed: (welfare) efficiency and fairness. The operationalisation of these norms is described below and discussed in Section 4.2.4. At this point, I emphasise that these norms were the criteria according to which the different preference constellations are selected. In addition, asymmetry is introduced in order to have a stronger test of self-interest. When two actors talk about a conflict and decide together in a symmetric game, they might realise that their refusal to cooperate might lead to a retaliation\textsuperscript{18} of the other actor and, thus, a worse result than could be achieved through cooperation. For setting up an asymmetric game, it is possible to use preference orders in such a way that one actor does not need to fear such retaliation. In terms of rational-choice theory, this actor (called Rambo) has no reason to cooperate because s/he will always receive the best outcome as long as the other actor behaves rationally and wants to avoid his/her worst possible outcome.

The decision for four different preference constellations is made while considering the above points. In the next paragraphs I present the rationale for choosing the Prisoner’s Dilemma (PD), the Chicken (CH) game, the Rambo-Welfare (RW), and the Rambo-Fairness (RF) games. The specific games have been selected because in those games the outcome in which both actors cooperate deviates from the theoretically predicted Nash-equilibria in the above-mentioned norms.

\textsuperscript{18} The word retaliation might be misleading here, because the experiments are designed as one-shot games. So retaliation in the literal meaning of the word is not possible. However, in the process of talking to each other, one actor can threaten to refuse cooperation. Such a threat can be refuted by making clear that one is willing to decide in such a way that the other actor will also lose.
Design and Data

The *Prisoner’s Dilemma* (PD) is the most famous 2-by-2 game and was subject to various experimental investigations already since 1950, when Melvin Drescher and Merrill M. Flood first investigated the behaviour of two people who repeatedly had to play a PD-styled game without communication (compare to Flood [1952]). An extensive analysis on the psychological reasons for decisions in a PD was done by Rapoport and Chammah ([1965]) who dedicated a whole book to analysing the effects of different variants of the PD-structure. The rational (self-interested) prediction of this strategic situation in the story of this experiment is both players choosing not to work the extra shift at the conference centre: the Nash-equilibrium in the *Prisoner’s Dilemma* is the No-No outcome. However, in repeated games, or when participants can coordinate by communication, they observe very quickly, that they both profit from mutual cooperation – i.e. both agreeing to work the extra shift. As soon as communication breaks down, or when the other person’s actions can no longer be directly observed, the dilemma situation returns: actors might be tempted to say No in order to increase their pay-off (believing that the other player trusts them to say yes), or they might not be able to put enough trust in the other actor and choose No in order to avoid ‘being played the sucker’. So, the important role and coordinating power of communication as such has been known for decades.

While the No-No outcome (solution S4) in PD is in equilibrium, the cooperative outcome (S1) is the Kaldor-Hix-efficient outcome. According to the Kaldor-Hix-criterion, an outcome is efficient, if no actor can deviate from a solution without putting any of the affected actors worse off – even if the gains earned by that deviation allow compensations to that actor and still make the deviating actor better off (Hicks [1939], Kaldor [1939]). Both S4 and S1 are fair in terms of leading to equal utility, but only S1 is efficient. Both actors can easily see that in the cooperative solution they would not only fare better individually if they can ascertain each other of cooperation, but they would also achieve the best overall outcome (in which the experimenter has to disburse them with the biggest
amount). What makes this game interesting in this study is the question of whether it takes a certain amount of deliberative quality in order to achieve this coordination. Turning the perspective, I ask if a low level of deliberative quality can negatively affect the participants’ ability to coordinate.

Compared to PD, the *Chicken* game (CH) deviates only in the position of S4 in the two actors’ preference orders. This set of decisions is the worst option for both actors equally. But choosing No also leads to the best outcome for the one actor who says No if the other actor says Yes. Both S2 and S3 are in equilibrium, yet no simple prediction can be made which of the two outcomes would be chosen. According to the Kaldor-Hicks criterion, all three options but S4 are efficient, yet only S1 is fair. The game was also studied by Rapoport and Chammah (1966) who find that participants tend to appease pre-emptively and therefore S1 is already quite likely even if people cannot communicate. The interesting aspect of this game is the individual temptation to say No, as soon as one assumes that the other actor might say Yes. Since the participants are not allowed to communicate in the original set-up, this perception could be created by diverse points of view: general trust in other people, assuming that the other person will see the optimal solution, assuming that the other person will not dare to crash, and others. In the experiment of this study, the participants have 30 minutes to assure each other of their (intended) cooperation, or they can try to bully the other actor towards working, while they do not work (and are allowed to not do so). The deliberative quality of the communication might depict such behaviour.

Even though the rational-choice predictions of the Nash-equilibrium lead to inferior results, the above games both also include incentives for the actors to cooperate. In PD, S1 has a higher utility for both actors than S4. In CH, threatening not to work might end in the worst outcome for both. Therefore, asymmetry is introduced as a further test, in which one actor has a dominant strategy to say No. There is no ratio-
nalisation of choosing a different strategy. If the advantaged actor decides to deviate from the prediction, other reasons must account for this decision. In this study, asymmetry is defined as different sets of preference orders for the two players as has been done by Zürn (1992), who also introduced the name Rambo-games. Others (e.g. Flood [1952]) have defined asymmetry in reference to the utility but with the same preference orders. Even if Ricky would earn 6 € for each step on the preference order, and Chris would earn 4 €, the strategic constellation would remain the same. I stick with 5 € for each step over all 240 observations and thus follow Zürn’s definition of asymmetry.

Both Rambo games are in equilibrium in S3, since Ricky is always better off if s/he does not take the work-shift, no matter what Chris does. Ricky’s preference order equals the one from PD. Chris, on the other hand, has to take the shift in order to avoid the worst outcome.

In the Rambo-Welfare game (RW), the cooperative outcome (S1) is more efficient than the theoretically predicted outcome (S3). Here Chris also has a dominant strategy: whatever Ricky does, Chris is better off when deciding to work. The Ricky player therefore has the choice between going for his/her best outcome or relinquishing 5 € for the sake of a Kaldor-Hix efficient result (S1), in which the Chris player actually receives 10 € more than in S3 and 5 € more than the Ricky player receives in S1. One could expect that a high deliberative quality of communication can bring to the forefront the actual efficiency gains. Yet this can only come about through the abdication of the strategically more powerful Ricky player. There is no option of a fair solution where both receive the same amount in RW.

In Rambo-Fairness (RF), Ricky’s preference order is the same and s/he therefore also has a dominant strategy to refuse to take the shift. Chris, on the other hand, has the preference order of CH, leading to his/her worst outcome if both agree to let the job at the conference centre go to the external catering service. This puts Chris in defence
4.2 Data: Operationalisation and Description

because s*he knows, that Ricky will not choose Yes by him/herself. Therefore, Chris cannot achieve his/her best outcome (S2). Since this best outcome is dominance eliminated, a rational Chris has to choose Yes. With Ricky deciding not to work, S3 is his/her best outcome and the second worst outcome for Chris, who avoids his/her worst outcome S4. So Chris should always decide to work at the extra shift. Ricky then has the choice between maximising his/her own pay-off or deciding to work and thereby relinquishing 5 € for the sake of a fair result: Chris’ pay-off would rise by that amount to 15 € each in S1. The strategically more powerful Ricky has the choice between two efficient results, one is fair, the other one is in equilibrium. Choosing to say Yes might even incorporate the threat of being ‘played the sucker’ by a very daring Chris who exploits Ricky’s move towards cooperation.

I need to point out that the norms fairness or (welfare) efficiency are not the only explanations that might lead to a cooperative outcome. If we compare PD and CH, the actors risk more, when choosing not to work in CH, as they could run into mutual refusal to work and thus the worst outcome. If risk-aversion is an important driving force for participants’ decisions, it can be assumed that cooperation is more likely in CH. On the other hand, in PD a refusal to work hurts the other actor more. If Chris decides to say No, s*he might run the risk of mutual refusal to work. However, if Ricky does say Yes, Ricky will be ‘played the sucker’, receiving the worst possible outcome. Maybe, Chris refuses to say No because that would risk that Ricky receives his/her worst outcome, assuming that Ricky would not do that to Chris either. Thus, other considerations, such as norms, might lead to cooperation, which cannot be predicted when purely applying the rational-choice model. Engelmann and Strobel (2004) compare the explanatory power of inequality aversion, efficiency and maximin preferences. Although these three cannot be isolated with the simple matrix games used in this study, it might be

\[\text{Table:}
\begin{array}{c|cc}
\hline
Ricky & Chris & \text{work} & \text{not work} \\
\hline
\text{work} & S1 & 3 & 4 \\
 & S2 & 1 & \\
\not work & S3 & 2 & 1 \\
 & S4 & 2 & \\
\hline
\end{array}
\]

\[\text{Rambo – Fairness}

\text{Chris}
work not work
S1 3 4
S2 1
S3 2 1
S4 2

\text{Ricky}
work not work
3 4
3 1
2 1
4 2

\text{I need to point out that the norms fairness or (welfare) efficiency are not the only explanations that might lead to a cooperative outcome. If we compare PD and CH, the actors risk more, when choosing not to work in CH, as they could run into mutual refusal to work and thus the worst outcome. If risk-aversion is an important driving force for participants’ decisions, it can be assumed that cooperation is more likely in CH. On the other hand, in PD a refusal to work hurts the other actor more. If Chris decides to say No, s*he might run the risk of mutual refusal to work. However, if Ricky does say Yes, Ricky will be ‘played the sucker’, receiving the worst possible outcome. Maybe, Chris refuses to say No because that would risk that Ricky receives his/her worst outcome, assuming that Ricky would not do that to Chris either. Thus, other considerations, such as norms, might lead to cooperation, which cannot be predicted when purely applying the rational-choice model. Engelmann and Strobel (2004) compare the explanatory power of inequality aversion, efficiency and maximin preferences. Although these three cannot be isolated with the simple matrix games used in this study, it might be}

\[\text{19 With maximin preferences, actors prefer to maximise the utility of the person that is worst off. In Engelmann and Strobel (2004), the personal gains are not affected by that choice.}

117
4 Design and Data

possible to test if the rate of cooperation is bigger in PD, compared to CH. If that is the case, one could carefully conclude that participants abide by their maximin preferences and are, thus, not willing to defect if the other player will get the worst outcome due to their refusal to work. I need to raise the awareness that choosing simple and commonly known matrix games for the mentioned reasons (possibility of translating the monetary interests into a story and restricted options to choose from for the participants – see Section 4.1.1) comes with the downside of not being able to completely isolate the effects of specific potential explanations that are inherent in the strategic set-up of the games. However, since I compare observations of high and low deliberative quality, while controlling for the specific preference constellations, I argue that isolation (of the potential explanations why specifically the actors decide to take the shift at the conference centre or not) is not the prime focus of this research project.

Of the 240 observations each preference constellation is played 60 times. Before the participants enter the lab, the experimenter rolls an equal-shaped 12-sided dice (using 3 numbers for each constellation) until the target number is reached. Thereafter, instead of running a 61st observation, the dice roll is repeated until all preference constellations are played 60 times. With the interests being a matter of design, no descriptive statistics are presented here.

4.2.3 Subject Pool and Control Variables

Due to the self-selection of the participants it is important to have a look at the subject pool in order to get an idea about the external validity of the study. Who participates in this study and how do the participants differ from a representative pool? Recruitment to the study was exclusively done at the University campus – mainly by an information brochure and subscription to an online allocation platform but increasingly also by personally approaching people and asking them to participate. Thus, some participants were not students but worked in the university administration or were guests. In addition, it might be important to know if there are any study areas that dominate the subject pool.
In order to approach such questions, I ask the participants at the beginning of the experimental session – before they read the conflict story – for their age, gender, field of study, and the degree they are attaining at the moment. In addition, I ask the participants, how well they know each other. A personality test – NEO-FFI (Borkenau and Ostendorf 2007) – constitutes the largest part of the pre-discussion questionnaire. This test assesses five personality traits: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness.

Some of these variables can serve as control variables. In addition to the influence of interests, other factors might influence the participants’ choices, willingness to share information or assessment of the process and thus confound the effects. The pre-discussion decisions as important confounding variables that should be controlled for are presented in Figure 4.5 in Section 4.2.4.

Table 4.4: Gender Distribution

<table>
<thead>
<tr>
<th>Ricky ↓ Chris →</th>
<th>female</th>
<th>male</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>female</td>
<td>85</td>
<td>47</td>
<td>132</td>
</tr>
<tr>
<td>male</td>
<td>53</td>
<td>55</td>
<td>108</td>
</tr>
</tbody>
</table>

First, I present the gender of the participants. Table 4.4 gives an overview. When controlling for gender in the statistical models, the variable is included for both roles and the interaction of both participants being male is also included in the models. More women take part in the study but the distribution does not suggest that there is a serious recruitment bias in respect to the participants’ gender.

Second, the age of the participants is assessed. Since a considerable number of participants decide not to answer this question (before it is made compulsory at a later stage of the data collection), five age groups are identified, according to the normalization age groups that are used in the personality test (Borkenau and Ostendorf 2007): < 20; 21 – 24; 25 – 29; 30 – 49; >50. Where age is not given, participants are manually

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Since the University of Konstanz is a rather small university, one cannot be sure, that people do not know each other, when they enter the lab. This is especially the case, because more than 25 % of participants study politics and administration – 26 pairs. In addition, some participants even try to self-select themselves into observations with friends.
4 Design and Data

Table 4.5: Age Group Distribution

<table>
<thead>
<tr>
<th></th>
<th>&lt;20</th>
<th>21 – 24</th>
<th>25 – 29</th>
<th>30 – 49</th>
<th>&gt;50</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky ↓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>23</td>
<td>34</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>69</td>
</tr>
<tr>
<td>21 – 24</td>
<td>23</td>
<td>60</td>
<td>18</td>
<td>5</td>
<td>1</td>
<td>107</td>
</tr>
<tr>
<td>25 – 29</td>
<td>10</td>
<td>22</td>
<td>17</td>
<td>0</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>30 – 49</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>&gt;50</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Sum</td>
<td>60</td>
<td>119</td>
<td>48</td>
<td>10</td>
<td>3</td>
<td>240</td>
</tr>
</tbody>
</table>

placed in one of the groups according to further information provided in their answers such as the number of semesters studied. The age groups distribution of the participants is presented in Table 4.5. The age group is used as a control variable for both roles and I also include the difference in age between the two participants using the values of the age groups in the models. Most participants are between 21 and 24 and a considerable number of participants are 20 or younger. Less than 30 participants are above 30, five of which are 50 or older. Apparently, students who are in their early semesters are more willing to participate. This observation is supported by a majority of 277 participants pursuing a Bachelor degree. 59 participants are on the master level and 88 are preparing for the Staatsexamen (studying law or becoming a teacher). Two cases still are enrolled in a diploma study and 25 PhD candidates participate. 29 do not give a reply on this question of which 28 state that they do not study in the respective question (452 replied yes).

As mentioned above, it is not feasible to prevent participants who know each other from participating in the same experimental session. I therefore assess how well they know each other through their response in the questionnaire. They are asked to choose the best fitting one from nine different statements about the other participant. This acquaintance variable is distributed as follows: never seen before: 370 — seen before: 8 – talked to each other before: 10 — visited the same seminar: 8 — worked together: 4 – acquaintance: 13 – visited each other at home: 4 - good friends: 63. Of the 240 pairs, 218 agreed on their definition. Most discrepancies come from some who have seen the other but not vice versa. The definitions of friends and acquaintances is also not always mutual: Of the 63 cases in which good friends is chosen, 26 pairs (52 individuals) agree.
4.2 Data: Operationalisation and Description

The following categories meet good friends: had a seminar together: 2 — worked together: 1 — acquaintance: 5 — home visit: 3. In the models of Chapters 5 through 7, this measure is used in a dichotomised version with 1 = “never seen before” and 0 = all other categories.

Especially in behavioural economics, results sometimes differ when the subject pools consist only of economics students or no economics students. I therefore ask what main subject the participants study. Due to the recruitment mechanisms, such as advertising in lectures of the department, 132 participants study politics and administration. The second biggest group are law students (56); followed by psychology students (36); and students studying one of the different economics studies (36). Combining literature with language and culture students amounts to 70 participants in total. The natural sciences (including biology, physics, chemistry, life science, sports, and others) total to 49; students of philosophy, sociology and history amount to 43 in total; and the combined group of mathematics and various IT studies has 21 participants. The 28 non-students of course give no response, and the remaining 9 students could not be grouped into any of these categories above. If testing the study background as a potential confounding variable, it is dichotomised to a meaningful separation, as is described in the respective chapters.

60 questions in the pre-discussion questionnaire are combined in the five dimensions for assessing personality. The results are then normalised according to the published tables that take age and gender into consideration. In Figure 4.4 the histograms of the standardised NEO-FFI dimensions are shown, where mean and standard deviation are set according to Borkenau and Ostendorf (2007). Thus the mean values in this study differ slightly from zero, but the participants are not significantly different from the comparison population. When controlling for the various personality dimensions in the statistical models, I consider the personality to play a role irrespective of the population norms in the respective dimensions. Thus, I use the non-standardised values, as age and gender are already included in the models.

In the post-discussion questionnaire, I ask how likeable the participants perceived the other participant. As a control variable, this perception is very difficult, because
it is asked after the decision has been made and the discussion ended. However a sense of congeniality develops over time. So the value that is reported is the result of an adaptation throughout the complete experimental session, from first sight to the discussion (in which the participants are told to remain in their given role\textsuperscript{21}). In Table 4.6, the numbers are presented. Most participants liked each other. The overall level of Ricky-players liking Chris-players and Chris-players liking Ricky-players does not differ. What is quite striking is the fact that the bottom right corner (uncongenial and very uncongenial) has not a single case. So, the few players who report not liking their experimentation partner are generally liked in return.

With the above list of variables, I can control for quite a number of potential confounders, but there are still variables that could influence either or both the dependent variables and the interaction of the participants. For some, such as political attitude

\textsuperscript{21} However, at least in one case the participants seemed to like each other so much that they decided to exchange real phone numbers at the course of the discussion. As they continued acting their role, the experimenter decided not to intervene.
or intelligence, I do not use available measures in the questionnaire, so that the time of one observation does not last longer than 90 minutes. For others, there is just no generally accepted way to measure these confounding factors: How well are the participants able to play a role? And to what extent can interests be induced? I need to consider, why people participate at the experiment in the first place, and how much they value the money they can earn? Finally, as I argue in the theory chapter, some people are more likely than others to abide by certain norms in their real life. For some, selfish behaviour is more acceptable, while others proclaim it unthinkable that anyone would refuse to share the burden of a situation into which they are placed. This type of attitude might be important for the participants’ choices of action and cannot be controlled effectively. A strategy for dealing with these unobservable potential confounders – namely the use of an instrumental variable – is the topic of Section 6.5 in the substantive outcomes chapter.

### 4.2.4 Dependent Variables

In this last subsection of the data section, I introduce the variables that I prescribe to being affected by deliberative quality in the theory chapter. The hypotheses are grouped in three sets of variables which deal with the sharing and processing of information, the actual decisions that are being taken and the conviction of the participants to have decided in the best possible way – a concept that I call consensus in accordance with the theoretical conceptualisation. In the following parts, the variables used to measure the outcomes of the communicative processes are described in accordance with the
conceptualisation from Chapter 3 and operationalised. In addition, I present descriptive statistics of these variables to give an overview of the data that is supposed to be explained by the level of deliberative quality. In each part, I present tentative interpretations of the observed patterns and assess some implications on the statistical models that follow in Chapters 5 through 7.

**Information Sharing**

With Hypotheses H1 and H2, I want to assess the sharing and processing of information. All the information available to the participants is the description of the conflict which both participants read before the communication phase. Most of the information is common knowledge. Both participants are told why the roles they represent are asked to take the shift at the conference centre and how long this job takes. They also get to know the preference order of the other participant so that they have a truly strategic situation in which they cannot misrepresent their preferences for private gain - even though the reasons for the preferences are not shared to the other participant. However, in addition to the given information, they are also explicitly told that they are allowed to invent details as long as they do not contradict their role descriptions.

Private information is then included by adding one piece of information to each of the participants’ conflict descriptions that the other participant is not aware of. The participants are made aware that the other actor does not know this particular detail. In addition, this specific piece of information is not supportive of their interests.

Ricky’s additional piece of private information mentions that the dish-washer at the conference centre is damaged and that, therefore, whoever will take the shift will have to spend the 30 minutes break in between the coffee breaks with washing the dishes. Whoever works, therefore, does not have enough spare time for completing his or her individual task while the seminar sessions are running. If Ricky wants Chris to take the shift, s/he should not mention the dish-washer, because then s/he could argue that there is spare time between the breaks for planing the rock climbing tour.
4.2 Data: Operationalisation and Description

Chris receives a piece of private information that is of a more personal nature: the seminar that takes place at the conference centre is organised by the foundation of rock-climbers, and thus Chris was thinking of attending the seminar anyway, if s*he had had enough time and money for the fee. If s*he were to take the shift, s*he would hope to be able to listen in on some of the talks and could benefit from that.

The shared information variable is coded as 1 if the actor mentions this piece of information and 0 otherwise. The variables can be used separately or they can be aggregated over both roles: in that case, the coding is 0 for no information shared, 1 if either of the two participants decides to mention their piece of information, and 2 for both pieces of information being shared.

The processed information variable is slightly less straightforward, even though the coding is the same. It depends on manual coding and a certain amount of interpretation of the coder when deciding whether Chris actually realises the implication of Ricky’s information and vice versa. This realisation can only be found, if explicitly dealt with in the discussion. Four student assistants have been trained in this task. If they were not sure, they coded 0.5 so that ambiguous cases could be discussed and resolved in the group. It is coded 1, if the respective participant mentions the information and reflects on its consequences. A Chris could for example say that in the case of the damaged dishwasher, s*he would not have time to do his/her individual task if s*he does not have the break as expected. A Ricky might mention that Chris could get help from the participants at the seminar for planning his tour. If nothing accordingly is mentioned, the variable is coded 0. Two versions of this variable exist: processed is coded 0 irrespective of whether the information was shared or not; processed if shared is coded 0 only if the information was shared and missing (NA) if not.

In Hypotheses H1 and H2, I conjecture that a high level of deliberative quality increases the probability of private information to be articulated and to be processed. Here, I present the number of games, in which the information about the dish-washer and the topic of the seminar is articulated and is integrated in the strand of argumentation.
4 Design and Data

Table 4.7: Overview of Shared and Processed Information

<table>
<thead>
<tr>
<th></th>
<th>Dishwasher</th>
<th></th>
<th>Seminar</th>
<th></th>
<th>Aggregate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>shared:</td>
<td>182</td>
<td>58</td>
<td>103</td>
<td>137</td>
<td>32</td>
<td>131</td>
</tr>
<tr>
<td>processed:</td>
<td>152</td>
<td>88</td>
<td>50</td>
<td>190</td>
<td>73</td>
<td>132</td>
</tr>
<tr>
<td>processed if shared:</td>
<td>152</td>
<td>30</td>
<td>50</td>
<td>53</td>
<td>41</td>
<td>132</td>
</tr>
</tbody>
</table>

Note: Overview of the number of experimental observations in which Ricky and Chris share and process their private information.

In Table 4.7 Ricky’s piece of information about the dishwasher being damaged can be observed to be shared more widely than Chris’ piece of information about the seminar being interesting for him. In less than one fourth of the games, Ricky does not mention the dishwasher. Chris on the other hand refuses to mention the seminar topic in more than half of all games. In addition, only in 30 cases, in which the dishwasher is mentioned does Chris not show understanding of the consequences. This makes only 16.4 %. On the other hand, Ricky does not reflect on the consequences of the seminar topic in more than half of the cases, in which this particular piece of information is shared (53 out of 103). In Table 4.8 crosstables of these informations are presented that consolidate this observation: mentioning the dishwasher does not coexist with a higher number of mentioned seminars, while when the seminar is mentioned 74.8 % of the cases also see the dishwasher being mentioned. When looking at the processing of information, we can observe that the processing of the dishwasher seems to be affected by mentioning the seminar. When the seminar is mentioned, 7 times more Chris-players reflect on the dishwasher while only four times more Chris-players reflect on the dishwasher when the seminar is not mentioned. On the other hand, if Ricky mentions the dishwasher, his level of processing the seminar information is almost equal among those cases in which the seminar is processed or not. There appears to be a slight effect of not mentioning the dishwasher, since in 16 cases, the seminar topic is not processed as compared to 10 cases, where it is processed.

Summarizing these observations, the dishwasher information is a lot more important in the discussions than the seminar information. Some potential reasons have to be
4.2 Data: Operationalisation and Description

**Table 4.8: Crosstables of Shared and Processed Information**

<table>
<thead>
<tr>
<th>Shared Information</th>
<th>Dishwasher</th>
<th>Yes Yes</th>
<th>Yes No</th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Seminar</td>
<td>Yes</td>
<td>77</td>
<td>26</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>105</td>
<td>32</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>182</td>
<td>58</td>
<td>240</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Processed Information (if shared)</th>
<th>Dishwasher</th>
<th>Yes Yes</th>
<th>Yes No</th>
<th>Yes NA</th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Seminar</td>
<td>Yes</td>
<td>35</td>
<td>5</td>
<td>10</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>33</td>
<td>4</td>
<td>16</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>84</td>
<td>21</td>
<td>32</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>152</td>
<td>30</td>
<td>58</td>
<td>240</td>
<td></td>
</tr>
</tbody>
</table>

Note: Crosstables of the number of experimental observations in which Ricky and Chris share and process (if shared) their private information.

mentioned before analysing if these variables are affected by the level of the deliberative quality of the two participants’ communication. First, the dishwasher information has much more to do with the actual task that the two participants have to decide about. They have to discuss and organise their work-shift and will therefore more naturally talk about the dishwasher as well. The seminar topic, on the other hand, might be considered irrelevant information since Ricky is in no way affected by this information. In addition, after observing some of the discussions in the experimental sessions the strategic use of the two pieces of information proved to be skewed. By mentioning the seminar topic, a Chris player could not make use of this information in order to sway the other player to work, as Ricky is not affected by this detail. On the other hand, the dishwasher could be shared strategically by a Ricky player. If a Ricky player decided to consider saying yes, the information about the dishwasher could be used to justify why working alone was not acceptable while working together would be beneficial for both. Therefore, when analysing the effect of the deliberative quality of communication on the sharing and processing of information, one has to consider the seminar topic as a harder case for controlling for the influence of interests on the sharing of information.
Substantive Results

Hypotheses H3 (a,b), H4 and H6 (a,b) talk about the results that come from the individual decisions. (Hypothesis H5 prepares for H6, but uses the deliberative quality as a dependent variable.) After the discussion, each participant has to choose between taking the shift at the conference centre or not. This leads to a 2-by-2 decision matrix and four possible outcomes as discussed in Section 4.2.2. This decision is taken at three points in time (T0, T1, and T2), as described in Section 4.1.1. For the analysis in Chapter 6, I look at T0 as a control variable and regress T1 (decision at the table) and T2 (decision after returning to the PC) individually on the deliberative quality of communication.

When introducing the different preference constellations in Section 4.2.2, I explain that such games are used in which the solution S1 (both players decide to work) deviates from the Nash-equilibrium, because S1 is the more efficient or fairer outcome. S1 is in fact always among the fairest and most efficient possible outcomes, but if there is another fair outcome S1 is more efficient and if there is an equally efficient outcome, S1 is the only fair outcome among the equally efficient ones. Thus, in the first step of analysing the effect of the deliberative quality of communication on the substantive outcomes, I ask if solution S1 is achieved or not. I call S1 the cooperative solution, as both actors have to decide to work together. I code S1 as 1 and all other outcomes as 0. This dichotomous measure draws logit models for assessing the hypothesised effect. In total, 206 of the 240 observations (86%) end in S1 at the table (T1). And 183 pairs (76%) cooperate after returning to the PCs (T2). Before communication (T0), the number is much lower: 104 pairs (43%) decide to cooperate. The absolute numbers of all individual decisions on the pair level (T0 - T2) for the four different preference constellations are presented in Figure 4.5.

In Hypotheses H3a and H6a, I ask if the probability of reaching a welfare-efficient result is affected by the deliberative quality. I test these hypotheses both at T1 and T2. Practically, this means that for each outcome, I add up the rank orders of the preferences. Adding up ranks is problematic, however, as rank orders are generally ordinal...
4.2 Data: Operationalisation and Description

scaled, and thus the difference between 1 and 2 might not be as large as the difference between 3 and 4. In addition, the rank orders of the two actors do not have to reflect an equal utility. However, since each upwards step in the rank order is translated to a gain of 5 € an interval scale, which is also comparable for both actors, is assumed at this point. Yet, it is important to remain aware of the problems inherent by the discrepancy between reimbursements and induced utility, which are mentioned in Section 4.2.2.

Irrespective of the four different preference constellations, the efficiency value ranges from 2 to 7. The mean value over all games is 5.73 at T0; 6.15 at T1; and 6.08 at T2.

In Hypotheses H3b and H6b, the question is if the deliberative quality affects the probability of reaching a fair result. Fairness is conceptualised with equality. The operationalisation of a fair result reflects the difference of the actor’s ranks in each outcome being zero – so the smaller the difference the fairer the result. Considering the four different games, the fairness value ranges from 0 to 3, with 0 being the fair result and 3 the least equal. The mean value over all games is 1.17 at T0; 0.43 at T1; and 0.68 at T2.

In Hypotheses H3 and H6, I conjecture a positive relationship between the deliberative quality in the negotiation process and the likelihood of fair or welfare efficient results. I also focus on the role of asymmetry. Before that, I observe the participant’s choices at T0 in Hypothesis H4, suggesting that the level of cooperation is smaller in the asymmetric games. In the 240 sessions, 480 participants decide if they will carry out the (fictitious) task of catering at a conference centre. Before being allowed to communicate, 318 participants (66%) decide to work. This number increases tremendously, when deciding at the table, where the other participant is able to observe the decision. At this point in the experiment, 447 participants (93%) decide to work. After they return to their PCs, the number of people stating that they will actually work slightly decreases again: 421 participants (88%) decide to attend the work shift at the conference centre.

These results are most interesting, when taking the strategic situation into account, and observing the decisions also in relation to the given preference constellations. In total, 60 sessions for each of the four preference constellations Prisoner’s Dilemma (PD), Chicken (CH), Rambo-Welfare (RW) and Rambo-Fairness (RF) are presented. In Figure 4.5,
I show the number of experimental sessions that result in the four solutions at the three points of decision making in the experimental sessions, separated into the four preference constellations.

In the left column of Figure 4.5 many differences in the game-theoretic models can be observed before communication (T0). While PD appears to be almost equally distributed over all four solutions, the cooperative solution dominates in CH. Only in the two Rambo games, the predominant solution is the Nash-equilibrium – bottom left corner, where Ricky decides not to work and Chris takes the shift. Interestingly in RF,
being dominated leads to a high rate of working for the Chris-players, while having a dominant strategy does not have such a pull towards not working: two out of five Ricky players still decide to work, even though this means that they do not choose their best outcome. In RW this distribution is similar. Here, it is even more surprising since Chris actually has a dominant strategy to work – he is always better off when taking the shift, no matter what choice Ricky makes, leading to a situation, where Ricky’s decision to work makes Chris better-off than even Ricky himself.

In the middle column of Figure 4.5, the results at the negotiation table are presented (T1). The participants were not informed about each other’s decisions at T0 and only very few mentioned their previous choice at the discussion table in the form of saying that they would not have come to work, if they had not been able to finally meet up to discuss the problem. The striking – even if not really surprising – observation is the power of communication to move people to a cooperative solution. In PD, only one Chris still insists on not taking the shift. In CH three participants playing Ricky singularly decide not to work while in one experimental setting, both participants decide to crash into each other accepting their worst outcome. Unsurprisingly, RW does not see any Chris not taking the shift. Yet the number of Rickys’ decisions to take the shift increases by 20. However, the 17 decisions not to work are still the highest rate of refusals to take the shift among all decisions at the table. This might reflect the above-mentioned problem that a decision to work by a Ricky makes the corresponding Chris even better off than Ricky him-/herself, while Ricky does not have any incentive to take the shift if s/he wants to maximize his/her own pay-offs. Accordingly, the Rickys’ rate of not taking the shift in RF is lower, but still higher than in any of the symmetric games.

In the third column, the results of the decisions taken at the PC-equipped work station (T2) are presented. At the time of decision, the participants are no longer allowed to talk to each other but are still sitting in the same room. They are also told beforehand that they will be bid farewell individually, leaving through another door, once they finish their final questionnaire. Overall, the number of participants that decide to change their minds is considerable. The number of decisions not to work does not rise
back to the level before communication, but the agreements at the table are not always stable either. However, outcomes in which both participants refuse to take the shift still remain rare. In PD and CH, decisions not to work by only one participant happen with a slight majority of Rickys refusing to actually take the shift. In the asymmetric games, the difference between the solutions at the table and afterwards are the least striking. Only four more Rickys refuse to work after agreement in RW, while in RF even two participants playing Chris refuse to actually take the shift in order to gain a better outcome. They do so even at the risk of ending up in the worst solution if the Ricky player should decide the same. Only 3 more Rickys decide not to work as compared to T1.

Overall, these numbers suggest that communication does indeed play a major role in coordinating people’s decisions to overcome their self-interests for the achievement of a common good. The next step in Chapter 6 is to assess if the variance in decisions can be attributed to the deliberative quality of the discussions at the negotiation table.

Consensus

In Hypotheses H7 through H10, I claim that the deliberative quality of communication positively affects consensus. However, in a debate with two participants, consensus – in the common use of the term – is obsolete, since the two actors either agree or not. This is why it is important to remember that consensus in this dissertation is not understood as the opposite of a majority decision, in which not all actors have to agree in order to find a solution. Rather, consensus is defined as gained unanimity due to shared reasons after a process of autonomous will-formation. It is important to focus on the process of achieving a unanimous decision, rather than being of a same mind already from the beginning. The term consensus also needs to be distinguished from a solution to a conflict, where one person agrees for other reasons than their own conviction.

In the theory chapter, I argue that the circular argument that consensus is defined as the result of genuine debate can only be broken when conceptualising consensus – as a dependent variable – as two observations: 1) the participants make the same


### 4.2 Data: Operationalisation and Description

#### Table 4.9: Patterns Across the Three Decision Points

<table>
<thead>
<tr>
<th></th>
<th>Prisoner’s Dilemma</th>
<th>Chicken</th>
<th>Rambo-Welfare</th>
<th>Rambo-Fairness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T0 ↓ T1 →</td>
<td></td>
<td>T0 ↓ T1 →</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S1</td>
<td>S2</td>
<td>S3</td>
<td>S4</td>
</tr>
<tr>
<td><strong>Prisoner’s Dilemma</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0 ↓ T2 →</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>∑</td>
<td>48</td>
<td>4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>S1</td>
<td>14</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>S2</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>S3</td>
<td>15</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>S4</td>
<td>12</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note:** Rows are decisions at T0 (decision before communication), columns are decision patterns of T1 (decision at the table) and T2 (decision after returning to the PC). S1 - S4 are the possible outcomes: S1 = both Ricky and Chris choose work; S2 = Ricky chooses work, Chris chooses not work; S3 = Ricky chooses not work, Chris chooses work; S4 = both Ricky and Chris choose not work.

choice after leaving the negotiation table as they have agreed upon at the table and 2) the participants are of the opinion that they are convinced to have decided in the best possible way.

First, in Hypotheses H7 and H9, the dependent variable is the consistency of choice. Since the actors are asked to decide for a last time at the PC-equipped work station, I can compare the results at the table (T1) and the ones taken at the PC (T2), controlling for their initial choice (T0). This variable receives the value 1 if T1 equals T2 and 0 otherwise. In total, 198 pairs (82.5 %) did not change their decision after returning to the PC, and in 44 observations at least one participant changed his/her mind. Among them, in two cases both players decided to defect from the cooperative solution. Of the 198 consistent choices, 171 remained at the cooperative solution (S1). Of these 171 cases, 90 had already chosen S1 at T0.
Some interesting patterns should also be mentioned: One Chicken game ended in S4 at the table – the worst outcome for both – but moved to S2 with the Ricky player deciding to go to work in the end. The one S4 result after returning to the table was the result of mutual defection after agreement on the cooperative solution was found at the table. In addition, among the Rambo games, there was one agreement in S4 at the table (T1). In this game, the Chris player realised that deciding to work increases his/her pay-off and thus moved to S3 by deciding to work anyway at T2. Moreover, two other participants playing Chris decided to defect at T2 from the cooperative solution at T1 in RF – sending the respective Ricky-player home with the basic payment of 5 €. In RW, five Rickys decided to defect at T2 after the agreement to cooperate at T1, while one Ricky decided to cooperate at T2 after having managed to convince his/her respective Chris of choosing S3 at the table (T1). In RF, there was also one case with the same pattern (S3 → S1) and four Rickys realising their advantage of being able to move to S3 (S1 → S3), all of which were at S3 before communication (T0). One other case moved from S1 to S3, but already at the table, and remained stable at S3 when returning to the PC.

Second, for the conviction of having decided in the best possible way (testing Hypotheses H8 and H10), I ask the participants if they are satisfied with their results. Four questions concerning the participants’ satisfaction were included in the post-discussion questionnaire. The satisfaction items serve as indicator variables for the conviction of having decided in the best possible way. I do not ask explicitly if participants feel that they have decided in the best possible way, because such phrasing would potentially trigger an instrumental understanding of the question. This could unintentionally place reference to the expected pay-off.

Each item is measured on a 5-point-scale, where 5 equals “very satisfied” and 1 equals “not at all”. It is important to keep in mind that these questions were asked after the participants have made their final decision (and might have defected from the agreement) but before they get to know the final decision of the other player. This means that they do not yet know how much money they will receive upon leaving the lab.
4.2 Data: Operationalisation and Description

(Q1) The first question asks for the participants’ satisfaction with the way or the procedure of arriving at the solution at the table (Wie zufrieden sind Sie in Ihrer Rolle mit der Art und Weise/ dem Verfahren, wie es zu Ihrer Entscheidung kam?). Of the 480 participants, one Ricky and one Chris (from different observations) chose not to answer this question. The remaining 478 participants used the whole range from 1 to 5 with a mean value of 4.01 and a standard deviation of 0.94. The Ricky and Chris players do not differ significantly, both in paired and non-paired t-tests. The worst value (1) is not chosen by any Ricky players.

(Q2) The second question targets the participants’ satisfaction with the result that they have achieved in their prescribed role. (Wie zufrieden sind Sie in Ihrer Rolle mit dem Ergebnis, das Sie für Ihre eigene Position erreicht haben?). The mean value is 3.87 with a standard deviation of 0.91 and no missing values. Chris and Ricky do not differ significantly. Players of both roles choose the complete range from 1 to 5.

(Q3) Third, the satisfaction with the outcome for both participants is of interest (Wie zufrieden sind Sie in Ihrer Rolle mit dem Ergebnis, das Sie als Verhandlungspaar erreicht haben?). In contrast to question 2, the participants are asked to focus on the group result rather than on their individual satisfaction. Here, the satisfaction level is highest among the four questions: the mean value is 4.31 with a standard deviation of 0.83. One Ricky decided not to answer but both roles receive values over the whole range: 1 to 5. No significant differences between the two roles can be found.

(Q4) Finally, the participants are asked to state their satisfaction with the result as the actual person, setting the prescribed role aside (Wie zufrieden sind Sie persönlich außerhalb der Rolle mit dem Verhandlungsergebnis?). With this question, the participants are asked for the first time to reflect on the negotiation process as themselves and detach from the role they were given. The satisfaction level is similar to the other questions: the mean is 4.06 and the standard deviation is 1.05. One Ricky does not reply, and there is no significant difference between the two roles. All possible values are selected by participants playing both roles.
In order to get an overview of the different satisfaction questions, I run two-sided t-tests for each combination of variables. Of these four variables, the satisfaction for the result as a pair (Q3) is significantly highest, compared to each of the other questions. The satisfaction with their individual result (Q2) is significantly lowest. Q4 (satisfaction detached from the role) is higher than Q1 (satisfaction with the procedure), but the difference is not significant. This result is quite telling, since the greatest difference is between the satisfaction for the individual and the satisfaction for the group (i.e., pair). Apparently, the participants can distinguish well between the two perspectives and value the group performance higher than the individual performance. Considering the high number of cooperative solutions (S1) at the table, one can interpret these numbers as the realisation of the participants that they could have achieved more individually but refrained from doing so for the sake of the group. Since all satisfaction levels are generally high, however, I want to refrain from overemphasising this point.

For all four questions, the unit of analysis is the individual participant. In Chapter 7, I first assess the four items individually. I then also test, if a latent satisfaction variable, capturing the essence of consensus as defined in this thesis, is affected by the deliberative quality of communication. To this end, I test if the four variables can be combined into one factor. Among four eigenvalues of the correlations of the standardised variables only one is bigger than 1. It already explains 60.5% of the variance. It is thus acceptable to assume that one factor is enough to combine the data. I use confirmatory factor analysis (CFA) in order to calculate factor scales which are used as weights for predicting the values of the latent overall satisfaction variable. Since none of the four variables are theoretically outstanding, I fix the variance of the latent variable at 1, allowing the four indicator variables to influence the latent variable freely. Although the four variables are not multivariate normal according to the appropriate tests, I accept 476 cases to be a high enough number to allow a normal ML-estimation, as this number is greater than five times the degrees of freedom (df = 2). Kurtosis and Skewness-values are within the respective bounds. The model fits are all acceptable: the $\chi^2$ test statistic shows a non-significant difference between the observed and the expected covariance matrix. The comparative fit index (CFI) is at 1.0, the Tucker-Lewis index (TLI) at 1.006. The Root Mean Square Error of Approximation (RMSEA) is virtu-
ally zero and the Standardized Root Mean Square Residual (SRMR) is 0.008. This is all very far from the cut-off criteria according to Hu and Bentler (1999). All factor scales are significant. They affect the latent satisfaction variable as follows: satisfaction with procedure (Q1): 0.74; satisfaction with individual result (Q2): 0.63; satisfaction with the result for the group (Q3): 0.58; and the satisfaction detached from the role (Q4): 0.60. The predicted values have four missing values (1x Chris; 3x Ricky). Due to the standardisation process of the model, the mean value is 0. However, values range from −3.14 to 1.15. Figure 4.6 shows the histogram of the latent satisfaction variable.

![Satisfaction Histogram](image)

**Note:** The red line in the histogram is the density function of the normal distribution with mean and standard deviation of the variable.

**Figure 4.6:** Histogram of the Predicted Values of the Latent Satisfaction Variable

Overall, both the decision patterns as well as the satisfaction values lean towards a rather high level of consensus as is conceptualised in this dissertation. Still, there is enough variance worthwhile to be explained. In Chapter 7, I assess if this variance can be explained by different levels of the deliberative quality of communication and/or by the different preference constellations.

### 4.3 Summary and Discussion

This design and data chapter sets the stage for all analyses that follow in Chapters 5 through 7. After having derived a number of testable hypotheses in Chapter 3, I
present here the strategy for testing the theoretical propositions. In the first part of this chapter, I begin by introducing the general idea of how one can actually assess the effect of deliberative quality. I conclude that running a combination of experiments with laboratory observations is the best approach when considering a balance between the theoretical reach and the empirical rigour of control. So the data collection is steeped in a considerably large number of cases and a great freedom of the participants to act within certain boundaries. The idea is that communication should not be restricted to a point where participants are no longer free to talk as they would in real life, in order to be able to measure the deliberative quality of their conversations in such a way that reflects the major theoretical aspects of deliberation. On the other hand, the possible outcomes that are supposed to be explained need to be restricted. Each participant has the choice between two options. These options are set in different strategic contexts, described by four different preference constellations, so that the effect of the deliberative quality can be assessed against the backdrop of strategic considerations of self-interest. I also make use of the great advantage of working in a laboratory, which ensures that a great number of variables that might influence the results can be held constant.

In the second part of this chapter, I describe the generated data. First, I describe deliberation on the basis of 4 indicators that represent the four theoretical dimensions justification, participation, respect, and accommodation. I then show with confirmatory factor analysis that it is not unreasonable to use these items as indicators of deliberative quality as a latent variable. Although I do not necessarily assume that the very specifications of my measuring model are able to travel from this research endeavour to other projects, I still show that confirmatory factor analysis (CFA) is a reasonable method for aggregating language data that is used to measure deliberative quality.

Second, I defend the use of simple game theoretical 2-by-2 matrix games as a way to include interests as a backdrop against which the effect of deliberation can be measured. The most important aspect in this subsection is the fact that preference orders are used in order to induce interests that travel from the idea of the researcher to the understanding of the experimental subject.
4.3 Summary and Discussion

In the third subsection, I describe the people that participate in this study. No remarkable observations had to be made: the gender balance is reasonable, most participants are between 20 and 30 years old, and they are slightly less neurotic and more agreeable than a representative sample would be. Due to recruitment practices, the majority of participants study political and administrative science. Most of the subject pairs do not know each other, but it was not possible to completely eradicate the possibility, so that some good friends participate at the experiment together.

Finally I introduce the dependent variables. The first set of hypotheses claims that information sharing is dependent on the deliberative quality of communication. From the descriptive data, I can already conclude that one piece of information (the broken dishwasher) was more likely to be shared than another (the topic of the seminar). Some potential explanations for this pattern are mentioned, but the question still remains, if the variance can be explained by the level of deliberative quality. This question is tackled in Chapter 5. One more observation that does not come by surprise is the level of information processing. This is considerably lower than the sharing of information, but again the dishwasher is more likely to be processed than the topic of the seminar.

The second set of hypotheses comes to the heart of this research endeavour. I present how the participants decide under the influence of the four different preference constellations at three different points of the experiment. The most striking observation is the level of cooperative behaviour, when comparing the decision before communication is allowed (T0) and at the table (T1). It is not surprising that communication increases the level of cooperation, but it is noteworthy how this effect differs among the four preference constellations. Another observation here is the possibility of changing ones mind (at T2). At face value, the symmetric games (and among them, especially the Prisoner’s Dilemma) appears to be less stable than the asymmetric games after a conclusion was reached. In Chapter 6, I present the results of the analysis concerning the question of whether the deliberative quality can be used as an explanation for these phenomena.

The third set of hypotheses deals with the participants acceptance of having agreed on the best possible solution. I find a sizeable level of satisfaction and consistency of
4 Design and Data

choice. Still, there are differences that await explanation. In Chapter [4], I wonder and assess if this variance can be explained by the level of deliberative quality.
5 Deliberative Quality and the Sharing and Processing of Information

Is the sharing and processing of information affected by the deliberative quality in a negotiation process? This chapter engages in answering this question. It is the first of three chapters testing the hypotheses which have been derived from the theory of communicative action in Chapter 3.

In the following sections, I first present the equations of the statistical models that are used for calculating the correlation between the level of deliberative quality and the probability of sharing and processing private information. In Chapter 4, I explain why it is infeasible to assess all information that is being shared within the 30 minutes of discussion. For these reasons, I introduce in Section 4.2.4 two pieces of private information that are given to the participants: the malfunctioning dish-washer and the topic of the seminar. The level of deliberative quality is included in the models as the overall index and as the individual indicators justification, respect, participation and accommodation.

In the second section, I elaborate on Hypothesis H1 and present the results of the calculations. From the theory of communicative action and from the discussion about the hidden profile experiments, I assume that a higher level of deliberative quality positively affects the willingness of participants to share their piece of extra information. The third section elaborates on Hypothesis H2. Here, I assess if shared information is actually processed by the recipient of that information. I assume analogously to the second section that a higher level of deliberative quality (index or individual indica-
5 Deliberative Quality and the Sharing and Processing of Information

tors) increases the probability that the recipient appreciates the new piece of information and elaborates on its consequences. In both sections, I first present the results of the statistical models before I elaborate on these results by interpreting the coefficients in light of the theoretical implications.

The two pieces of information have different strategic meaning for the two roles, as is mentioned in the design and data chapter. Therefore, I expect the influence of the deliberative quality to be stronger for the seminar topic, as this piece of information should be affected much less by the interests of the two participants. The information about the dish-washer on the other hand might be affected much more by the preference constellation, since it can be used strategically to sway a Chris player towards working together – especially in the symmetric games, in which Chris is equally likely not to work the shift at the catering service as Ricky is.

Statistical Models

The sharing of information is measured by asking whether the Ricky player mentions the malfunctioning dish-washer or whether the Chris player mentions the seminar topic. If they do, the variable is coded as 1 and 0 otherwise. The processing of information is manually coded as 1 if signs of recognition and elaboration of the consequences of the respective piece of information can be detected in the transcripts of the discussions. It is 0 if no such signs can be detected and coded as missing value if the piece of information has not been shared – reducing the number of observations in the models in Section 5.2.

In the different models each of these four possibilities is depicted by $y_i$ in the following formula. Since $y_i$ is dichotomous, I use logit models to estimate the probability of $y_i = 1$. The level of deliberative quality is depicted by $x_i$, with $\beta_{\text{deliberation}}$ as the coefficient. As the main control variable, I look at the different preference constellations. They are used in all models. Since this variable is nominally scaled, I turn to hierarchical models. This allows to control for the four different preference constellations without having to choose a baseline category with which all other preference constel-
5.1 Does a higher level of deliberative quality lead to disclosure of private information?

lations are compared. On the macro level, I estimate the random intercept $\alpha_j$ with the overall intercept $\gamma_0$ and the residuals for each constellation $\epsilon_j^\alpha$. The matrix $X_i$ and the vector $B_{controls}$ depicts the values of the various control variables and their respective coefficients. They are included in a second step. The choice of control variables differs in the two sections.

$$\Pr(y_i = 1) = \logit^{-1}(\alpha_j[i] + x_i\beta^{deliberation} + X_iB_{controls}); \text{ for } i = 1, \ldots, 240 \text{ pairs}$$

with

$$\alpha_j = \gamma_0 + \epsilon_j^\alpha; \text{ for } j = 1, \ldots, 4 \text{ constellations}$$

Because I cannot control for all variables that are presented in Chapter 4 within one model, I choose only those variables that significantly correlate with the sharing and processing of either of the two pieces of additional information. I also include the complete sets of variables if one of them is significant. For example, the fact that the Chris player is studying at the BA level significantly correlates with the sharing of the seminar topic. Thus, I include the variables ‘Ricky: BA’, ‘Chris: BA’, and ‘both BA’ to the models that estimate both the sharing of the dishwasher information and the seminar topic information. This makes the different models comparable. However, I include different sets of variables in the two sections when controlling for the effect of deliberative quality on the sharing (Section 5.1) and the processing (Section 5.2) of the private information according to the correlations of the respective dependent variables.

5.1 Does a higher level of deliberative quality lead to disclosure of private information?

This section deals with the test of Hypothesis H1. I derive from theory the expectation that a higher deliberative quality correlates with a higher probability for Ricky to share the extra information on the malfunctioning dish-washer and for Chris to share the extra information on the seminar topic. In addition, I expect the dishwasher to be mentioned more often than the seminar topic, and I assume that such a result can
be explained by the strategic meaning of this piece of information. For this reason, I also expect the influence of the deliberative quality to be stronger in the models that calculate the correlations with Chris sharing his or her piece of additional information. If this expectation turns out to be true, I would also expect the probability of mentioning the damaged dishwasher to be higher in the symmetric games, while I expect not much of a difference over the preference constellations on the probability of Chris mentioning the seminar topic.

In this section, I first present models in which I only control for the preference constellations (Table 5.1). Then I present models with additional control variables (Table 5.2). In Figures 5.1 and 5.2, I present the predicted probabilities that are calculated from the results of the models with additional control variables.

### 5.1.1 Results Testing Hypothesis H1

In Table 5.1 one above-mentioned expectation is strikingly true: the intercepts of the D models – the models in which the dependent variable is the mentioning of the dishwasher being damaged – are much higher than the intercepts of the S models (Chris mentioning the seminar topic). Thus, the malfunctioning dishwasher was mentioned more often. This result can already be observed from Tables 4.7 and 4.8 in Chapter 4. However, the standard deviation of the random intercepts is bigger in the S models. Therefore, the preference constellations have a stronger effect on the probability of mentioning the seminar topic. But none of the random intercepts are significantly different from the overall intercept. In the D models, the symmetric games indeed show a higher probability to mention the dishwasher. In the S models, the greatest difference is between the Rambo-Welfare game (highest probability) and the Chicken game (lowest probability).

**Index:** I now turn to the deliberative quality. The overall index is negatively correlated with the mentioning of both pieces of additional information. Moreover, the negative coefficient is larger in the S-Model. However, both coefficients are not sig-
5.1 *Does a higher level of deliberative quality lead to disclosure of private information?*

| Table 5.1: The Relationship of Deliberation and the Sharing of Private Information |
|---------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                                 | Index            | Justification    | Participation    | Respect          | Accommodation    | All              |
|                                 | D S             | D S              | D S              | D S              | D S              | D S              | D S              | D S              |
| Index                           | −0.03 (0.15)    | −0.19 (0.14)     |                  |                  |                  |                  |                  |                  |
| Justification                   |                 |                  | 0.08 (0.15)      | −0.15 (0.14)     | 0.12 (0.17)      | −0.10 (0.15)     |                  |                  |
| Participation                   |                 |                  | 0.18 (0.15)      | −0.01 (0.14)     | 0.18 (0.15)      | −0.01 (0.14)     |                  |                  |
| Respect                         |                 |                  | −0.06 (0.15)     | −0.05 (0.13)     | −0.07 (0.17)     | 0.09 (0.15)      |                  |                  |
| Accommodation                   |                 |                  | −0.13 (0.15)     | −0.31 (0.14)     | −0.14 (0.16)     | −0.32 (0.15)     |                  |                  |
| (Intercept)                     | 1.16 (0.20)     | −0.30 (0.29)     | 1.16 (0.20)      | −0.30 (0.29)     | 1.16 (0.20)      | −0.30 (0.29)     | 1.17 (0.20)      | −0.30 (0.29)     |
|                                 | (0.20)          | (0.29)           | (0.20)           | (0.29)           | (0.20)           | (0.29)           | (0.20)           | (0.29)           |

**Random Intercepts**

| PD                              | 1.34 (0.26)     | −0.20 (0.51)     | 1.34 (0.27)      | −0.21 (0.51)     | 1.32 (0.25)      | −0.22 (0.49)     | 1.34 (0.26)      | −0.22 (0.49)     |
| CH                              | 1.29 (0.26)     | −0.93 (0.51)     | 1.30 (0.27)      | −0.92 (0.51)     | 1.31 (0.25)      | −0.89 (0.49)     | 1.30 (0.26)      | −0.89 (0.49)     |
| RW                              | 0.91 (0.26)     | 0.32 (0.49)      | 0.90 (0.26)      | 0.32 (0.49)      | 0.93 (0.26)      | 0.30 (0.49)      | 0.90 (0.26)      | 0.30 (0.49)      |
| RF                              | 1.09 (0.26)     | −0.39 (0.54)     | 1.10 (0.26)      | −0.39 (0.54)     | 1.09 (0.26)      | −0.38 (0.54)     | 1.09 (0.26)      | −0.38 (0.54)     |
| std dev                         | (0.26)          | (0.51)           | (0.27)           | (0.51)           | (0.25)           | (0.49)           | (0.26)           | (0.49)           |
| Deviance                        | 260.69          | 309.37           | 260.38           | 310.16           | 259.42           | 311.64           | 260.54           | 311.51           |
| DIC                             | 256.76          | 306.18           | 256.33           | 300.97           | 255.66           | 302.73           | 256.56           | 302.61           |

**Note:** Results of hierarchical logit regression models using `glmer(family=binomial(link="logit"))` from the R-package “lme4” (Bates et al. 2015) on the sharing of private information; Models D use Ricky’s information of the damaged dishwasher as dependent variable, Models S use the seminar topic that Chris knows about; standard errors in parentheses; N=240; data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant at the 0.9 level of confidence; intercepts are significant for Models D but not for Models S; “std dev” reports the standard deviation of the random intercepts; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion.

significant. I cannot reject without reasonable doubt the possibility of these results being produced by chance.

**Indicators:** Therefore, I have a closer look at the individual indicators of the deliberative quality. *Justification, participation* and *respect* all show non-significant coefficients in both models as well. While all coefficients are negative in the S models, the coefficients of *justification* and *participation* are positive in the D models – the coefficient of *respect* is negative. Both models using *accommodation* as predictor variable show negative coefficients. The coefficient in Model Accommodation S is even significant. Using the divide by four rule (Gelman and Hill 2007, 82), I can conclude that an increase in the *accommodation* variable by one standard deviation decreases the probability of Chris mentioning the seminar topic by a maximum of 7.8 % The presented percentage numbers are relative to the comparison value and not percentage points. If a fictitious
case with 0 deliberative quality had a probability of 0.1 to see the piece of information shared, the same case had a probability of 0.1078 with a deliberative quality of 1. If another case had a probability of 0.8, this 7.8% increase would end in a probability of 0.86.

**All:** In Models All, I include all individual indicators in the same model. The observations for the indicators are generally the same. Only the coefficient for respect turns positive in Model All, compared to Model Respect. Since both coefficients are not significant, this is just a sign of the uncertainty of the direction.

Are these coefficients more or less stable when controlling for other variables? This question is answered in a second step, which is presented in Table 5.2. Comparing the coefficients between the two tables, I can conclude that by and large the magnitude and directions of the coefficients do not change when including the control variables. Unfortunately, both Models All fail to converge, which is indicated by the two asterisks in the table. The results should therefore be handled with care. The change of direction of the respect coefficient from Model Respect to Model *All* *S* also happens when controlling for the additional variables.

However, in Model Participation, the coefficient of the participation indicator is 0.1 larger in the model with control variables compared to the model without them. Here, it is even significant at the 0.9 level of confidence. In fact, this coefficient is also significant when including each control variable at a time for all but the gender variables. So, all else being equal, an increase in participation by one standard deviation co-occurs with no more than a 7% rise of the probability that the malfunctioning dishwasher is mentioned in the discussion.

**Figures:** Figures 5.1 and 5.2 give a good overview of the probabilities of mentioning the two pieces of information. In Figure 5.1 the mean predicted probability is centred around 0.75 in all models. Participation shows a rising trend, while accommodation shows a sinking trend. The figures are created by inserting values for the respective variable of the deliberative quality in the model equations that reach from the minimum to the maximum values. The horizontal lines stretch from the 25% to 75%
5.1 Does a higher level of deliberative quality lead to disclosure of private information?

quantiles of the 240 cases. All other variables are inserted in the model as they are for each observation. In Figure 5.2, I separate the mean predicted values and their quantiles according to the four preference constellations. This is only done here, be-

Table 5.2: The Relationship of Deliberation and the Sharing of Private Information; Including Control Variables

<table>
<thead>
<tr>
<th></th>
<th>Index</th>
<th>Justification</th>
<th>Participation</th>
<th>Respect</th>
<th>Accommodation</th>
</tr>
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<td>D</td>
<td>S</td>
<td>D</td>
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<td>(0.14)</td>
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<td>(0.14)</td>
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<td>0.08</td>
<td>(0.15)</td>
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<tr>
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<td>(0.18)</td>
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<td>(0.44)</td>
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<td>(0.59)</td>
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<td>(0.84)</td>
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<td>(0.22)</td>
<td>0.83</td>
<td>(0.49)</td>
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<tr>
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<td>−0.31</td>
<td>(0.49)</td>
</tr>
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<td>−0.12</td>
<td>(0.47)</td>
</tr>
<tr>
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<td>0.47</td>
<td>(0.22)</td>
</tr>
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<td>283.6</td>
<td>244.1</td>
<td>284.3</td>
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</tbody>
</table>

Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit")) from the R-package "lme4" (Bates et al. 2015) on the sharing of private information; Models D use Ricky’s information of the damaged dishwasher as dependent variable; Models S use the seminar topic that Chris knows about; standard errors in parentheses; N=240; data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant at the 0.9 level of confidence; intercepts are significant for Models D but not for Models S; std dev reports the standard deviation of the random intercepts; Deviance reports the relative conditional deviance; DIC reports the deviance information criterion. Models "All" failed to converge.
5 Deliberative Quality and the Sharing and Processing of Information

Figure 5.1: Predicted Probability of Ricky Mentioning the Damaged Dishwasher
5.1 Does a higher level of deliberative quality lead to disclosure of private information?

Figure 5.2: Predicted Probability of Chris Mentioning the Seminar Topic
cause the differences in Models D are too small for a meaningful visualisation. The described patterns can be clearly observed in these figures. In Models S, the probability of mentioning the seminar topic sinks with an increase in the different indicators of the deliberative quality. The strongest effect can be observed for accommodation. Rambo-Welfare (purple) shows the highest probability; Chicken (red) shows the lowest.

**Control Variables:** Returning to Table 5.2, some patterns of the control variables are noteworthy. First of all, there is a striking positive correlation between the cooperation at T0 and the probability that Ricky mentions the malfunctioning dishwasher. When the two participants both decide to take the shift at the conference centre before they can communicate with each other, the probability of the dishwasher being mentioned rises by a maximum of 17% (Model Respect D) to 18.8% (Model *All* *D*). Such a positive effect cannot be observed for the seminar topic.

The gender variables are not significant. Yet the pattern is interesting to mention. In Models D, a male Chris has a considerably large positive coefficient, a male Ricky correlates with a value slightly below zero, and both male has a considerably large negative coefficient. Thus a female Ricky who is faced with a male Chris is at a maximum about 16% more likely to mention the dishwasher compared to a female Ricky faced with a female Chris. A male Ricky is only slightly less willing to mention the dishwasher than a female Ricky, if faced with a female Chris. A male Ricky facing a male Chris is about as likely to mention the dishwasher as two women facing each other would be. The pattern is strikingly different for the seminar topic. In Models S, the negative coefficients of male Ricky and male Chris are considerably large, while the coefficient for both male meanders around zero. Thus, a male Chris faced with a female Ricky is at the most about 15% less likely to mention the seminar topic than a female Chris. A female Chris is also about 11.5% less likely to mention the seminar topic when faced with a male Ricky, compared to a female Ricky. Two women facing each other have the largest probability to talk about the seminar topic while two men are least likely to talk about it.

Studying at the BA level apparently plays a role for Chris in some models. The coefficients are significant at the 0.9 level of confidence in Models S when including
5.1 Does a higher level of deliberative quality lead to disclosure of private information?

the index, justification, and respect. They are also significant for Model Participation D. Models Accommodation and All have significant coefficients for both D and S. However, the coefficients are quite similar, no matter whether they are significant in the end or not. The effect is hardly robust, but not negligible. The patterns of the three variables are quite different when comparing Models D and S, however. In Models D, a Ricky who does not study at the BA level is less likely to mention the dishwasher when faced with a Chris who does. On the other hand, if a Ricky does study at the BA level, and is faced with a Chris who does not study at the BA level – and is therefore most likely more experienced – this Ricky is more likely to mention the dishwasher compared to a Ricky who does not study at the BA level. An observation in which both study at the BA level is slightly more likely to see the dishwasher mentioned compared a experimental session, in which only Chris studies at the BA level. In Models S, the pattern is different. Ricky studying at the BA level negatively correlates with a non-BA Chris mentioning the seminar topic as well. An observation in which both study at the BA level has the lowest probability to see the seminar topic to be mentioned, while it is most likely when two participants face each other that do not study at the BA level.

Finally, I have a look at the level of neuroticism of the two participants. Higher levels of neuroticism of Chris are positive but not significant in all models. Ricky showing higher values of neuroticism is negatively correlated with Chris mentioning the seminar topic in Models S. These coefficients are not significant. Yet in Models D, the level of Ricky’s neuroticism is positively and significantly correlated with the probability that s*he mentions the dishwasher. The value of 0.04 in Models Index D, Justification D, Respect D and Accommodation D indicates at most a 1 % increase of the probability for each point on the neuroticism scale. Theoretically, this variable ranges from 0 to 48. The actual data ranges from 3 to 44. The predicted effect from a least neurotic to the most neurotic Ricky would therefore multiply the baseline probability 41 times by 1.01. A baseline probability of 0.5 with the lowest neuroticism value would end in 0.75 with the highest neuroticism value, all else equal.
5 Deliberative Quality and the Sharing and Processing of Information

5.1.2 Interpretation of the Information Sharing Results

Overall, I cannot conclude from the above calculations that the willingness to mention either the malfunctioning dishwasher or the seminar topic is positively affected by the deliberative quality. In fact, the general picture suggests the opposite, even though these results cannot be trusted beyond reasonable doubt.

My expectation of a stronger effect in Models S is partially backed by the data: The absolute values of the coefficients in Models Index S, Justification S and Accommodation S are bigger than their Model D counterparts. However, the Models Respect have similar coefficients and Model Participation D sees a bigger coefficient than Model S. In contrast to my expectations, the preference constellations also show a bigger difference in random intercepts in Models S. So the explanation for the stronger effect – a smaller influence of the strategic value of the piece of information in the different preference constellations – does not gain credibility.

The positive correlation of participation when controlling for the additional variables is noteworthy. Reading this result in light of the theoretical assumptions, I can suggest that a Ricky who is part of a conversation in which both participants have a more equal share of speaking time is more willing to disclose his or her private information. I suggested in the theory section that the reason for such an effect is the diversity of viewpoints that can come to the forefront if dominance by one actor can be avoided.

An even clearer result is the negative correlation between accommodation and the disclosure of the seminar topic. In light of the theory, this result suggests that Chris is less willing to mention the seminar topic, the more the two participants engage in efforts to suggest potential solutions to their conflict. On the level of operationalisation, the lower probability to disclose the seminar topic information is affected by a larger share of agreement speech acts compared to disagreement speech acts. In the theory chapter, I refrained from explicating theoretical suggestions how accommodation and the willingness to share information can be causally connected. Thus this result needs further investigation. Maybe, a higher level of disagreement is an incentive for Chris to reveal all information available to him or her.
5.1 Does a higher level of deliberative quality lead to disclosure of private information?

There is, however, one methodological aspect that needs consideration in this interpretation as well. Since the disclosure of the private information can happen at any time within the 30 minute long discussion, the direction of the effect can be questioned. The logic might be the exact opposite. Maybe, the share of participation becomes more equal, because the dishwasher is mentioned. Maybe, the communication becomes less accommodating when Chris mentions that the seminar deals with rock climbing topics that he or she is interested in. I do not see a common sense causal explanation that imposes itself for this reading of the data, however. On the other hand again, since the causal direction of the effect remains unclear, one can also interpret both the significantly different level of the respective deliberation indicator and the willingness to share private information to be the effect of some other variable. One could imagine that some participants do not want to engage in a conflict and therefore honestly mention all the information they receive without any strategic considerations. Such a couple of participants would probably take care that both have about the same amount of speaking time. Moreover, they would have no need for a lot of accommodation, since they agree on the outcome already from the beginning. But why would such a pattern be portrayed by the difference of agreement and disagreement speech acts?

The last option of reading the results can partly be substantiated by looking at the control variables. The clearest predictor for mentioning the dishwasher is the fact that both participants decided to take the shift before they could communicate with each other. So this predisposed mindset might influence the level of participation as well. In addition, those Rickys who score higher on the neuroticism scale are also more likely to mention the dishwasher. It is safe to assume that a neurotic Ricky is also one that is not willing to engage in a conflict – especially not such an artificial conflict that takes place in a laboratory setting with a negotiation partner that they do not know.

However, this story does not work for the lower levels of accommodation in the observations in which Chris mentions the seminar topic. In Models S, the cooperation at T0 is virtually not at all correlated with the dependent variable. Chris’ neuroticism value is also positive but not significant. The only more or less consistently significant variable is the level of education. A Chris studying at the BA level is less likely to men-
tion the seminar topic. Maybe such (younger) students lack the capacity to score high on the accommodation indicator. However, a common sense explanation, in what way experience could positively affect the willingness to mention the private information is beyond my imagination.

5.2 Does a higher level of deliberative quality lead to more processing of new information?

In Hypothesis H2, I postulate a positive correlation between a higher deliberative quality and a higher probability for Chris to elaborate on the consequences of the malfunctioning dishwasher and for Ricky to utter signs of recognition how the seminar topic is related to the conflict at hand. This section evaluates the theoretical proposition with the data from the experiment. Although I control for the preference constellations, I do not expect a difference between them, since the strategic value of processing the information is always positive for the recipient of this information, no matter which preference constellation the two participants are dealing with.

Akin to Section 5.1 above, the first presented results include only the preference constellations in the models (Table 5.3). These results are then compared to the results from the models with additional control variables, which are presented in Table 5.4. From these models with additional control variables, I calculate predicted probabilities and present visualisations of these results in Figures 5.3 and 5.4. The results subsection is then completed with a discussion on the control variables, before I engage in an interpretation of the presented results in the final subsection.

5.2.1 Results Testing Hypothesis H2

For the models presented in Table 5.3 not all 240 cases were used. Since the dependent variable is coded as missing value when the piece of information is not shared, the results are taken from 182 observations in Models D and 103 observations in Models S.
5.2 Does a higher level of deliberative quality lead to more processing of new information?

Models D use the processing of Ricky’s extra information as a dependent variable. It is therefore coded 1, if Chris shows signs of realisation how the malfunctioning dish-washer affects their conflict. Analogously, in Models S, the value is 1 if Ricky elaborates on the seminar topic.

Table 5.3: The Relationship of Deliberation and the Processing of Private Information

<table>
<thead>
<tr>
<th></th>
<th>Index</th>
<th>Justification</th>
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<td>(0.00)</td>
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</tr>
<tr>
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<td>141.00</td>
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Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit")) from the R-package "lme4" (Bates et al., 2015) on the processing of private information; Models D use Ricky’s information of the damaged dishwasher as dependent variable, Models S use the seminar topic that Chris knows about; standard errors in parentheses; data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant at the 0.9 level of confidence; intercepts are significant for Models D but not for Models S; "std dev" reports the standard deviation of the random intercepts; "Deviance" reports the relative conditional deviance; "DIC" reports the deviance information criterion.

Analogous to Table 5.1, the intercepts of Models D are larger. The dishwasher information is generally more likely to be processed. As expected, the random intercepts are quite similar. In Models S, the highest probability is in the Rambo-Fairness games, while the lowest can be found in the Rambo-Welfare games. In Models D, the standard deviation of the preference constellations is even 0. It is save to assume that no strategic considerations played a role in openly elaborating on the consequences of this extra piece of information.
The deliberative quality apparently plays a major role in predicting the probability of processing the dishwasher information. The variables show a significantly negative correlation. At the maximum, an increase in the index of deliberative quality by one standard deviation decreases the probability of elaborating on Ricky’s disclosure of the malfunctioning dishwasher by 14.8%. A closer look at the individual indicators reveals that all four are negatively correlated with the processing of the dishwasher information. In Models Respect D (11% decrease) and Accommodation D (15.3% decrease), the coefficients are also significant. When all indicators are included in the same model (Model All D), the negative coefficient of accommodation remains significant, while the coefficient for the respect indicator is only almost half as large and no longer significant. The smallest coefficient in the individual Models – justification – even turns positive when controlling for the other indicators.

Models S present a slightly different picture. The correlation of the overall index with the probability that Ricky reflects on Chris disclosing the seminar topic information is virtually zero. Although the negative correlation of the accommodation indicator is almost as large as the one in Model Accommodation D, the coefficients of the other indicators are positive; yet not significant. Raising the accommodation value by one standard deviation decreases the probability of processing the seminar topic by a maximum of 14.3%. In Model All S, the participation indicator turns slightly negative but is generally negligible, while justification and respect show slightly larger coefficients; which remain insignificant, however.

**Deliberation with Control Variables:** In the additional models with control variables, I test if the above presented results remain stable. The results are presented in Table 5.4. As can easily be observed, the general picture remains the same, even with control variables.

In Models D, the coefficient of the overall index remains the same. There are some changes in the models with the individual indicators, however. Most strikingly, the negative coefficient in Model Respect D drops to -0.27 and is no longer significant. The loss of significance happens, when including either the age or the gender variables for Chris. The negative coefficient in Model Justification D more than doubles but remains
### Table 5.4: The Relationship of Deliberation and the Processing of Private Information; Including Control Variables

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<th></th>
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<th>Justification</th>
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<th>Respect</th>
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<td>5.17</td>
<td>1.99</td>
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</tr>
<tr>
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<td>1.92</td>
<td>4.79</td>
<td>2.01</td>
</tr>
<tr>
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<td>2.08</td>
<td>5.17</td>
<td>2.28</td>
<td>4.79</td>
<td>2.28</td>
</tr>
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<td>(0.00)</td>
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<td>131.5</td>
<td>126.9</td>
<td>130.8</td>
<td>128.1</td>
</tr>
<tr>
<td>DIC</td>
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<td>125.4</td>
<td>131.9</td>
<td>123.9</td>
<td>130.8</td>
<td>126.0</td>
</tr>
</tbody>
</table>

**Note:** Results of hierarchical logit regression models using glmer(family=binomial(link="logit")) from the R-package "lme4" (Bates et al. 2015) on the processing of private information; Models D use Ricky's information of the damaged dishwasher as dependent variable, Models S use the seminar topic that Chris knows about; standard errors in parentheses; data were produced at University of Konstanz between 2014 and 2016; **bold** coefficients are significant at the 0.9 level of confidence; significant intercepts are indicated in the table; "std dev" reports the standard deviation of the random intercepts; "Deviance" reports the relative conditional deviance; "DIC" reports the deviance information criterion; Models S* failed to converge.
5 Deliberative Quality and the Sharing and Processing of Information

insignificant as does the coefficient in Model Participation D. Here, the negative value is also bigger compared to the model without control variables. The negative coefficient in Model Accommodation D remains significant and becomes bigger as well. Model All D experiences the same effects: the accommodation indicator remains stable, the coefficients of the justification and the respect indicators become smaller and the negative coefficient of the participation indicator becomes slightly bigger. They all keep their level of significance – accommodation is significant at the 0.9 level of confidence, the other three indicators are not.

Model Index S sees a tiny increase of the coefficient even though it remains virtually zero. The Models S with the individual indicators all fail to converge, rendering the results not trustworthy. On the other hand, they are very similar to the coefficients without control variables. The positive coefficient in Model *Justification* *S* remains stable and the positive coefficients in Models *Participation* *S* and *Respect* *S* become smaller. The negative coefficient in Model *Accommodation* *S* becomes slightly bigger and remains significant. Interestingly, Model All S converges again. The coefficients show only small differences and the directions of the correlations remain the same.

**Figures:** In Figures 5.3 and 5.4, the general patterns of the predicted values over the deliberative quality as an index and as the individual indicators can be observed. The generally higher probability of processing the dishwasher information is striking. It is also interesting to see that the differences between the 25 % and 75 % quantiles increase with higher values of the deliberative quality in Models D, while the range between the two remains generally stable in Models S. In Model Accommodation S the range even decreases with higher levels of the deliberative quality variable. Unlike in Section 5.1, I refrain from separating the predicted values according to the preference constellations in all figures since the visualisations do not provide any added value. The coloured ribbons overlap in such a way that the difference can no longer be observed.

**Control Variables:** I now return to Table 5.4 with a short discussion about the control variables. I do not control for the decision at T0, since this variable does not correlate with the processing of either of the two pieces of additional information. This is
5.2 *Does a higher level of deliberative quality lead to more processing of new information?*

---

**Figure 5.3:** Predicted Probability of Chris Processing the Damaged Dishwasher Information
5 Deliberative Quality and the Sharing and Processing of Information

Figure 5.4: Predicted Probability of Ricky Processing the Seminar Topic Information
5.2 Does a higher level of deliberative quality lead to more processing of new information?

another indication for being right with the conjecture that strategic aspects do not play a major role for the processing of information.

The two participants’ gender and whether or not they study politics and administration at the University of Konstanz individually correlate significantly with at least one of the two dependent variables. Thus, they are included in the models. In the full models, the variables are no longer significant, neither for Chris, nor Ricky, nor their interaction. The coefficients differ substantially over the models so that generalizations over the models are difficult. However, certain patterns can be described. Ricky being male (with a female Chris) is generally positive for both pieces of information to be shared. Chris being male (facing a female Ricky) is generally negative in all models. The interaction is more negative in Models S. So the difference of both participants being male as compared to only either of them being male makes it less likely that Ricky processes the seminar topic information. For each model, adding up all three coefficients compares all male pairs with all female pairs. A general pattern cannot be observed however and does not deserve more attention as the variables are insignificant. Studying politics is slightly clearer – even though insignificant. In Models D, Chris is least likely to process the relevance of the malfunctioning dishwasher if either of the two participants studies politics compared to no politics students. Both studying politics reverses the trend but is never as likely as no politics students. In Models S, the pattern is the exact opposite. One politics student increases the probability that Ricky processes the relevance of the seminar topic, while both studying politics reverses that effect.

Age is included with several categories for the two participants. All coefficients show the comparison with the baseline category: 20 or younger. One category shows some significant coefficients: In Models D, Chris being 30 or older decreases the probability of him- or herself processing the relevance of the dishwasher by a maximum of 87,8 % (Model Justification D) to 75 % (Model Respect D). In Models S, the same coefficients are much smaller and insignificant, but still negative. The other two age categories are also negative in all models, so that I can conclude that Chris being 20 or younger leads to the highest rate of information processing. Ricky being 30 or older is
5 Deliberative Quality and the Sharing and Processing of Information

negative throughout all models as well. The 25-29 age group has positive coefficients in Models S and negative coefficients in Models D. The pattern is the opposite for the 21-24 age group. None of these age coefficients are significant, however.

The processing of private information correlates with the participants' personality in several indicators of the NEO-FFI. In the models with all control variables, only the neuroticism value for Chris remains significant in the D models. At the most, one step on the neuroticism Chris scale (which ranges from 3 to 44) increases the probability that Chris processes the dishwasher information by 2.3%. A fictitious observation with a probability of 0.50 and a neuroticism value for Chris of 10 would have a probability of 0.63 if Chris had a neuroticism value of 20 instead, all else equal. In Models S, the coefficient is virtually zero or close and insignificant. Ricky’s neuroticism value is not significant and very similar in Models S. In Models D, the coefficients are slightly bigger and negative, but still not significant. Extraversion is negative but insignificant across the board. Chris has larger absolute values. Conscientiousness is negative and insignificant for the participant that does not need to process the information: Ricky in Models D and Chris in Models S. Ricky’s conscientiousness coefficient is small but positive in Models S, while the coefficients for Chris are virtually zero in Models D.

5.2.2 Interpretation of the Information Processing Results

Comparable to the sharing of private information, its processing is not positively affected by a higher deliberative quality. At least, the presented results do not support the theoretically derived hypotheses. However, the deliberative quality apparently plays a more important role in predicting the probability of processing private information compared to sharing it, alas in the opposite direction of my expectation, when

1 Another challenge for interpreting the age coefficients is the inclusion of the age difference variable. It has to be interpreted like an interaction effect. One has to add up all coefficients for Ricky: Age, Chris: Age, and Age difference. The coefficients of Age Chris: 30 or older in Models D has to be added up with the other two variables. If the age of Ricky is in the baseline category (20 or younger), the Age difference is 4 or 5. (I collapsed two age groups into one only in the individual age variables.) So, an old Chris who participates with a young Ricky is overall more likely to process the dishwasher information than an old Chris participating with an equally old Ricky. In such an observation, the two negative coefficients of Ricky and Chris being of age 30 or older are added up and the positive coefficient for the age difference is not subtracted from the negative effect.
5.2 Does a higher level of deliberative quality lead to more processing of new information?

significant. In addition, as expected the preference constellations are less or even not at all influential.

This conclusion is stronger in Models D. Here, all individual indicator variables point in the same direction: in observations with a higher deliberative quality, the probability of processing the dishwasher information is lower. Thus the overall index is significant, as is the accommodation variable in Model Accommodation D and Model All D. The respect value in Model Respect D is only significant in the Model without control variables.

Does this mean that a higher deliberative quality causes participants not to process the piece of information, or that a low quality causes the evaluation? Processing the dishwasher information leads to the realisation that Chris will not be able to do the job at the conference centre alone and use the breaks for planning his or her climbing route. Even if s/he can get useful tips from the participants of the seminar, Chris would not have enough time to do the planning as s/he has to clean the dishes for the next coffee break. Can I assume a causal relationship between the deliberative quality and the utterance of this realisation? If yes, I would postulate that a higher deliberative quality hinders Chris in this realisation (or at least in making Ricky aware that s/he has realised the problem). This is particularly the case, if the number of agreement speech acts is higher or the number of disagreement speech acts is lower, or both. With control variables, the negative effects of justification, participation and respect are about equally strong. They would all hinder Chris in realising the problem, if this reading of the data is plausible. I can muster some credibility of this interpretation: in a discussion with a higher justification value, the Chris player might have not enough time to think about the information s/he receives as s/he is mentally engaged with finding own arguments for his or her position. In a discussion in which both interlocutors participate equally, they might not have enough mental capacity to think about what the other person has said: they are too much engaged in planing their own contribution. A high value in respect is a sign of a positive atmosphere. Maybe, a Chris realising the problem is no longer willing to break up this good and nice atmosphere by complicating the situation. This reading could also explain the correlation between accommodation and
the probability of processing the dishwasher information. I remain doubtful and offer
an alternative reading below.

Before, I have a closer look at Models S. Here, the accommodation coefficient is
equally negative, but all other coefficients are positive, larger in the models with con-
trol variables, yet insignificant. What does the realisation of the seminar topic mean
for the conflict? If the piece of information is shared, Ricky gets to know that the semi-
nar happening at the conference centre is held by the same club that Chris is working
for with the kids. He or she might then realise that this could enable Chris to get
help from the participants of the seminar. This information does not affect his or her
own situation. It only provides some more arguments, why Chris should be working –
alone or together. Ricky must believe that Chris is aware of this consequence. Showing
signs of information processing thus only serves to remind Chris of this fact. It does
not change anything for Ricky’s situation. The lower probability of processing this
information might be the consequence of the irrelevance of this piece of information
for Ricky, even if s/he understands the consequences for the conflict. This reading of
the data is supported by the lowest random intercept for the RW constellation. Here,
Chris already prefers working over not working, no matter what Ricky does. Since
Ricky knows this preference order there is no need to remind Chris of the advantages
of the seminar topic.

For this reason, the negative coefficient of the accommodation value means that ob-
servations in which there are more agreement speech acts compared to disagreement
speech acts are less likely to see Ricky showing signs of realisation of the relevance of
the seminar topic. Does an increased amount of disagreement speech acts lead to the
processing of this particular piece of information? The argument from the theory chap-
ter proposes that a general atmosphere of deliberative communication is the driving
factor for processing information. In light of this proposition one can consider plausi-
ble that in a dialogue atmosphere that is permeated by disagreement, actors are more
prone to scrutinising every piece of information they receive and are in the modus of
uttering all elaborations of these informations. This interpretation of the coefficient
holds for both Models D and S. Remaining with Models S, even though the coefficients
5.2 Does a higher level of deliberative quality lead to more processing of new information?

for the justification, participation, and respect values are insignificant, I also need to speculate about the reasons why they are positive. The positive coefficients in Models S are in the right direction as proposed in the theory chapter. There, I sketch the causal path by reminding of the mental capacity that is freed by the certainty of being allowed to speak and be listened to in a friendly atmosphere. The reasoning behind a positive correlation between information processing and justification is explained by the atmosphere of scrutinising validity claims and giving reasons for one’s opinion. This logic might also be able to include the negative coefficient of accommodation in an explanation that is in line with the proposed effects of the deliberative quality. Scrutinising validity claims comes with disagreement.

So far in the interpretation of the results, I explain the processing of information as a result of the deliberative quality. I present potential explanations for the results under the assumption that there indeed is a direct effect. However, I already elaborate in Section 5.1 that the sharing of information can happen any time within the 30 minutes. Of course, the same is true for the processing of this information. Therefore, the level of deliberative quality can in some cases also be the consequence of the processing of the two pieces of information. In addition, I cannot rule out that an unobserved variable affects both variables. A significant correlation would then present two related consequences of one unobserved cause.

In what way could the processing of the two pieces of information lead to a lower value of the accommodation variable? The variable decreases when relatively more disagreement speech acts are uttered compared to agreement speech acts. This is a sign of conflicting positions. The malfunctioning dishwasher is a potential source of conflict which has to be dealt with. Both participants realise that they will not be able to work on the task that is their original reason for not wanting to take the shift. This can lead to a reinforcement of their original position and increase the level of conflict. So the correlation in Models D is plausible in this reading as well. On the other hand, it appears far-fetched to imagine the same mechanism to work for the seminar topic. I would also expect more justification to be the result of engaging with the dishwasher information compared to the seminar topic. The results show the opposite pattern. I
must therefore conclude that individual results can be interpreted quite well, but an overall explanation that provides answers for why all results are as they are is still missing.

Finally, I ask if a spurious relationship is plausible. What types of omitted variables would lead to both a higher probability of processing the information and a lower level of accommodation? Especially, would that same variable be able to explain why justification, respect, and participation are positively correlated with the seminar topic and negatively correlated with the dishwasher? In Section 5.1 I refer to people who prefer to avoid conflicts as a potential source of a spurious relationship of the deliberation variables and the sharing of information. However, I fail to come up with a plausible explanation that could make all the observed patterns for the processing of information equally understandable.

The control variables provide some guidance in finding a personality trait that might solve this puzzle. The neuroticism value of Chris has a strong influence in Models D. Thus the dishwasher is a piece of information that is being tackled by people that can be considered as less emotionally stable. However, the same cannot be said about Ricky, his or her neuroticism value and the processing of the seminar topic. Also, older people tend to be less able to process each piece of information. What might be the causal relationship between experience and a lack of information processing (or an unwillingness to engage with processed information)? Unfortunately, this study is not equipped with data that is able to provide answers to these questions. So I rest on the conclusion that the theory of communicative action does not provide answers to the observed patterns concerning the processing of new information.

5.3 Summary and Discussion

This chapter is the first of three chapters that analyse the relationship between the deliberative quality and various outcomes of negotiation processes. Here, I ask if the sharing and processing of information is positively affected by a higher level of de-
liberative quality. The short answer is: no. The results of several hierarchical logit regression models do not provide any evidence for a significant positive relationship between the deliberative quality – measured as the overall index as well as the individual indicators justification, participation, respect, and accommodation – and the sharing and processing of two additional pieces of private information which have been given to the two participants.

Some aspects of the deliberative quality are influential, however. Both the sharing and the processing of private information is negatively correlated with the level of accommodation. Moreover, only the disclosure of the malfunctioning dishwasher is not significant in the calculations presented above. Keeping in mind that the presented calculations do not specify a causal direction, I provide potential causal explanations for these observed patterns. Although some of these explanations appear plausible, they are generally only able to explain some patterns but appear far-fetched with others.

Additional results are significant but even more difficult to explain, because the patterns over all models are not consistent. The sharing of the dishwasher information is positively correlated with the participation indicator. However, this positive correlation only appears when controlling for other variables and is limited to Ricky’s additional piece of information. The interpretation that makes use of the diversity of viewpoints to explain this pattern would only be credible if it could be observed irrespective of who discloses their private information. Also in the reversed interpretation, according to which the disclosure of the malfunctioning dishwasher increases the participation value, the difference in the two pieces of private information is creating tension. An all-encompassing explanation which takes into consideration the differences between the two pieces of information is still missing and can inspire future research.

The overall index of deliberative quality has a significantly negative effect on the processing of the dishwasher information as well. This is the result of all indicator variables being negative, and the respect variable even producing a significant coefficient – even though only without control variables. Again, the differences between the two pieces of information are striking and crave for explanation. Unfortunately,
the theoretical underpinning is too weak to elaborate into the overall pattern and even plausible speculations cannot be offered.

Thus, I have to conclude that this study is not equipped with the right data (and design) to dig deeper into understanding the sharing and processing of private information. Since both tasks are essential for deliberation to work as intended, scholars of deliberation should watch out for results that are produced by the real experts in this field. My focus in the design of this study lies in a comparison with behavioural economics and is the topic of the next two chapters. When looking for explanations that make the results presented here plausible, one should turn to studies by social psychologists. Further developments in the hidden profile experiments and similar studies that deal with information sharing and information processing are worthwhile to be tracked in order to gain insights into the actual process of deliberation.
6 The Effect of the Deliberative Quality on Substantive Outcomes

Does the deliberative quality in a decision making process actually influence the decision that is being made at the end of the discussion? This is the core question of this research endeavour. It will be dealt with in this chapter. I present statistical models that assess the following questions: Is the deliberative quality of the discussions able to explain why some discussions end in a cooperative solution, while others end in a solution in which one or both participants follow their self-interest and speculate to end in a better outcome for themselves? Do the norms of welfare efficiency or fairness play a role in explaining the outcomes? What effects do the different preference constellations have? And can any observed patterns be explained by asymmetry?

This chapter is organised as follows: the first section deals with the general question whether the deliberative quality affects outcomes. I control for the four preference constellations and assess in what way the deliberative quality interacts with them in explaining the probability of coming to a fair or welfare-efficient solution. The section starts with a small introduction of the methodology and hierarchical logistic regression models that are being used. I then present the results before the last subsection engages in the interpretation of these results. In the second section, I dig deeper into an understanding of the experimental data. By picking up on Hypothesis H4, I assess the decisions at T0 in order to better understand how asymmetry might already play a role before the participants communicate with each other. Is this decision at T0 influenced by some of the control variables as well? The next section covers an assessment of the influence of asymmetry on the deliberative quality of communication, as is suggested
in Hypothesis H5. The two hypotheses prepare for the following section that further investigates the deliberative quality of the individual actors rather than the overall quality by the interaction of both actors. All sections are organised in the same way as the first: methodology, results, and interpretation. These four sections establish the correlative relationships. In the fifth section, I take a closer look at causality and investigate if any of the results from the first section can be considered causal. To this end, I use an instrumental variables approach. The first part of this section explains how this approach can be used for any study of deliberation. I then apply the methodological framework to this study and introduce some more design details that have not been covered in the design and data chapter. After a presentation of the results they are again interpreted in the last subsection. In the final section of this chapter, the results and interpretations are discussed with regard to the question of how this investigation can contribute to the theoretical propositions that are being made when advocating for deliberative decision-making.

6.1 Does deliberative quality lead to a cooperative solution?

From the theory of communicative action I derive in Chapter Hypotheses H3a and H3b which state that the level of deliberative quality positively correlates with a welfare efficient (H3a) and a fair (H3b) result. These conjectures shall be tested against the backdrop of interests. In Section 4.2.2 I introduce the different preference constellations that are used to randomly assign certain preference orders to the participants of this study. I expect a lower number of cooperative solutions when the deliberative quality is low especially in the symmetric games in which communication is known to strengthen the ability to coordinate on a mutually beneficial but not individually optimal result – as was strongly suggested for the Prisoner’s Dilemma. In the asymmetric games, I expect mere communication not to be strong enough to lead to higher levels of cooperation, but argue that a high level of deliberative quality is able to overcome such restrictions. Accordingly, I expect the cooperative solution in all four preference
6.1 Does deliberative quality lead to a cooperative solution?

constellations to be attained more often when the deliberative quality is high and less often, when the deliberative quality is low.

**Statistical Models**

In order to test if the above-mentioned conjectures find empirical support, I run hierarchical logistic regression models. Using hierarchical models allows to effectively control for the preference constellations without having to arbitrarily choose a baseline category. In addition, the interaction of the explanatory variable with the four preference constellations can be assessed when allowing the coefficients to vary across them.

Formally, the models are written as follows. Depending on the model, $y_i$ represents the decision at the table (T1) or after returning to the PC-equipped work station (T2). It takes the value 1 if the participants agree on the cooperative solution (S1) and 0 otherwise. $x_i$ represents the deliberation variable, either the full index or the individual dimensions. $X_i$ is the matrix of control variables. $\alpha_j$ is the varying intercept over the four preference constellations. $\beta_j$ is the varying slope over the same preference constellations that is estimated for the deliberation variable.

$$
\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_j[i] + x_i \beta_{deliberation}^j + X_i \beta_{controls}) \; \text{for } i = 1, \ldots, 240 \text{ pairs}
$$

with

$$
\alpha_j = \gamma_0^\alpha + \epsilon_j^\alpha \; \text{for } j = 1, \ldots, 4 \text{ constellations}
$$

and

$$
\beta_{deliberation}^j = \gamma_0^\beta + \epsilon_j^\beta \; \text{for } j = 1, \ldots, 4 \text{ constellations}
$$

In a hierarchical model, the parameters of these equations are estimated simultaneously, making use of partial pooling. Due to this characteristic of hierarchical models, the effect of the deliberative quality on the negotiation outcomes is estimated between two different types of analysis: complete-pooling and no-pooling. In a complete-pooling analysis, all individual data are analysed without controlling for the group, which is the preference constellation in this study. In a no-pooling analysis, I would
divide the dataset in the four different groups and calculate separate regressions for
each preference constellation individually. The results of a partial pooling analysis al-
ways comes in between the two. Depending on the number of observations in each
group and the group-level standard deviation the results tend to be drawn more to the
individual (no-pooling) regression or the shared (complete-pooling) regression: the
smaller the standard deviation on the group-level, the more pooling happens. If there
were a big difference in observations per group, smaller groups would also be drawn
further to the mean values gained by complete-pooling. A downside of this approach
is the fact that especially with a small number of groups, the effect of the preference
constellation cannot be assessed with established tests of significance. However, it is
possible to use likelihood-ratio tests to compare models with and without allowing
the effect of the deliberative quality to vary across the different groups. The results of
these likelihood-ratio tests are presented alongside the general model presentations in
the next subsection.

6.1.1 Results Testing Hypothesis H3

In Tables 6.1 and 6.2 I present the coefficients estimated by the different hierarchical
logit regressions. Each model is calculated for the result at the table (T1) and the result
after returning to the PC-equipped work station (T2). First, I use the created index as
the explanatory variable. Then each of the four dimensions is individually tested, be-
fore two models (at T1 and T2) that include all the individual indicator variables of the
four dimensions in the same model are presented. In Table 6.1 the presented models
only assess the role of the deliberation variables against the backdrop of the preference
constellations. In Table 6.2 a number of control variables are additionally included.
In Figures 6.1 and 6.2 I present the predicted probabilities that can be calculated from
the models with control variables. In order to have comparable coefficients over the
different models, the deliberation variables have been standardised (with mean = 0
and sd = 1) before being entered in the model. Since the interpretation of their actual
values is already complicated with the scales of the variables being the result of several
mathematical transformations, there is no downside to this process.
6.1 Does deliberative quality lead to a cooperative solution?

Table 6.1: The Relationship of Deliberation and the Probability to Agree on the Cooperative Solution

<table>
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<th>Index</th>
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<th>T2</th>
<th>Justification</th>
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<th>T1</th>
<th>T2</th>
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<th>T1</th>
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<td>0.04</td>
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<td>0.05</td>
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<td>-0.17</td>
<td>0.06</td>
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<td>-0.34</td>
</tr>
<tr>
<td>CH</td>
<td>-0.16</td>
<td>0.12</td>
<td>-0.23</td>
<td>-0.23</td>
<td>0.20</td>
<td>0.06</td>
<td>0.34</td>
<td>0.07</td>
<td>-0.17</td>
<td>-0.34</td>
<td>0.05</td>
<td>0.34</td>
<td>0.07</td>
<td>0.34</td>
<td>0.07</td>
<td>0.34</td>
</tr>
<tr>
<td>RW</td>
<td>-0.18</td>
<td>0.10</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
<td>-0.36</td>
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</tr>
<tr>
<td>RF</td>
<td>-0.05</td>
<td>-0.14</td>
<td>-0.67</td>
<td>-0.21</td>
<td>0.50</td>
<td>0.03</td>
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<td>0.05</td>
<td>-0.14</td>
<td>-0.30</td>
<td>0.05</td>
<td>0.19</td>
<td>0.05</td>
<td>0.19</td>
<td>0.05</td>
<td>0.19</td>
</tr>
</tbody>
</table>

\[ \chi^2 \] Deviance 162.0 258.5 155.2 257.9 162.3 259.1 161.6 259.1 162.2 254.5 150.2 246.6

\[ \delta DF \] Random Intercepts 3 4 4 2 2 2 2 2 2 2 2 2

\[ \chi^2 \] Random slopes at model All 2 2 2 2 2 2 2 2 2 2 2 2

Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit"); optimizer="bobyqa") from the R-package "lme4" (Bates et al. 2015) on the decisions to end in a cooperative solution; standard errors in parentheses; N=240; data were produced at University of Konstanz between 2014 and 2016; only intercepts are significant; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; *: random slopes of the four dimensions are presented beneath.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Justification</th>
<th>T1</th>
<th>T2</th>
<th>Participation</th>
<th>T1</th>
<th>T2</th>
<th>Respect</th>
<th>T1</th>
<th>T2</th>
<th>Accommodation</th>
<th>T1</th>
<th>T2</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>0.14</td>
<td>0.20</td>
<td>0.38</td>
<td>0.02</td>
<td>-0.13</td>
<td>-0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>0.00</td>
<td>0.18</td>
<td>0.43</td>
<td>0.25</td>
<td>-0.19</td>
<td>-0.34</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RW</td>
<td>-0.39</td>
<td>0.03</td>
<td>0.25</td>
<td>-0.06</td>
<td>-0.07</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>RF</td>
<td>-0.48</td>
<td>0.02</td>
<td>0.55</td>
<td>-0.32</td>
<td>-0.38</td>
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<td></td>
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</tr>
</tbody>
</table>

\[ \chi^2 \] Likelihood-Ratio tests when dropping individual random slopes 1.89 2.76 0.44 0.12 0.53 1.62 0.40 1.17

\[ \delta DF \] 5 5 5 5 5 5 5 5

The very first observation from Table 6.1 is the result that none of the deliberation variables show a significant effect. Because of this fact, none of the following observations can be trusted without doubt. I cannot rule out that any of the following statements are the result of mere chance in the data generating process. In addition, the likelihood ratio test, which compares the random-slopes-random-intercepts models with
the respective random-intercepts-only models, are also not significant. This shows that the interactions between the deliberative quality variables and the preference constellations also do not make a substantive contribution to explaining the variance on the dependent variable. However, the coefficients of these models still tell an interesting story that should not be neglected in future research on the role of deliberation. Especially since some of the random slopes are in absolute numbers larger than 1.65 times the respective standard errors (corresponding to a 0.9 level of confidence), these parameters can be interpreted as statistically significant for the respective preference constellation only.

Index: I start with presenting the two index models. Generally, the probability to reach a cooperative solution at the table is quite high. At the table (T1), it is higher in the two symmetric games. In addition, the index of deliberative quality plays a mixed role. While an increase in the deliberative quality co-occurs with a higher probability of a cooperative solution in the symmetric games, the probability of a cooperative solution becomes lower, the more deliberative the two participants behave in the asymmetric games. Although not significant, the results from the asymmetric games contradict the general expectations derived from the theory of communicative action. Further interpretations follow in the next subsection. The probability to cooperate is considerably lower at T2, when the participants have left the negotiation table, as can be seen from the random intercepts in Table 6.1. The difference in probabilities between T1 and T2 is much higher in the symmetric games, however. At T2, an increasing level of deliberative quality can also be observed to co-occur with a declining probability to end in a cooperative solution. In PD, when the deliberative quality increases by one standard deviation, the participants were 6.5 % more likely to end in a cooperative solution at the table (using the ‘divide by 4 rule’ – a rough estimate suggested by Gelman and Hill (2007, 82) which refers to “the maximum difference in Pr(y = 1)

---

1 In a no-pooling setting, in which the effects would be tested in divided datasets, the number of observations might not be large enough to detect a significant relationship. Therefore one would be ill advised to report such a coefficient as a grand finding. In this context, however, it is at least noteworthy that some random slopes can be considered to be above or below zero with considerable certainty.
6.1 Does deliberative quality lead to a cooperative solution?

The presented percentage numbers are relative to the comparison value and not percentage points. If a fictitious case with 0 deliberative quality had a probability to end in the cooperative solution of 0.1, the same case had a probability of 0.1065 with a deliberative quality of 1. If another case had a probability of 0.8, this 6.5% increase of probability would end in a probability of 0.852 if the standardised deliberative quality were 1 instead of 0 and 0.907 if it were 2.

corresponding to a unit difference in $x^2$. The same increase in deliberative quality, on the other hand, made the participants roughly 4% less likely to end in a cooperative solution after returning to the PC-equipped work station. The random intercepts of the symmetric games show a stronger negative association with the probability to reach a cooperative solution than the random intercepts of the asymmetric games. Since the asymmetric constellations have lower intercepts, however, the predicted probabilities remain higher for the symmetric preference constellations over the whole range of the index variable.

**Indicators:** Looking at the other models, one can conclude that the different dimensions of deliberative quality work in different directions and vary across the preference constellations. On the one hand, high values of *justification* and *accommodation* are generally associated with a lower probability to attain a cooperative solution both at T1 and T2. However, at T1, the level of *justification* still positively correlates with attaining a cooperative solution in the symmetric games, while it negatively correlates with attaining a cooperative solution in the asymmetric games. In RF, this negative random slope can even be considered significant. The random slopes of *accommodation* at both T1 and T2 for all preference constellations are negative. At T2, they can be considered significant for all preference constellations but RW. On the other hand, high values of *participation* and *respect* are more likely to co-occur with a cooperative solution. Again, there are differences between the different preference constellations as well as differences between T1 and T2. For *participation*, the strongest positive effects are in the symmetric games at T1, while they are very close to zero in the asymmetric games at T1 and all preference constellations at T2. The random slopes of RW are even negative but still virtually zero. The random slopes of the *respect* variable are also virtually zero at T2 (and negative in RW), and most positive at T1 in the symmetric games. At PD the parameter can even be considered significant. Another interesting pattern can be
observed in RW: here, all random slopes but \textit{respect} at T1 are negative, even though they are very often negligibly close to zero.

\textbf{All:} In Models All-T1 and All-T2, these random effects are similar but sometimes even stronger. \textit{Justification} is negative and can be considered significant in RF for both T1 and T2. \textit{Participation} is generally positive but cannot be considered significant in any of the four preference constellations. At T1 the random slope of RF is much bigger when controlling for all other dimensions in the same model. \textit{Respect} is also generally positive with random slopes that can be considered significant for CH at T1 and RF at T1 and T2. The random slope of \textit{respect} at PD could be considered significant in Model Respect-T1, but no longer in Model All-T1. \textit{Accommodation} is generally negative and at T2, all the random slopes are negative. The parameter for \textit{accommodation} at T2 for PD can be considered significant in Model Accommodation-T2 but no longer in Model All-T2.

\textbf{Deliberation with Control Variables:} Turning to Table 6.2, none of the above presented observations have to be withdrawn even though the slope differences between the preference constellations cease to exist at Models Index-T2 and Participation-T2. In the full model with the individual measures of the four dimensions (Models *All*), there is even a significant positive coefficient for \textit{respect} at T1 (at the 0.9 level of confidence). Since this model failed to converge, however (as is marked by the two asterisks), the estimates should not be trusted beyond doubt. In addition to the random slopes at the models without control variables, the negative random slope of \textit{justification} at T2 in RF is now also significant after controlling for the other variables. In Model *All-T1*, the positive random slope of \textit{respect} in PD is significant again.

\textbf{Figures:} An overview of the predicted probabilities over the range of the different variables measuring deliberative quality is presented in Figures 6.1 and 6.2 (excluding models *All*). The curves represent the mean predicted values over the 60 cases for each preference constellation when exchanging the actual value of the deliberation variable with the value on the x-axis. The x-axis consists of 100 equally spread values ranging from the minimum value to the maximum value of the respective deliberation variable. The coloured ribbons range from the lower (25 %) to the upper (75 %) quan-
6.1 Does deliberative quality lead to a cooperative solution?

quality of x and the actual values of all other variables. Since all deliberation variables have been standardised, the effects are comparable over the dataset.

Table 6.2: The Relationship of Deliberation and the Probability to Agree on the Cooperative Solution; Including Control Variables

<table>
<thead>
<tr>
<th>Observation</th>
<th>Index</th>
<th>Justification</th>
<th>Participation</th>
<th>Respect</th>
<th>Accommodation</th>
<th><em>All</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>T0: Yes-Yes</td>
<td>1.01</td>
<td>1.03</td>
<td>1.10</td>
<td>0.99</td>
<td>1.14</td>
<td>1.03</td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(0.57)</td>
<td>(0.53)</td>
<td>(0.37)</td>
<td>(0.52)</td>
<td>(0.37)</td>
</tr>
<tr>
<td>Chris: male</td>
<td>0.77</td>
<td>0.13</td>
<td>0.13</td>
<td>0.13</td>
<td>0.12</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>(0.62)</td>
<td>(0.48)</td>
<td>(0.62)</td>
<td>(0.48)</td>
<td>(0.61)</td>
<td>(0.49)</td>
</tr>
<tr>
<td>Ricky: male</td>
<td>0.89</td>
<td>0.60</td>
<td>0.99</td>
<td>0.64</td>
<td>0.79</td>
<td>0.61</td>
</tr>
<tr>
<td></td>
<td>(0.64)</td>
<td>(0.50)</td>
<td>(0.66)</td>
<td>(0.50)</td>
<td>(0.64)</td>
<td>(0.51)</td>
</tr>
<tr>
<td>both male</td>
<td>-0.58</td>
<td>-0.69</td>
<td>-0.65</td>
<td>-0.76</td>
<td>-0.48</td>
<td>-0.69</td>
</tr>
<tr>
<td></td>
<td>(0.83)</td>
<td>(0.69)</td>
<td>(0.94)</td>
<td>(0.69)</td>
<td>(0.69)</td>
<td>(0.93)</td>
</tr>
<tr>
<td>know each other</td>
<td>1.05</td>
<td>0.81</td>
<td>0.94</td>
<td>0.85</td>
<td>1.07</td>
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<tr>
<td></td>
<td>(0.72)</td>
<td>(0.52)</td>
<td>(0.72)</td>
<td>(0.72)</td>
<td>(0.72)</td>
<td>(0.72)</td>
</tr>
<tr>
<td>Chris: BA</td>
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<td>-0.99</td>
<td>-0.15</td>
<td>-0.86</td>
</tr>
<tr>
<td></td>
<td>(0.73)</td>
<td>(0.56)</td>
<td>(0.78)</td>
<td>(0.60)</td>
<td>(0.73)</td>
<td>(0.56)</td>
</tr>
<tr>
<td>Ricky: BA</td>
<td>-0.30</td>
<td>-0.72</td>
<td>-0.47</td>
<td>-0.75</td>
<td>-0.28</td>
<td>-0.71</td>
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<tr>
<td></td>
<td>(0.73)</td>
<td>(0.56)</td>
<td>(0.75)</td>
<td>(0.75)</td>
<td>(0.73)</td>
<td>(0.75)</td>
</tr>
<tr>
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<td>1.37</td>
<td>1.27</td>
<td>1.21</td>
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<tr>
<td></td>
<td>(0.94)</td>
<td>(0.72)</td>
<td>(0.97)</td>
<td>(0.74)</td>
<td>(0.93)</td>
<td>(0.72)</td>
</tr>
<tr>
<td>Chris: PV</td>
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<td>-0.63</td>
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<td>-0.71</td>
<td>-0.06</td>
</tr>
<tr>
<td></td>
<td>(0.71)</td>
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<td>(0.72)</td>
<td>(0.54)</td>
<td>(0.71)</td>
<td>(0.54)</td>
</tr>
<tr>
<td>Ricky: PV</td>
<td>-1.23</td>
<td>-0.69</td>
<td>-1.30</td>
<td>-0.76</td>
<td>-1.22</td>
<td>-0.69</td>
</tr>
<tr>
<td></td>
<td>(0.58)</td>
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<td>(0.60)</td>
<td>(0.44)</td>
<td>(0.58)</td>
<td>(0.43)</td>
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<tr>
<td>both PV</td>
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<td>0.31</td>
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</tr>
<tr>
<td></td>
<td>(1.02)</td>
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<td>(1.05)</td>
<td>(0.83)</td>
<td>(1.03)</td>
<td>(0.82)</td>
</tr>
<tr>
<td>Chris: Agreeableness</td>
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<td>0.05</td>
<td>0.02</td>
<td>0.06</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>Ricky: Agreeableness</td>
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<td>0.03</td>
<td>0.04</td>
<td>0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>(Intercept)</td>
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<td>0.39</td>
<td>-1.95</td>
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<tr>
<td></td>
<td>(1.89)</td>
<td>(1.38)</td>
<td>(1.95)</td>
<td>(1.41)</td>
<td>(1.86)</td>
<td>(1.38)</td>
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Random Intercepts

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<tr>
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<tr>
<td>-1.40</td>
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Random Slopes

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<th>CH</th>
<th>RW</th>
<th>RF</th>
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</tr>
<tr>
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<td>-0.30</td>
<td>0.06</td>
</tr>
<tr>
<td>-0.30</td>
<td>-0.12</td>
<td>-0.46</td>
<td>-0.09</td>
<td>-0.03</td>
</tr>
<tr>
<td>-0.03</td>
<td>-0.12</td>
<td>-0.78</td>
<td>-0.41</td>
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</table>

Likelihood Ratio Tests

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<td>77</td>
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Deviance

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<td>119.9</td>
<td>221.3</td>
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<td>226.3</td>
<td>129.1</td>
<td>220.7</td>
<td>129.9</td>
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</table>

DIC 129.7 225.7 119.9 221.3 131.6 226.3 129.1 220.7 129.9 220.0 112.6 149.5
6 The Effect of the Deliberative Quality on Substantive Outcomes

<table>
<thead>
<tr>
<th>Observation</th>
<th>Justification T.1</th>
<th>Justification T.2</th>
<th>Participation T.1</th>
<th>Participation T.2</th>
<th>Respect T.1</th>
<th>Respect T.2</th>
<th>Accommodation T.1</th>
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<tr>
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<td>0.12</td>
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<td>0.76</td>
<td>0.05</td>
<td>0.01</td>
<td>−0.41</td>
</tr>
<tr>
<td>CH</td>
<td>−0.53</td>
<td>−0.47</td>
<td>0.11</td>
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<td>0.66</td>
<td>0.56</td>
<td>−0.26</td>
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<td>RW</td>
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<td>0.07</td>
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<td>−0.95</td>
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<td>0.82</td>
<td>0.99</td>
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</table>

Likelihood-Ratio tests when dropping individual random slopes

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<th>5</th>
<th>5</th>
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<td>1.93</td>
<td>0.04</td>
<td>2.77</td>
<td>1.06</td>
<td>1.70</td>
<td>0.41</td>
<td>1.76</td>
</tr>
</tbody>
</table>

Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit")) from the R-package “lme4” (Bates et al. 2015) on the decisions to end in a cooperative solution using the optimizer bobyqa for all but the models with all dimensions included in the model(there optimizer = Nelder-Mead); standard errors in parentheses; bold coefficients are significant at the 0.95 level of significance - coefficients in bold italics are larger than 1.645 times the standard deviation of the variable; N=240; data were produced at University of Konstanz between 2014 and 2016; *: random slopes of the four dimensions are presented beneath. Models *All* failed to converge → estimates might not be reliable.

In Figure 6.1, the clearest observation is the high probability of the cooperative solution in PD (green). With only one case that does not end in a cooperative solution, this preference constellation needs to borrow from the other variables, as is intended with the partial pooling of the hierarchical models and is thus drawn slightly to the mean. In the respect dimension, the predicted probability when respect is at the lowest is 0.83 compared to above 0.9 at the lowest level of all other dimensions. So apparently the one case in which the participants did not decide for the cooperative solution at the table was one in which the respect value scored considerably low. For the accommodation dimension, however, there is a slight decline of the predicted probability when the participants used more agreement speech acts compared to disagreement speech acts.

Another clear observation is the low predicted probability of RW (purple). Here, there seems to be a clear negative effect of the deliberative quality. In the index graph, the curve drops quite sharply. This result is apparently drawn from the justification and the argumentation dimensions, while respect and especially participation do not show such a strong pattern. CH (red) and RF (blue) are pretty much in line with each other but in the justification dimension. In general, respect and participation as well as the overall index see slightly higher predicted probabilities when the deliberative quality in the respective dimension is higher. In accommodation, the predicted probability drops by roughly 0.15 in both preference constellations. Only in justification do the two preference constellations differ. While the predicted probability in CH declines only
6.1 Does deliberative quality lead to a cooperative solution?

marginally, the decline in RF approaches almost 0.5 from a pair that (potentially) uses the smallest share of argumentation EDUs to a pair that uses the largest share.

In Figure 6.2, the preference constellations appear less important than at the table. RW is an exception, as it shows different trends in all but the participation dimension and the overall index. In the overall index as well as for participation, the probability to agree on the cooperative solution is generally lower in RW, but the curves go almost parallel. However in the other dimensions some interesting patterns can be observed.

While higher values of respect lead to increasing predicted probabilities in all other preference constellations, the predicted probability in RW actually decreases. Yet it is highest among the preference constellations at the low end of the respect variable. Justification and accommodation share a similar pattern again, as they did with the decision at the table. Although the predicted probabilities in all four preference constellations decline with higher levels of the respective deliberative quality, this decline is lowest in RW, so that the mean prediction curves actually cross in the higher third of the variable range leaving RW with the highest predicted probabilities at high levels of accommodation and justification.

Control Variables: In the next paragraphs, I present a number of observations about the control variables. I control for the decision at T0, gender, whether or not the participants pursue a BA degree, whether or not they study politics and administration, and agreeableness (one of the big five personality traits). Since the model would be overloaded if too many variables were included, a selection is made from the set of variables presented in Section 4.2.3. Only those variables are added to the models that have a significant correlation with the outcome when no other variables are included. I also add corresponding variables. When Ricky’s gender is significant, I also add Chris’ gender and their interaction.

Looking at the control variables, a striking even if not surprising observation is the effect of the decision at T0. Even though there are big differences between the cooperation rates at T0 and T1 or T2 respectively, as observed in Section 4.2.4, the decision before the negotiation took place significantly influences the level of cooperation at
Figure 6.1: Predicted Probability of a Cooperative Solution at the Table (T1)
6.1 Does deliberative quality lead to a cooperative solution?

![Deliberation Index Diagram](image)

**Figure 6.2: Predicted Probability of a Cooperative Solution After Returning to the PC (T2)**
points T1 and T2. Depending on the model, the maximum difference of the probability to cooperate when a cooperative solution was already found at T0 ranges from roughly 25% to roughly 32%. This variable is significant at the 0.95 level of confidence in all models.

The gender variables are hardly ever significant with the exception of a male Chris in Model *All - T1* and both male in Model *All - T2*. There is, however, an interesting pattern here as well: both male Chris and male Ricky are always positive, with bigger coefficients at T1 and bigger coefficients for Ricky rather than Chris. Yet, the interaction is always negative. This suggests that in mixed gender observations, the cooperation rate is always higher than in observations with two women. Observations with two men are generally most likely to end in the cooperative solution at T1 (where the negative coefficient for both men is smaller than each positive coefficient of the individual gender variables). At T2, the negative both men coefficients are generally larger than the individual positive gender coefficients, but not larger than the sums. This suggests that after returning to the PC, male participants playing against each other are almost as unlikely to cooperate as two women. When looking at games with a male Chris (and a female Ricky) one can observe that the positive coefficient at T1 suggests a maximum difference of the probability to cooperate to be between 15.5% and 20% when Chris is male as compared to Chris being female (and Ricky being female). At T2 the same variable only makes games with a male Chris 3.25% to 6.75% more likely to come to a cooperative solution compared to games with two female participants. The lower coefficients of Chris: male suggests that women were much more likely to take advantage of their position as Ricky when returning to the PC-equipped work station, but agreed on the cooperative solution at the table. However, since this result does not differentiate between the preference constellations, this suggestion still needs further elaboration.

The question of whether the two participants know each other is positive across all models, but never significant. These positive coefficients are not surprising, even though one could also have imagined that it is easier to behave competitively against a friend rather than against a complete stranger.
6.1 Does deliberative quality lead to a cooperative solution?

The study degree, which the participants aim for, shows a similar but reversed picture compared to gender: Both Ricky or Chris studying at the BA level being matched with a partner who does not (or no longer) study at BA level makes a cooperative solution less likely. Over the 12 different models, the coefficient is sometimes more negative for Chris and sometimes more negative for Ricky. Chris: BA tends to have a more negative coefficient at T2, while Ricky: BA sometimes has a more negative coefficient at T1. For some models, this is even significant at the 0.9 level of confidence for either Chris or Ricky. On the other hand, when both participants study at the BA level, the probability of cooperation is usually higher than if two participants do not study at the BA level. (The coefficients of the interaction variable are usually higher than the sum of the absolute (negative) coefficients of Chris: BA and Ricky: BA.) The interaction variable is also occasionally significant. In Model *All* at T2, the significance even is at the 0.95 level of confidence, as is the coefficient for Chris: BA in the same model. However, this model did not converge.

The same pattern – negative coefficients for the variables and positive coefficient for the interaction – can be observed for students of politics and administration (PV). However, politics students were also not very cooperative with each other, as indicated by the small coefficients of the interaction effect compared to the individual variables. The effect is stronger at T1 and Ricky studying politics is significant throughout the models. The coefficient of Ricky: PV is also always more negative than the one for Chris. For T1, the level of confidence is at 0.95. The maximum difference describing the decline of the probability to cooperate for a game in which only Ricky studies politics compared to games in which no politics students participate ranges from 30.5 % to 34 %. At T2, the same effect is significant only in half of the models and only at the 0.9 level of confidence and the coefficients are quite a lot smaller – even more so for Chris studying politics and administration. The interaction term is generally bigger at T2, but never reaches the sum of the absolute (negative) coefficients of the non-interacted variables.

The last control variable presented here is the measure of agreeableness. The effect is significant for the agreeableness of Chris throughout all models at T2. An increase
by one point on the agreeableness scale increases the probability to cooperate by 1.5 % at the maximum. As the agreeableness variable ranges from 10 to 46, the probability can rise substantially when moving from the least agreeable Chris to the most agreeable Chris. In Figure 6.3, I present the predicted probabilities over the range of Chris’ agreeableness values from model Respect T2 (as the coefficient is significant at the 0.95 level of confidence in this model). The curve represents the mean predicted value over all 240 cases when exchanging the actual value of the variable with the value on the x axis. The horizontal lines range from the lower to the upper quantiles of the predicted values of the 240 cases with an agreeableness value of x. The mean predicted values to end in a cooperative solution range from 0.52 to 0.87 over the range of the variable. The 25 % quantiles range from 0.35 to 0.81 and the 75 % quantiles range from 0.70 to 0.95.

![Figure 6.3: Predicted Probability of a Cooperative Solution After Returning to the PC Across the Range of Agreeableness Chris](image)

Comparing the intercepts between models T1 and T2 is also telling: the intercepts at T2 are strongly negative, while the intercepts at T1 are either weakly negative or weakly positive. This observation leads to the conclusion that the difference in coop-

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3 In Section 4.2.3, I present standardised variables of the NEO-FFI. There, I intend to assess how the subject pool deviates from a general population. In the models here, I include the non-standardised values, which can theoretically reach from 10 to 60, because I am interested in the actual values that are not standardised according to gender and age group.
6.1 Does deliberative quality lead to a cooperative solution?

Deliberative solutions between T1 and T2 in the dataset cannot be explained by any of the variables included in the models. It is also important to point out that the dependent variables are always the same over the six different models at either T1 or T2. Thus those coefficients who are only significant in some models but not in all changed because another deliberation variable was added to the model. This is no sign for a stable effect.

**Alternative Dependent Variables:** In Section 4.2.4 I also present alternative measures for the negotiated outcomes. Welfare is measured as the sum of the two players’ rank orders. Fairness is measured as the difference between them. Running hierarchical linear regression models with these variables as dependent variables does not provide any more insights into the relationships between the deliberative quality and the outcomes. This also does not change when analysing only half the dataset split between the two norms welfare and fairness. Among the control variables, the BA variables tend to be significant after returning to the PC, but only for the welfare measures. For the fairness measures only Ricky studying politics and administration has a significant effect. The agreeableness measures are on the verge of being significant in some of the models. Since the assumption of linearity is far-fetched from the way the variables are created, this attempt to gain further insights is not further pursued.

In yet another approach, I use the split datasets with the dichotomous outcome variable of a cooperative solution. For the welfare constellations, no significant results could be obtained. For the fairness constellations, some deliberation variables are here significant, but only in the full models which include the four dimensions as individual variables – with and without control variables. *Justification* has a negative effect and *respect* has a positive effect. These models do also not converge, but the convergence is so much further away from an acceptable threshold than in the models presented above that it is also not worthwhile pursuing this approach.
6.1.2 Interpretation of the Substantive Outcomes Results

In the above subsection, a number of observations have been made that reveal a varied picture about the relationship between the deliberative quality and the decisions taken by the participants. This variation concerns both the different dimensions used to measure deliberation as well as the different preference constellations. In this subsection, I move away from the mere data and parameters and present the interpretation of the results in respect to the theoretical conjectures and the peculiarities of the data generating process. This is done in general terms first, and in respect to the different ways of measuring deliberation second. The section ends with several interpretations about the control variables.

Overall, considering Hypotheses H3a and H3b, I have to concede that the hypothesised relationships cannot be supported with the data presented here. None of the deliberation coefficients are significant overall. In the theory section, Hypothesis H3 is divided in the two parts H3a and H3b, suggesting that it is worthwhile to differentiate the effect of deliberation on the outcomes by the norms that are defining the cooperative solution to be normatively superior to all other outcomes. Looking at these two norms independently does not change any of the general conclusions, as is mentioned in the last paragraphs in the above subsection. However, some observations can still be made. Although looking at T1, the two fairness games behave very similar, the two welfare games are generally at the opposing ends of the predicted probabilities. At T2, PD generally aligns with CH and RW, even though the probability to reach the cooperative solution is often slightly lower. Only RW behaves different to the other games. Most likely, this can be explained by certain characteristics of that preference constellation. RW is the only preference constellation in which the cooperative solution is not fair – i.e. the difference between the outcomes for the two participants is not zero. However, it is still among the fairest possible outcomes of the constellation. Unfortunately, testing the effect of the welfare efficiency norm analogous to this preference constellation is not possible, because the absolute comparison point of efficiency (a utility of 4 for both players) would no longer lead to any strategic conflict and make the study obsolete. So, in all preference constellations, the cooperative solution is among
6.1 Does deliberative quality lead to a cooperative solution?

the most efficient results but inferior to an absolute comparison point. However, the
other unique characteristic of RW is the efficiency value of the cooperative solution: it
is highest among all games. The rate of achieving a cooperative solution is generally
lower, however. One could carefully conclude that a clearly observed lack of absolute
fairness might play a more important role than a clearly observed lack of welfare ef-
ficiency in influencing participants not to set aside their self interests for the sake of a
normatively superior solution.

Another general observation described above is the smaller difference of the effects
of the deliberative quality over the different preference constellations on the outcomes
at T2 compared to T1. This observation appears to be mainly driven by the fact that
PD does no longer have such a high cooperation rate but aligns much more with CH
and RW. The time between the two decision points is 5 to 10 minutes. So, the biggest
difference between them is the fact that the other participant can no longer react to the
deciding participant’s action. Especially in PD, but also in the other constellations, the
cooperation inducing effect of communication already vanishes to a certain degree –
the participants can no longer coordinate their actions and can no longer adapt to the
other participant’s actions. Since the variance of the random slopes is considerably
smaller at T2, a first careful conclusion can be drawn by stating that if the deliberative
quality has any effect at all, it influences the process of coordination and adaptation
rather than the conviction of what is the best solution. At this point, one has to keep in
mind that although I control for T0 in all models with control variables, I never control
for T1 when regressing on T2. The relationship between T1 and T2 is the topic of the
next chapter. There, I take up this conclusion and examine to what extent the partici-
pants have been convinced of anything. Here, I proceed by looking at the measures of
deliberation in more detail, interpreting the observations about the deliberative quality
index first and the individual dimensions thereafter.

Index: In respect to the index of deliberative quality, the following observations have
been mentioned: at T1, there is a difference of direction between the random slopes
between the symmetric games and the asymmetric games. In the symmetric games the
probability of agreeing on the cooperative solution seems to profit from a higher level
of deliberative quality, while in the asymmetric games, the direction of the random
slopes suggests a negative correlation. At T2, all random slopes point in the same
direction: suggesting a negative effect of deliberation on the cooperative solution.

To make sense of these patterns, it is worthwhile to recall the logic of coordination
that has been mentioned above. Especially in the symmetric games, the participants
need to coordinate their actions and can profit to a certain degree from mutual coop-
eration. Although both actors could be better off, they would need to explain why
they deserve to be better off and why the other actor should not retaliate or should
accept being worse off. In the asymmetric games, such an explanation is easier: since
the Rambo is in an advantaged position, Ricky just needs to argue that Chris was not
convincing enough to make him give up this advantage for the sake of the (externally
defined) normatively superior solution. The same is true for the decisions at T2: the
time for coordination has passed already. The actors no longer need to make an effort
in justifying their positions (in front of each other and themselves).

With this interpretation, one characteristic of this study comes to the forefront. Al-
though generally the decisions at T1 and T2 both are made after the process of deliber-
ation, the actors’ intent to work at the catering service is generally mentioned right at
the beginning of the discussion. So the process of communication tries to influence the
transformation from intention to decision. Within this process, both Ricky and Chris
need to justify their positions; they can try to dominate the discussion; they can try to
be (dis)respectful to the other actor; and they can offer, accept, and/or reject proposi-
tions for dealing with the conflict – all these options can be used in an instrumental
manner in order to achieve the best outcome for themselves. Thus, the direction of
causality must be contested.

The above interpretations lead to the careful conclusion that the level of deliberative
quality, which is measured by the different indicators, rises with at least one actor’s
intention not to support the normatively superior result. If this interpretation of the
data is true, however, one can also conclude that efforts to deliberate, although quite
common when considered necessary, do not in general have enough power to sway
6.1 Does deliberative quality lead to a cooperative solution?

self-interested actors towards a fairer or more efficient solution when they no longer need to justify their decisions.

This interpretation of the results can be further substantiated by looking at the four different dimensions of deliberation. I would expect this negative correlation between high levels of deliberation with the cooperative solution to be mainly drawn by the dimensions of justification and accommodation, while participation and respect do not work as well in this line of reasoning. Thus, the next paragraphs deal with the different aspects of deliberative quality.

**Justification:** The dimension of justification measures the proportion of causally connected EDUs in the dialogue. The following observations have been mentioned in the last subsection: generally, high values of justification are associated with a low probability to attain a cooperative solution. However, in the symmetric games, the level of justification is positively associated with the cooperative solution at T1. This positive association remains stable only for PD when also including the control variables, while it turns slightly negative for CH. A striking observation is also the strongly negative (and significant) association of justification in RF as well as the generally negative and declining probability in RW in the justification model. At T2, the level of justification also exposes an interesting pattern: although the difference between the preference constellations is much smaller at this decision point, and the general pattern of a declining probability with higher levels of justification remain, RW is special. At the high end of the justification measure, the probability of achieving the cooperative solution is highest among all preference constellations.

These observations generally fall in line with the above interpretation. Particularly in the asymmetric games at T1 a lot of justification has happened before the participants decided not to agree on the cooperative solution. When testing Hypotheses H6, I further investigate whether it is the role of Chris or Ricky which draws this result, but for the moment this is not important: Both have their reasons for justifications. For the advantaged player, although Ricky knows that s/he can decide not to work without having to suffer any negative consequences, there appears to be a need for defending this decision in front of the other actor (and/or his/her own conscience). Chris on
the other hand tries to make Ricky understand how difficult it is for him/her to work alone. These pull factors for using arguments are apparently not as strong in the symmetric games. In addition, reaching the cooperative solution does not include so much effort for the participants. Once they both decide to work at the catering service, they can continue talking about whatever they want. This will most likely not sway their decision at the table anymore. They are satisfied with their second best solution and do not want to make an effort for the best solution, which would also make the other actor worse of. So, they do not need justification for influencing the other actor or silencing their bad conscience. Hence, an association between the level of justification and the probability to achieve the cooperative solution is almost non-existent in PD and CH at T1.

For T2, the interpretation of the results is different. Why is RW so different from the other preference constellations, and why does the level of justification have the smallest (random slope) association with the probability of reaching the cooperative solution in comparison to the other preference constellations? Since the level of justification is the same for both models (T1 and T2), the different patterns have to be explained by the difference of ending in a cooperative solution at the two decision points. At T2, I observe more cases that do not end in S1. Thus, in the asymmetric constellations more cases with low levels of justification also end in a result other than S1, while in the symmetric constellations more cases with high levels of justification show the same pattern. One possible explanation could be deception: some participants in the symmetric games might be willing to play nicely and only decide for their own interests at T2, while there is no need for such means in the asymmetric games. However, since the participants are informed about their choice at T2 only after they have returned from the table, this explanation would only work if a considerable amount of participants had been told about the whole procedure of the experiment beforehand. This cannot be ruled out unfortunately. So, alternatively, this pattern can potentially be explained by the lack of conviction: even though some participants might have agreed on cooperating at T1 after having listened to a number of reasons, they might have had second thoughts once they returned to the PC-equipped work station where the other actor could no longer react on the defection. In asymmetric games, this reason to cooperate
6.1 Does deliberative quality lead to a cooperative solution?

is less influential as the constellation more or less forces Chris to work no matter what decision Ricky takes. The small association between justification and the outcome at T2 can therefore most probably be explained by the existence of actors who seize the opportunity even though they have not been willing to engage in a lot of justification at the table.

**Participation:** Unlike justification, a high value of participation is more likely to co-occur with a cooperative solution. However, this effect is just marginally above zero (and like everything else not significant). This is true both for T1 and T2. Even the special position of RW is least striking in this dimension. Only at T1 does the random slope of RW show a slightly negative correlation in comparison to a slightly positive random slope of the other preference constellations.

Maybe this should not be too surprising though. The biggest effect of participation is in PD. Here the increase of one standard deviation is associated with a maximum of a 4 % increase of the the probability to choose S1. This one standard deviation is a difference of 0.06 on the participation scale. This difference is the same as when one participant uses 56 % of the overall speaking time and the other uses 44 % as compared to a 50/50 distribution - with the later co-occurring with the higher probability of S1.

**Respect:** The respect dimension reflects the number of words with positive connotation in reference to the number of word with negative connotation. Like participation, high values are generally more associated with the probability to end in the cooperative solution, both at T1 and T2. In PD at T1, this rise is most striking (and can be considered significant) with a considerably low probability for the lowest respect values. Furthermore, the predicted probability at the highest levels of respect is almost 1, in PD as well as in CH and RF. RW, however, shows the opposite pattern again, even though it has a positive random slope at T1 when the control variables are not included in the respect model and only a small negative association when they are included. In addition, the negative association is not as strong as with justification (and accommodation). At T2, however, the predicted probability of S1 is highest among all preference constellations at the lowest levels of respect. Apparently, those RW cases that ended in
6 The Effect of the Deliberative Quality on Substantive Outcomes

the cooperative solution where among the cases where respect was at the lowest, while those that ended in S3 saw the highest respect values.

Generally, I can conclude that the tone of the discussion appears to affect the willingness of the participants to cooperate with each other (if this result is not produced purely by chance). This however does not explain the pattern that is observed for RW at T2. Yet, analogously to the justification dimension, maybe it is possible for a Chris to instrumentally set the tone to be extra-nice to a Ricky who refuses to work. The observed pattern could then be explained, if a respectful Chris is able to sway a Ricky to decide for S1 at the table, but this does not last until the same Ricky returns to the PC and takes advantage of the Rambo position nonetheless. Within RW, the words with a positive sentiments value that are most often used are the following words: einfach (simple, simply: 2972 appearances), gut (good: 2503), lernen (to learn: 1452), genau (exactly: 1050), wichtig (important: 943), klar (clear / clearly: 776), and richtig (right / correct: 548). Although there might be other words that drive the result, it is well imaginable that these words are more often used in a dialogue in which Ricky, the Rambo player, refuses to work and Chris tries to persuade him/her to change his/her mind.

Accommodation: Finally, accommodation is measured with trigger words that vocalise the illocutionary words of speech acts. The general picture that can be drawn from the above results resembles the one from justification. In general, high values of accommodation are associated with a low probability to end in the cooperative solution. At T1, there is a slight decline of the mean predicted probability from the minimum value to the maximum value of accommodation for PD, a considerable decline of approximately 0.15 for both CH and RF, and a substantial decline of close to 0.3 for RW.

At T2 the similarities to justification continue: while the mean predicted values of PD, CH and RF decline substantially for more than 0.3, the decline of RW approaches only 0.1. The mean predicted probability of reaching S1 at T2 with the highest values of accommodation is highest for RW, while it is lowest among the preference constellations for the lowest accommodation values. It is noteworthy that the random slopes of accommodation can almost all be considered significant at T2, while the random slopes in the other dimensions can be considered significant only at T1, if at all.
6.1 Does deliberative quality lead to a cooperative solution?

Looking at the interpretation of these presented patterns and considering the differences between T1 and T2, the careful conclusion is in line with the one for justification. While one actor – most likely Ricky – refuses to work in RW, the other actor (Chris) tries to make offers, generates different ideas and does everything to accommodate for the negotiation partner’s needs, just to make him accept to work in one way or another. Since the mean predicted probability at the low end of accommodation are higher at T1 than at T2, I can conclude that in T2 some Rickys took the opportunity to defect even though they have never mentioned that option at the table.

The different patterns among the preference constellations can also be explained by the possibility of actors who considered not to work having been persuaded to agree to work at the table, but deciding to defect at T2 nonetheless.

In RW, in contrast, they never accepted to dispose of their own benefits for a solution in which the other participant earned more. So they refused the cooperative solution already at the table.

Control Variables: After the results of the deliberative quality have been amply discussed, I now turn shortly to the control variables. It does not come as a surprise that the decision at T0 (even though phrased as a fictitious decision) significantly correlates with the decisions at T1 and T2. Especially if the two actors are already willing to find the compromise solution before having heard any arguments, they are also often very fast in agreeing on the cooperative solution at the table. In the theory chapter, I discuss the role of norms and mention that different people might assume different norms to be valid. If compromise orientation is such a norm and if two participants who generally abide by this norm – unless persuaded to reconsider – meet each other at the negotiation table, there is no reason in the whole experiment why they should behave differently than choosing S1. Maybe being drawn into RW does challenge such a norm, since S1 is not fair, but the high cooperation rates in the asymmetric constellations do not give much credit to this idea.

In the theory chapter, I also discuss a psychological experiment called the hidden profile. In a hidden profile experiment, participants often are not able to find an op-
The Effect of the Deliberative Quality on Substantive Outcomes

timal solution, because they do not share private information that contradicts the solution they would attain according to the information they have individually. Reminiscing the coordinating power of the actors’ believe in agreement (and the subsequent choice of a suboptimal solution), this study might fall pray to a similar mechanism. But since the ‘compromise solution’ is also always the normatively superior solution, it is impossible to discern the suggested causal explanations for the above observations.

Since gender did not produce significant results, I refrain from interpreting to much into the results. It is however interesting to see, that mixed gender pairs were more likely to cooperate, and that women seemingly were more willing to defect from an agreed upon solution when given the role of Ricky, which is the advantaged actor in the asymmetric preference constellations.

The study degree is a proxy for age and experience. Since the age group was not significant by itself, only the degree was included in the model. Mixed pairs were less likely to end in S1. One possible explanation is the level of experience of BA students – not really understanding the strategic component of the experiment and being subject to a compromise orientation norm. If these factors come together, a self-interested actor might need little effort to get their preferred outcome. This is especially convincing if the participant not studying at the BA level was randomly selected to play Ricky in an asymmetric game.

A similar explanation can be given for the effect of politics students. Although economics students should also be aware of the game theoretic models, the simple four fielders are part of the general curriculum in the first semester of the politics department. So at least one can assume that they have a basic understanding of the strategic situation they are put into.

The significant effect of agreeableness appears to be self-explanatory. Apparently, participants like agreeable people (where the value of agreeableness comes from the questionnaire and thus from self-reporting). The fact that only Chris is significant (although the coefficients are very similar for Ricky as well) might be driven by the asymmetric constellations, where a Ricky who meets an agreeable Chris does not choose to
6.2 Are asymmetric games less prone to end in the cooperative solution?

follow their self interest, while a Ricky who is faced with a Chris who scores low on agreeableness might be more willing to take advantage of their dominant strategy not to work.

6.2 Are asymmetric games less prone to end in the cooperative solution?

In this and the next sections the aim is to dig deeper into understanding how communication might affect decisions. Here, I lay the basis for the further analyses by scrutinising the preference constellations in reference to the control variables. The aim is to figure out if any of the game-theoretic constellations already affect the willingness to cooperate, even when there is no communication allowed.

From theory, I derive the general expectation that asymmetric games are less prone to end in the cooperative solution. In the last section, I already observe differences in the four preference constellations. Generally, RW is least likely to end in a cooperative solution while PD is most likely at T1 and equally likely as the other two constellations at T2. Overall, RW and RF appear to be less likely to end in S1, compared to PD and CH. From the numbers presented in Figure 4.5, I already observe that at T0, the cooperative solution is least often selected in PD, where only one fourth of the cases end in S1, and most often selected in CH. The asymmetric games RW and RF see slightly more than a third of the cases in S1. In the following statistical analyses, I isolate the effect of the symmetry characteristic of the preference constellations from the control variables. As I suggest in the last section that some compromise norm might be at work, I scrutinise the decision at T0 for patterns that are able to strengthen or weaken such a suggestion.
6 The Effect of the Deliberative Quality on Substantive Outcomes

Statistical models

Analogous to the last chapter, I make use of hierarchical logit models. Here, I am not primarily interested in the interaction of a control variable with the preference constellations. However, the reason of using the preference constellations as a grouping variable remains the same: I prefer not to be forced to decide on a baseline category against which all other preference constellations are being tested, as the choice would be completely arbitrary. In addition, when testing for the group level predictors (asymmetry and norm), the hierarchical model adjusts for the fact that the 240 cases are nested in just four preference constellations and that, therefore, the distribution of the norms and symmetry variables is not completely independent of each other, even though the pairs have been randomly assigned to the preference constellations. Effectively, in the no-pooling scenario, I would compare the mean probabilities of two vs. two cases for each of the two group level predictor variables. Due to partial pooling, the model is able to borrow strength from the 240 cases.

The following formula represents the models with control variables. In these models, $y_i$ represents the decision before the participants move to the negotiation table. The value 1 is given to the cooperative solution (S1) and 0 to all other possible solutions. $X_i$ is the matrix of control variables. $u_{symmetry}^j$ takes the value 1 if the preference constellation is asymmetric and 0 if it is symmetric. $u_{norm}^j$ takes the value 1 if the preference constellation was introduced to test the welfare norm and 0 if it was introduced to test the fairness norm. $\alpha_j$ is the varying intercept over the four preference constellations. I do not include random slopes in this model, since I am not interested in any interactions between the various control variables and the preference constellations.

$$
\Pr(y_i = 1) = \logit^{-1}(\alpha_j[i] + X_i \beta_{controls}); \text{ for } i = 1, \ldots, 240 \text{ pairs}
$$

with

$$
\alpha_j = \gamma_0^\alpha + \gamma_1^\alpha u_{symmetry}^j + \gamma_2^\alpha u_{norm}^j + \epsilon_j^\alpha; \text{ for } j = 1, \ldots, 4 \text{ constellations}
$$
6.2 Are asymmetric games less prone to end in the cooperative solution?

### 6.2.1 Results Testing Hypothesis H4

In Table 6.3, I present the results of five different models. In Model 0, I only include the preference constellations as random intercepts with no predictors whatsoever. In Model 1, I then introduce the two predictor variables on the group level. In Model 2, I add the NEO-FFI personality values of both Chris and Ricky (without their interactions). Model 3 then includes the control variables that have been used for testing Hypotheses H3 plus the participants’ age groups. In Model 4, I include all control variables, combining Models 2 and 3. This last model is presented for consistency reasons although it fails to converge, which is not surprising considering the number of observations (240) and the number of included variables (25).

PD and CH are the two preference constellations whose probabilities to end in S1 are furthest apart as can be observed from Model 0. The random intercept is actually significantly different from the overall intercept ($\gamma_0$) for these two preference constellations. Moving on to the other models and controlling for the group level predictors symmetry and norm, however, this difference in random intercepts changes, as the group level predictors already explain a considerable amount. In Model 1, the symmetry variable, which is hypothesised to have a negative effect on the probability of both participants to agree to work before they speak, is indeed negative. The coefficient is, however, smaller than the standard error and can therefore not be considered statistically significant on any reasonable level of confidence. This result does not change when including any of the control variables in Models 2 through 4. However, the preference constellation does have a significant effect when looking at the norm that was intended to be tested: the welfare games (PD and RW) are significantly less likely to end in S1 at T0 than the fairness games (CH and RF). The coefficient is significant on the 0.9 level of confidence in Models 1, 3, and 4. The inclusion of the two predictor variables in Model 1 does however not improve the model fit: The DIC (deviance information criterion) rises from 280.8 to 284.4 as compared to Model 0.

In Model 2 – including the NEO-FFI personality control variables – the coefficient for norm (welfare vs. fairness) does not pass the significance threshold. In fact, in Model
6 The Effect of the Deliberative Quality on Substantive Outcomes

Table 6.3: Determinants of the Cooperative Solution Before Communication (T0)

<table>
<thead>
<tr>
<th></th>
<th>Model 0</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>&quot;Model 4*&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymmetric</td>
<td>−0.55</td>
<td>−0.61</td>
<td>−0.56</td>
<td>−0.64</td>
<td></td>
</tr>
<tr>
<td>norm: welfare vs. fairness</td>
<td><strong>−1.02</strong></td>
<td>−1.03</td>
<td><strong>−1.17</strong></td>
<td><strong>−1.26</strong></td>
<td></td>
</tr>
<tr>
<td>Neuroticism: Chris</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroticism: Ricky</td>
<td>−0.03</td>
<td>−0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion: Chris</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion: Ricky</td>
<td>−0.02</td>
<td>−0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness: Chris</td>
<td>0.02</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness: Ricky</td>
<td>0.02</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness: Chris</td>
<td>0.02</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness: Ricky</td>
<td>0.01</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscientiousness: Chris</td>
<td>0.02</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscientiousness: Ricky</td>
<td>−0.03</td>
<td>−0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris: male</td>
<td>−0.02</td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.49)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ricky: male</td>
<td><strong>0.84</strong></td>
<td>0.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.40)</td>
<td>(0.44)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>both male</td>
<td>−0.66</td>
<td>−0.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.61)</td>
<td>(0.63)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>know each other</td>
<td>0.33</td>
<td>0.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.40)</td>
<td>(0.42)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris: BA</td>
<td>−0.42</td>
<td>−0.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(0.54)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ricky: BA</td>
<td>−0.32</td>
<td>−0.46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(0.55)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>both BA</td>
<td>0.72</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.66)</td>
<td>(0.69)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris: PV</td>
<td>0.31</td>
<td>0.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.48)</td>
<td>(0.50)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Ricky: PV</td>
<td>−0.22</td>
<td>−0.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.40)</td>
<td>(0.43)</td>
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<tr>
<td>both PV</td>
<td>0.97</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.74)</td>
<td>(0.75)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris: age</td>
<td>0.07</td>
<td>0.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.20)</td>
<td>(0.21)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ricky: age</td>
<td>−0.02</td>
<td>−0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.19)</td>
<td>(0.20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>age difference</td>
<td>0.23</td>
<td>0.23</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.19)</td>
<td>(0.20)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Results of hierarchical logit regression models using glmer(family=binomial (link="logit"); optimizer="bobyqa") from the R-package "lme4" (Bates et al. 2015) on the decisions to end in a cooperative solution before communication; standard errors in parentheses; N=240; data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant on 0.95 level of significance – italic bold coefficients on 0.9 level; *Model 4* failed to converge → estimates might not be reliable. Model 2 failed to converge with bobyqa optimizer → Nelder–Mead optimizer was used instead;
6.2 Are asymmetric games less prone to end in the cooperative solution?

2, not a single coefficient is significant. The inclusion of 10 new variables has a slightly better model fit with a DIC of 278.4. Comparing the deviance, however, this cannot be considered much of an explanatory power: in general the deviance should sink by 1 point per variable that is more included in a comparative model. The difference between Models 1 and 2 is however only 5. Looking at the model fit of Model 3, the picture is slightly better: the deviance drops by slightly more than 13 with the inclusion of 13 control variables on the individual level, compared to Model 1. The norm predictor is significant again at the 0.9 level and there is even one more significant value: a male Ricky, as compared to a pair of two women, has a positive correlation with the probability to end in S1 before communication was allowed. The probability rises for a maximum of 20%. Interestingly, the coefficient for Chris being male is almost zero. In addition, it is interesting to remark that this effect is mainly driven from the symmetric games. When splitting the dataset according to symmetry, the variable Ricky: male is only significant in the symmetric dataset, but not in the asymmetric dataset.

6.2.2 Interpretation of the Results that Predict the Decision at T0

From the above results, I can conclude that asymmetry in itself cannot be shown to affect the willingness to cooperate before communication (T0) as the negative coefficient is not significant. However, the norm in question apparently does make a difference. Yet, this result is driven by the symmetric games and the differences between PD and CH, as RW has a slightly higher cooperation rate than RF at T0. My considerations following the discussion on Engelmann and Strobel (2004) in Chapter 4, suggesting that the participants might try to maximize the minimal pay-off for any player are hereby off the stove. The opposite appears to be the case: when the participants are faced with a decision without being able to communicate they want to avoid the worst outcome for themselves and choose accordingly. Even though they gain as much by risking not to work in both PD and CH, they accept risking the second worst outcome for the chance of the best outcome, but not the worst outcome. Or they avoid the risk of 'being played the sucker'. The clear Nash-equilibrium in PD is quite powerful for some participants to choose No, but the mixed equilibrium in CH makes most participants
choose to work and not try to risk losing all for the chance of attaining the highest outcome. Since the background stories are so similar and the variance of decisions at T0 is considerably large, I conclude that at this point, the strategic constellation appears to be the driving force for the participants’ decisions.

Even though Hypothesis H4 could not be supported due to the strong influence of PD on the results, both Rambo-games had a negative random intercept. This result suggests that the disadvantaged actor knows that the advantaged actor has an incentive to decide not to work and simultaneously does not risk ‘being played the sucker’ as s/he would when deciding not to work. In fact, from Figure 4.5, one can observe that in the Rambo games, the defection rate is even slightly higher for Ricky, compared to PD, which has the same preference order for Ricky irrespective of Chris’ preference order. Since in PD, both players can avoid their worst outcome by choosing not to work, this preference constellation ends in the lowest cooperation rate. In a split dataset including only Ricky, regressing on the decision to say yes like in Model 0 results in the lowest random intercepts in the asymmetric games. However, PD is on a similar level. CH, on the other hand, is significantly different from all other preference constellations. In the dataset including only Chris, the decision to work is highest in the two Rambo games, followed by CH. In PD, Chris is most likely to decide not to work.

The second observation is the significantly positive coefficient of a male Ricky. One could think that some sort of ‘Gentlemen’s code’ were at work if this result were driven by the asymmetric games in which the Ricky player is in advantage. In contrast, the result is driven from the symmetric games and disappears when looking at the asymmetric games. Since the symmetric games have no difference in the utility functions of Chris and Ricky, the result appears to suggest that the background story of Ricky has a different effect on male participants which disappears when the asymmetric preference constellation places Ricky in an advantaged position. One reason for this pattern might be that male participants do not want to admit Ricky’s reasons of having to revise for a last exam to be justified, when they are facing a female opponent that has to take care of a group of kids at the rock-climbing tour. A male Ricky facing a male Chris is still more likely to end in S1 at T0 than if Ricky is female, but the effect is no longer
6.3 Does the disadvantaged player use more arguments?

In Hypothesis H5, I conjecture that the level of deliberative behaviour (especially in terms of justification) is influenced by the preference constellation. In Rambo games, the disadvantaged actor has an incentive to use more arguments and to behave in such a way as is measured by the deliberative quality – even though this instrumental use of justification neglects the idea of a genuine search for the best solution in which every actor is expected to be open to being convinced of a common best solution. However, there is no self-interested reason for the advantaged actor to go to work at the catering service, which is why the disadvantaged actor has no choice but to try to convince the other participant using other means if s/he wants to achieve a solution that is better for him/her. Specifically, convincing the other actor to cooperate is instrumental to his/her interests. This is why we would expect a higher level of justification for those participants playing the role of Chris.

Statistical models

In order to test Hypothesis H5, I split the dataset and only analyse the asymmetric games. On the other hand, I disaggregate the level of analysis to the individual level of each participant. This is not possible for the participation dimension as the measure of equal participation depicts the relation between the two actors. Thus, participation is still part of the general index but is not used as an independent variable in its own right, here.

Even though the measures of the different dimensions are slightly skewed as can be observed in Table [4.1], I assume the measures to be normally distributed. This al-
allows the use of linear models. Since I am only using the asymmetric games, there is no need for controlling for the preference constellation in a hierarchical structure. I simply include the norm as a dichotomous variable in the model in order to differentiate between RW and RF.

The following equation depicts the linear model. \( y_i \) is the respective level of the deliberative quality – either the index value or the value on the respective dimension. \( \alpha_0 \) is the intercept. \( x_{i \text{role}} \) is 0 for Ricky and 1 for Chris. \( x_{i \text{norm}} \) is 0 for RW and 1 for RF. And \( X_i \) is the matrix of control variables, including various interaction effects. \( \beta_{\text{controls}} \) is thus the vector of coefficients for each variable included in \( X_i \). \( \epsilon_i \) depicts the respective residuals. For each measure of deliberative quality, I calculate three models. Models 0 only look at the effect of role and norm, without any control variables. Models 1 include control variables including the interactions of role with the control variables of the individual. I am not interacting the role with the measures of the negotiation partner. Models 2 then interact some control variables (gender, study degree, and studying politics) with the values of the negotiation partner. In Models 2, I drop the interactions with the role in order to avoid three-way interactions.

\[
y_i = \alpha_0 + \beta_1 x_{i \text{role}} + \beta_2 x_{i \text{norm}} + \beta_{\text{controls}} X_i + \epsilon_i
\]

### 6.3.1 Results Testing Hypothesis H5

The results of the above described models are presented in Table 6.4. Throughout all presented models, there is no clear correlation between the disadvantaged player and the level of deliberative quality. Comparing Models 0, one can observe a positive coefficient for Role: Chris for all measures of deliberative quality but justification. Using the index as an example, the level of deliberative quality is 0.13 standard deviations higher for Chris-players compared to Ricky-players. Model 0 – Justification on the other hand actually has a slightly but negligibly negative coefficient.

None of these described coefficients are significant and it is therefore impossible to set aside the possibility of the directions of these coefficients being the result of pure chance in the data generating process. The inclusion of the different sets of control
6.3 Does the disadvantaged player use more arguments?

Table 6.4: Determinants of the Deliberative Quality at the Negotiation Table

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Model</th>
<th>M0</th>
<th>M1</th>
<th>M2</th>
<th>Justification</th>
<th>M0</th>
<th>M1</th>
<th>M2</th>
<th>Respect</th>
<th>M0</th>
<th>M1</th>
<th>M2</th>
<th>Accommodation</th>
<th>M0</th>
<th>M1</th>
<th>M2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role: Chris</td>
<td></td>
<td>0.13</td>
<td>−0.44</td>
<td>0.11</td>
<td>−0.04</td>
<td>0.01</td>
<td>0.16</td>
<td>−0.65</td>
<td>0.17</td>
<td>0.15</td>
<td>−0.18</td>
<td>−0.01</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Norm: fairness</td>
<td></td>
<td>−0.03</td>
<td>−0.02</td>
<td>−0.02</td>
<td>−0.10</td>
<td>−0.13</td>
<td>−0.12</td>
<td>0.05</td>
<td>0.09</td>
<td>0.08</td>
<td>−0.21</td>
<td>−0.18</td>
<td>−0.17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

decision to cooperate at T0

-0.01| 0.04| −0.14| −0.11| −0.07| 0.02| 0.32| 0.27|                          |     |     |     |                          |     |     |     |

male

0.09| −0.07| 0.13| −0.26| −0.01| 0.02| 0.04| 0.02|                          |     |     |     |                          |     |     |     |

male partner

0.07| −0.10| 0.06| −0.26| 0.04| −0.05| −0.03| −0.25|                          |     |     |     |                          |     |     |     |

know your partner

−0.29| −0.17| −0.27| −0.08| −0.21| −0.14| 0.03| 0.08|                          |     |     |     |                          |     |     |     |

BA: Yes

−0.03| −0.004| −0.07| −0.10| −0.03| 0.02| 0.17| 0.15|                          |     |     |     |                          |     |     |     |

BA Partner: Yes

0.06| 0.12| −0.08| −0.03| 0.02| 0.06| 0.27| 0.35|                          |     |     |     |                          |     |     |     |

PV: Yes

−0.13| −0.24| −0.17| −0.11| 0.06| −0.07| −0.29| −0.44|                          |     |     |     |                          |     |     |     |

PV Partner: Yes

−0.11| −0.20| −0.02| 0.05| −0.05| −0.24| −0.21| 0.35|                          |     |     |     |                          |     |     |     |

Chris x cooperate at T0

0.42| 0.07| 0.68| 0.05|                          |     |     |     |                          |     |     |     |                          |     |     |     |

Chris x male

0.06| −0.54| 0.29| 0.39|                          |     |     |     |                          |     |     |     |                          |     |     |     |

Chris x knows partner

0.25| 0.47| 0.06| 0.12|                          |     |     |     |                          |     |     |     |                          |     |     |     |

Chris x BA

−0.02| −0.16| 0.10| −0.14|                          |     |     |     |                          |     |     |     |                          |     |     |     |

Chris x PV

−0.15| −0.04| −0.02| −0.27|                          |     |     |     |                          |     |     |     |                          |     |     |     |

male x male partner

0.42| 0.34| 0.21| 0.52|                          |     |     |     |                          |     |     |     |                          |     |     |     |

BA x BA Partner

−0.08| −0.03| −0.04| −0.15|                          |     |     |     |                          |     |     |     |                          |     |     |     |

PV x PV Partner

0.14| −0.29| 0.42| 0.08|                          |     |     |     |                          |     |     |     |                          |     |     |     |

Intercept

−0.04| 0.18| 0.14| 0.09| 0.46| 0.44| −0.12| 0.04| −0.05| 0.01| −0.25| −0.22|                          |     |     |     |

Adjusted $R^2$ −0.004| −0.04| −0.02| −0.01| −0.01| −0.001| −0.03| −0.03| 0.01| 0.02| 0.03|                          |     |     |     | 203

Note: Results of linear regression models on the respective standardised levels of deliberative quality of communication (index and individual dimensions); standard errors in parentheses; N=240 (120 observations with two participants); data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant on 0.95 level of significance - italic bold coefficients on 0.9 level;

Variables also lead to both positive and negative coefficients in every set of models. Thus, any effect of the role variable is completely unreliable.

So again, the postulated relationship of Hypothesis H5 cannot be supported by the data in this experiment. Also, the preference constellation (RW or RF) do not play an important role. However, some of the control variables still tell an interesting story.
6 The Effect of the Deliberative Quality on Substantive Outcomes

In Model M1 - Justification, the interaction of Role: Chris and Gender: male is significant with a coefficient of -0.54. While a female Chris has only a small negative coefficient (-0.09), and a male Ricky even has a higher level of justification (0.13), with these coefficients not being significant, the level of justification is half a standard deviation lower if the participant playing Chris is male. Interestingly, when dropping these interactions and interacting the actor’s variables with its partner’s variables in Model M2 - Justification, being male shows a negative (even though not quite significant) coefficient for both the actor and its partner. The gender interaction then shows that a male participant arguing with another male participant is much less negatively correlated with the level of justification. The highest level of justification however appears, when two women participate in one session.

The other two significant coefficients appear in Model M2 - Accommodation. First, studying politics and administration correlates with a level of accommodation that is almost half a standard deviation lower than if the participant were studying something else. Although not significant, the level of accommodation is about one third of a standard deviation higher if the other participant is studying politics and administration. Since I am describing the second model, I included an interaction term of the study course. Thus, the described coefficients always refer to experimental sessions in which only one person is studying politics. Both participants studying politics only increases the level of accommodation to a negligible extent.

The second significant coefficient is the gender interaction term. If both participants are male, the level of accommodation is half a standard deviation higher. There is almost no difference between the level of accommodation of a woman with a female partner and a man with a female partner. However – even though not significant – the level of accommodation is one fourth standard deviation lower for female participants who meet a male experiment partner.
6.3.2 Interpretation of the Results that Predict the Deliberative Quality

In the last subsection, I describe the most noteworthy coefficients from Table 6.4. In general, the level of deliberation does not depend on the role that was given to the participants. This is true for the index as well as for the three scrutinised dimensions 

**justification, respect** and **accommodation**. So I cannot conclude that participants in the study were affected by the advantage or disadvantage they received from an asymmetric preference constellation.

However, for **justification**, the disadvantaged actor turns out to use significantly fewer arguments, if he is male, even though being male generally increases the level of **justification** – when being the advantaged actor. Ergo, for women I cannot show that my expectations are right and for men the data actually points to the opposite direction of my expectations. Due to the fairly large intercept (0.46) one potential explanation for these results might be obtained by changing the perspective. Male participants playing Chris might have a considerably low level of **justification** because Rickys have a considerably high level of **justification** – male Rickys even more so then female Rickys. In Section 6.1 I already suggest that there might be a tendency of the advantaged players to defend themselves and support their advantaged position with reasons. Following the line of this argument, the data would suggest that men are especially prone to such tendencies, not being able to accept that they are in an advantaged position due to the luck of a draw. While male Rickys have the highest level of **justification**, male participants playing Chris have the lowest level of **justification**. The level of **justification** of female participants on the other hand does not appear to be affected by the role as such.

The level of **accommodation** does not depend on the (dis)advantaged position of the participants. However, studying politics and the gender variables show a significant influence. Both control variables suggest that higher levels of **accommodation** are instrumentally used and that certain groups of people are more prone to such instrumental use of language than others.
6.4 Is the deliberative quality of the advantaged actor decisive for attaining a cooperative solution?

In the last section, no signs of rhetorical action by the disadvantaged actors can be presented. Rather, I find high levels of justification when looking at the advantaged actors. For the last set of hypotheses (H6a and H6b), I talk about rhetorical entrapment (Schim-melfennig 1997) in the theory chapter: I suggest that a high level of deliberative quality of the Rambo player is decisive for a greater probability to reach the cooperative solution (which is either welfare efficient (H6a) or fair (H6b)). The argument presented in the theory chapter claims that the disadvantaged actor uses a high deliberative quality in order to force the advantaged actor into engaging in a process of justification. This would lead to agreement that does not end in the individually best outcome of the Rambo-player (Solution S3). The Rambo-player gets convinced of agreeing to the cooperative solution for normative reasons that he can no longer find reasons against being applicable to the situation. So even if the high level of deliberative quality of the advantaged actors is most likely not induced by the disadvantaged actors’ use of rhetorical action, rhetorical entrapment might still appear.

I therefore now test if the deliberative quality of the two actors has different effects on the probability to reach the cooperative solution. The probability of cooperation should increase, according to the theoretical considerations, if Ricky is willing to engage in deliberation and thus allows for the power of the better argument to change his/her mind.

Statistical models

For the intended test, I need to disaggregate the deliberation variables to the individual actors. I therefore use the same variables that I use in the last section. However, the unit of analysis returns to the game. With the full dataset, the number of cases is 240. I just have two separate variables for the deliberative quality of the two actors on the
game level. Due to the above-mentioned reasons, I no longer have an individual look at participation. It remains part of the overall index, however.

In the following set of equations, I present the hierarchical model that is used to calculate the probabilities of reaching the cooperative solution. I again use random-intercepts random-slopes models. This time, the slopes can vary for the deliberation variables for both actors across the four preference constellations. Akin to Section 6.1, \( y_i \) represents the decision at the table (T1) or after returning to the PC-equipped workstation (T2). It takes the value 1 if the participants agree on the cooperative solution (S1) and 0 otherwise. \( x_i^C \) represents the deliberation variable by Chris, either the full index or the individual dimensions. \( x_i^R \) represents the respective deliberation variable by Ricky. \( X_i \) is the matrix of control variables. \( \alpha_j \) is the varying intercept over the four preference constellations. \( \beta_{\text{deliberation}}^{j[C]} \) is the varying slope over the preference constellations that is estimated for the deliberation variable of Chris, \( \beta_{\text{deliberation}}^{j[R]} \) is the varying slope for Ricky. \( \beta_{\text{controls}} \) represents the vector of coefficients for the various control variables.

\[
\Pr(y_i = 1) = \logit^{-1}(\alpha_j + x_i^C \beta_{\text{deliberation}}^{j[C]} + x_i^R \beta_{\text{deliberation}}^{j[R]} + X_i \beta_{\text{controls}}); \\
\text{for } i = 1, \ldots, 240 \text{ pairs; with} \\
\alpha_j = \gamma^\alpha_0 + \epsilon_j^\alpha; \text{ for } j = 1, \ldots, 4 \text{ constellations} \\
\text{and} \\
\beta_{\text{deliberation}}^{j[C]} = \gamma^\beta_0 + \epsilon_j^\beta; \text{ for } j = 1, \ldots, 4 \text{ constellations} \\
\text{and} \\
\beta_{\text{deliberation}}^{j[R]} = \gamma^\beta_0 + \epsilon_j^\beta; \text{ for } j = 1, \ldots, 4 \text{ constellations}
\]

### 6.4.1 Results Testing Hypothesis H6

For a first overview, I present the results of Table 6.5 in which no control variables are included in the models. In general, only the intercepts are significant. However, some of the random slopes are in absolute numbers larger than 1.65 times the respective
Table 6.5: The Relationship of Individual Deliberation and the Probability to Agree on the Cooperative Solution

<table>
<thead>
<tr>
<th>Observation</th>
<th>Index T1</th>
<th>T2</th>
<th>Justification T1</th>
<th>T2</th>
<th>Respect T1</th>
<th>T2</th>
<th>Accommodation T1</th>
<th>T2</th>
<th><em>All</em> T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Chris</td>
<td>0.01</td>
<td>−0.03</td>
<td>(0.28)</td>
<td></td>
<td>(0.18)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index Ricky</td>
<td>−0.32</td>
<td>−0.11</td>
<td>(0.34)</td>
<td></td>
<td>(0.20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Justification Chris</td>
<td>0.13</td>
<td>−0.15</td>
<td>(0.32)</td>
<td></td>
<td>(0.18)</td>
<td></td>
<td></td>
<td></td>
<td>0.19</td>
<td>−0.20</td>
</tr>
<tr>
<td>Justification Ricky</td>
<td>−0.38</td>
<td>−0.11</td>
<td>(0.31)</td>
<td></td>
<td>(0.18)</td>
<td></td>
<td></td>
<td></td>
<td>−0.37</td>
<td>−0.12</td>
</tr>
<tr>
<td>Respect Chris</td>
<td>−0.02</td>
<td>0.11</td>
<td>(0.26)</td>
<td></td>
<td>(0.17)</td>
<td></td>
<td></td>
<td></td>
<td>0.12</td>
<td>0.20</td>
</tr>
<tr>
<td>Respect Ricky</td>
<td>−0.02</td>
<td>0.00</td>
<td>(0.28)</td>
<td></td>
<td>(0.19)</td>
<td></td>
<td></td>
<td></td>
<td>0.14</td>
<td>0.11</td>
</tr>
<tr>
<td>Accommodation Chris</td>
<td>−0.21</td>
<td>−0.16</td>
<td>(0.25)</td>
<td></td>
<td>(0.16)</td>
<td></td>
<td></td>
<td></td>
<td>−0.27</td>
<td>−0.16</td>
</tr>
<tr>
<td>Accommodation Ricky</td>
<td>−0.40</td>
<td>−0.07</td>
<td>(0.41)</td>
<td></td>
<td>(0.17)</td>
<td></td>
<td></td>
<td></td>
<td>−0.39</td>
<td>−0.07</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>2.28</td>
<td>1.19</td>
<td>(0.58)</td>
<td></td>
<td>(0.20)</td>
<td></td>
<td></td>
<td></td>
<td>1.20</td>
<td>2.63</td>
</tr>
<tr>
<td></td>
<td>2.29</td>
<td>1.19</td>
<td>(0.59)</td>
<td></td>
<td>(0.19)</td>
<td></td>
<td></td>
<td></td>
<td>1.24</td>
<td>1.21</td>
</tr>
<tr>
<td></td>
<td>2.22</td>
<td>1.19</td>
<td>(0.53)</td>
<td></td>
<td>(0.20)</td>
<td></td>
<td></td>
<td></td>
<td>1.20</td>
<td>2.63</td>
</tr>
<tr>
<td></td>
<td>2.45</td>
<td>1.20</td>
<td>(0.72)</td>
<td></td>
<td>(0.19)</td>
<td></td>
<td></td>
<td></td>
<td>(0.83)</td>
<td>(0.16)</td>
</tr>
</tbody>
</table>

Random Intercepts

| Role | PD | 3.40 | 1.28 | 3.49 | 1.25 | 3.16 | 1.28 | 3.93 | 1.27 | 4.34 | 1.21 |
|      | CH | 2.55 | 1.31 | 2.52 | 1.34 | 2.58 | 1.37 | 2.65 | 1.32 | 2.72 | 1.21 |
|      | RW | 0.98 | 0.93 | 1.05 | 1.00 | 1.02 | 0.92 | 0.97 | 0.94 | 1.17 | 1.21 |
|      | RF | 1.94 | 1.21 | 1.85 | 1.18 | 1.91 | 1.18 | 1.92 | 1.23 | 1.82 | 1.21 |

Random Slopes: Chris

| Role | PD | −0.03 | −0.002 | 0.22 | −0.15 | −0.18 | 0.14 | −0.36 | −0.15 | * | * |
|      | CH | 0.001 | 0.01 | 0.15 | −0.15 | −0.08 | 0.16 | −0.23 | −0.14 | * | * |
|      | RW | 0.06 | −0.10 | 0.03 | −0.15 | 0.18 | 0.02 | −0.05 | −0.20 | * | * |
|      | RF | 0.02 | −0.02 | 0.10 | −0.15 | 0.03 | 0.10 | −0.15 | −0.15 | * | * |

Random Slopes: Ricky

| Role | PD | −0.68 | −0.15 | −0.53 | −0.10 | −0.17 | −0.03 | −1.11 | −0.11 | * | * |
|      | CH | −0.40 | −0.17 | −0.41 | −0.08 | −0.08 | −0.06 | −0.49 | −0.13 | * | * |
|      | RW | 0.10 | 0.01 | −0.23 | −0.16 | 0.16 | 0.09 | 0.32 | 0.04 | * | * |
|      | RF | −0.21 | −0.12 | −0.33 | −0.12 | 0.02 | 0.003 | −0.14 | −0.09 | * | * |

Likelihood Ratio Tests

\( \chi^2 \) | 1.86 | 0.29 | 0.16 | 0.06 | 0.92 | 0.33 | 5.80 | 0.38 | 6.97 | 0.26 |
\( \delta DF \) | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 27  | 27  |

Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit"); optimizer="bobyqa") from the R-package "lme4" (Bates et al. 2015) on the decisions to end in a cooperative solution; standard errors in parentheses; N=240; data were produced at University of Konstanz between 2014 and 2016; only intercepts are significant; absolute random slopes in *italics* are larger than 1.645 time the standard deviation of the variable; *: random slopes of the four dimensions are presented beneath; Models *All* have failed to converge → estimates may not be reliable

Random slopes at model All

<table>
<thead>
<tr>
<th>Role</th>
<th>Justification</th>
<th>T1</th>
<th>Respect</th>
<th>T1</th>
<th>Accommodation</th>
<th>T1</th>
<th>T2</th>
<th>Justification</th>
<th>T1</th>
<th>T2</th>
<th>Respect</th>
<th>T1</th>
<th>Accommodation</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>0.52</td>
<td>−0.42</td>
<td>0.07</td>
<td>0.25</td>
<td>−0.63</td>
<td>−0.99</td>
<td></td>
<td>−0.22</td>
<td>−0.12</td>
<td>0.20</td>
<td>0.06</td>
<td>−0.18</td>
<td>−0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>0.20</td>
<td>−0.38</td>
<td>0.09</td>
<td>0.12</td>
<td>−0.26</td>
<td>−0.46</td>
<td></td>
<td>−0.18</td>
<td>−0.12</td>
<td>0.20</td>
<td>0.15</td>
<td>−0.14</td>
<td>−0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RW</td>
<td>−0.10</td>
<td>−0.28</td>
<td>0.31</td>
<td>0.24</td>
<td>−0.15</td>
<td>0.41</td>
<td></td>
<td>−0.19</td>
<td>−0.12</td>
<td>0.20</td>
<td>0.13</td>
<td>−0.15</td>
<td>−0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF</td>
<td>0.03</td>
<td>−0.39</td>
<td>−0.01</td>
<td>−0.08</td>
<td>0.07</td>
<td>−0.37</td>
<td></td>
<td>−0.20</td>
<td>−0.12</td>
<td>0.20</td>
<td>0.11</td>
<td>−0.16</td>
<td>−0.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Likelihood-Ratio tests when dropping individual random slopes

\( \chi^2 \) | 0.55 | 1.05 | 5.89 | 0.04 | 0.49 | 0.04 |
\( \delta DF \) | 13   | 13   | 13   | 13   | 13   | 13   |
6.4 Is the deliberative quality of the advantaged actor decisive for attaining a cooperative solution?

standard errors and can be considered significant for the respective preference constellations. This is the case for Ricky in PD at T1.

**Index:** For the overall index, the general probability to end in the cooperative solution is highest among all preference constellations, but an increasing level of deliberative quality also has the strongest negative effect on the probability to end in S1 across the four preference constellations. This result is most likely driven by the accommodation dimension. Here, the absolute random slope (-1.11) is almost three times as large as the standard error of Ricky’s accommodation (0.41). However, also for justification the random slope (-0.53) can be considered significant at the 0.9 level of confidence (sd = 0.31).

**Indicators:** Some further general observations (even though not significant) can be made for T1: Overall, the index variable for Ricky negatively affects the probability for a cooperative solution, while the index variable for Chris is virtually zero. This can also be observed when looking at the random slopes. The largest absolute value for Chris is 0.06 in RW, while the smallest absolute value for Ricky is 0.1 (also in RW). In all preference constellations but RW, an increasing value of the index variable for Ricky coexists with a lower probability to end in the cooperative solution. This pattern can be seen most clearly in the justification dimension: through all preference constellations, an increasing value for Chris coexists with a higher probability to end in S1, while an increasing level of justification of Ricky coexists with a lower probability to end in S1. On the respect dimension, another pattern can be observed, even though the coefficients are very far from being significant. Here, Chris and Ricky align. A higher level of respect coexists with a lower probability to achieve solution S1 in the symmetric preference constellations, while more respect is aligned with a higher probability to achieve S1 in the asymmetric games – especially in RW. Yet another pattern can be seen for the accommodation dimension. Here, both Chris and Ricky have generally negative coefficients with the one exception of Ricky’s random slope in RW. This pattern of accommodation actually also remains stable in Model *All-T1*. For PD, the negative values of the random slopes are even significant.
6 The Effect of the Deliberative Quality on Substantive Outcomes

For T2, the only striking observation is that almost all coefficients are smaller than the reported standard errors, leading to the conclusion that for the decision after returning to the PC, none of the deliberation or interest variables seem to have an effect on the outcome. One can also observe that with very few exceptions the coefficients of Chris and Ricky almost always align in their direction: positive or negative. The exceptions are virtually zero and, thus, do not deserve individual attention. I will therefore turn to the models with control variables.

In Table 6.6 as well as Figures 6.4 and 6.5 I present the results of the hierarchical models including the same set of control variables that has been used for Hypotheses H3 in Section 6.1. Unfortunately all models for T2 failed to converge. Thus their results should only be interpreted with great caution. Overall, the patterns described above hold also, when the control variables are added. Just the coefficient of the random slope in Model *All-T1* for Chris’ accommodation can no longer be considered significant. In addition, the random slopes of the justification variables of Chris in Models *Justification-T2* and *All-T2* are here significant for some preference constellations. They are all negative, indicating that a higher level of justification co-aligns with a lower probability of reaching the cooperative solution. In Model *Justification T2*, the random slopes in PD and RF can be considered significant. In Model *All T2*, all random slopes but RW can be considered significant at the 0.95 level of confidence, which even makes the overall coefficient significant at the 0.9 level of confidence.

Figures: In Figures 6.4 and 6.5 the above described patterns can be seen quite clearly. Also, the special role of RW at both times for all measures and both players becomes apparent at first glance. The differences between T1 (Figure 6.4) and T2 (Figure 6.5) are striking, especially since PD has a special role only in T1, where the high cooperation rate can be observed in most individual figures. Where the green line drops, the more influential and thus nearer to the deliberative ideal is the one case in which the two participants did not agree on the cooperative solution. Especially Ricky was very accommodating in this one observation, which ended with Chris not working and Ricky doing the job alone.
6.4 Is the deliberative quality of the advantaged actor decisive for attaining a cooperative solution?

Control Variables: The control variables give further insights in what is going on. In Table 6.6, the following results can be observed: the cooperative solution at T0 has a strong positive and significant coefficient in all models, as can be seen in the models of Section 6.1. It is slightly stronger at T1 than at T2. The fact that the two partici-

<table>
<thead>
<tr>
<th>Observation</th>
<th>Index Chris</th>
<th>Justification Chris</th>
<th>Respect Chris</th>
<th>Accommodation Chris</th>
<th><em>All</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1</td>
<td>T2*</td>
<td>T1</td>
<td>T2*</td>
<td>T1</td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Index Chris</td>
<td>0.06</td>
<td>-0.005</td>
<td>(0.30)</td>
<td>(0.19)</td>
<td></td>
</tr>
<tr>
<td>Ricky</td>
<td>-0.44</td>
<td>-0.20</td>
<td>(0.36)</td>
<td>(0.24)</td>
<td></td>
</tr>
<tr>
<td>Justification</td>
<td>0.07</td>
<td>-0.30</td>
<td>(0.31)</td>
<td>(0.20)</td>
<td></td>
</tr>
<tr>
<td>Ricky</td>
<td>-0.52</td>
<td>-0.08</td>
<td>(0.35)</td>
<td>(0.19)</td>
<td></td>
</tr>
<tr>
<td>Respect Chris</td>
<td>0.03</td>
<td>0.12</td>
<td>(0.33)</td>
<td>(0.17)</td>
<td></td>
</tr>
<tr>
<td>Ricky</td>
<td>-0.03</td>
<td>-0.11</td>
<td>(0.32)</td>
<td>(0.21)</td>
<td></td>
</tr>
<tr>
<td>Accommodation</td>
<td>-0.01</td>
<td>-0.02</td>
<td>(0.27)</td>
<td>(0.18)</td>
<td></td>
</tr>
<tr>
<td>Ricky</td>
<td>-0.54</td>
<td>-0.12</td>
<td>(0.47)</td>
<td>(0.20)</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.6: The Relationship of Individual Deliberation and the Probability to Agree on the Cooperative Solution; Including Control Variables

<table>
<thead>
<tr>
<th>T0: Yes-Yes</th>
<th>1.11</th>
<th>1.03</th>
<th>1.20</th>
<th>1.08</th>
<th>1.14</th>
<th>1.02</th>
<th>1.11</th>
<th>1.02</th>
<th>1.20</th>
<th>1.07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chris: male</td>
<td>0.71</td>
<td>0.67</td>
<td>0.02</td>
<td>0.73</td>
<td>0.13</td>
<td>0.89</td>
<td>0.16</td>
<td>0.82</td>
<td>0.06</td>
<td>0.19</td>
</tr>
<tr>
<td>Ricky: male</td>
<td>0.69</td>
<td>0.54</td>
<td>0.69</td>
<td>0.51</td>
<td>0.77</td>
<td>0.63</td>
<td>0.84</td>
<td>0.60</td>
<td>0.78</td>
<td>0.55</td>
</tr>
<tr>
<td>both male</td>
<td>-0.36</td>
<td>-0.24</td>
<td>-0.60</td>
<td>-0.49</td>
<td>-0.72</td>
<td>-0.58</td>
<td>-0.35</td>
<td>-0.59</td>
<td>-0.28</td>
<td>-0.20</td>
</tr>
<tr>
<td>know each other</td>
<td>1.22</td>
<td>1.22</td>
<td>0.96</td>
<td>1.12</td>
<td>0.80</td>
<td>1.16</td>
<td>0.79</td>
<td>1.31</td>
<td>0.86</td>
<td>0.83</td>
</tr>
<tr>
<td>Chris: BA</td>
<td>-0.12</td>
<td>-0.14</td>
<td>-0.76</td>
<td>-0.85</td>
<td>-0.13</td>
<td>-0.86</td>
<td>-0.06</td>
<td>-0.81</td>
<td>-0.70</td>
<td>-0.63</td>
</tr>
<tr>
<td>Ricky: BA</td>
<td>-0.13</td>
<td>-0.30</td>
<td>-0.67</td>
<td>-0.14</td>
<td>-0.68</td>
<td>-0.21</td>
<td>-0.66</td>
<td>-0.19</td>
<td>-0.73</td>
<td>-0.68</td>
</tr>
<tr>
<td>both BA</td>
<td>1.22</td>
<td>1.39</td>
<td>1.16</td>
<td>1.21</td>
<td>1.17</td>
<td>1.25</td>
<td>1.19</td>
<td>1.33</td>
<td>1.18</td>
<td>0.83</td>
</tr>
<tr>
<td>Chris: PV</td>
<td>-0.76</td>
<td>0.01</td>
<td>-0.68</td>
<td>-0.83</td>
<td>-0.63</td>
<td>-0.69</td>
<td>-0.01</td>
<td>-0.65</td>
<td>-0.03</td>
<td>-0.73</td>
</tr>
<tr>
<td>Ricky: PV</td>
<td>-1.41</td>
<td>-0.71</td>
<td>-1.33</td>
<td>-0.66</td>
<td>-1.47</td>
<td>-0.70</td>
<td>-1.26</td>
<td>-0.70</td>
<td>-1.48</td>
<td>-0.67</td>
</tr>
<tr>
<td>both PV</td>
<td>0.60</td>
<td>0.51</td>
<td>0.52</td>
<td>0.51</td>
<td>0.52</td>
<td>0.51</td>
<td>0.48</td>
<td>0.28</td>
<td>0.17</td>
<td>0.15</td>
</tr>
<tr>
<td>Chris: Agreeableness</td>
<td>0.03</td>
<td>0.06</td>
<td>0.03</td>
<td>0.06</td>
<td>0.02</td>
<td>0.06</td>
<td>0.04</td>
<td>0.06</td>
<td>0.04</td>
<td>0.07</td>
</tr>
<tr>
<td>Ricky: Agreeableness</td>
<td>0.02</td>
<td>0.05</td>
<td>0.02</td>
<td>0.05</td>
<td>0.02</td>
<td>0.05</td>
<td>0.02</td>
<td>0.05</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-0.12</td>
<td>-2.26</td>
<td>0.27</td>
<td>-2.23</td>
<td>0.11</td>
<td>-2.19</td>
<td>-0.32</td>
<td>-2.16</td>
<td>-0.28</td>
<td>-2.35</td>
</tr>
</tbody>
</table>

Deviance 137.0 226.2 138.3 224.7 136.9 227.8 134.1 226.7 123.9 226.0
DIC 124.0 221.6 127.2 220.9 122.7 223.8 121.7 222.0 105.6 224.8
pants knew each other also shows a positive correlation with the cooperative solution at T1 and considerably less so at T2. Yet it is only significant at the 0.9 level of confidence in Models Index-T1, Justification-T1, *Justification-T2*, and Model *All-T1*. In the models of Section 6.1, this variable is never significant.

Ricky studying politics and administration is significant at the 0.95 level of confidence for all models at T1 and Model *Accommodation-T2*. All coefficients (even if not significant) have a negative value, leading to the conclusion that if Ricky was played by a politics student, the probability to reach the cooperative solution was lower. Taking into consideration the coefficients for Chris studying politics and both participants studying politics, even if they are not significant, I can conclude that two participants...
6.4 Is the deliberative quality of the advantaged actor decisive for attaining a cooperative solution?

Decision at the table (T1)

Deliberation Index

Respect

Justification

Accommodation

Figure 6.4: Predicted Probability of a Cooperative Solution at the Table (T1); by Role
Figure 6.5: Predicted Probability of a Cooperative Solution After Returning to the PC (T2); by Role
6.4 Is the deliberative quality of the advantaged actor decisive for attaining a cooperative solution?

who do not study politics and administration were most likely to reach the cooperative solution. At T1, the lowest cooperation rate could be observed among those pairs in which both studied politics. Even though the interaction term is positive throughout the models, it is always smaller than the Ricky: PV and Chris: PV coefficients. Therefore having at least one politics student in the pair is bad for the cooperative solution – but the effects slightly cancel each other out. At T2, the negative coefficients for Chris: PV drop considerably to virtually zero. This means that the lowest probability to reach the cooperative solution at T2 are those games in which Ricky studies politics and Chris does not. This is followed by both studying politics. At T2, whether Chris studies politics or not does not make a difference, if Ricky does not do so. Compared to the models in Section 6.1, some of the Ricky: PV coefficients are no longer significant at the 0.9 level of confidence at T2, while the coefficient in Model *Accommodation - T2* is significant. The coefficients of Chris: PV are even closer to zero, here, and sometimes even turn positive.

Another significant control variable in the Models T2 is the agreeableness of Chris. It is significant at either the 0.95 or the 0.9 level of confidence, but only for Models T2. The interpretations are the same as above in Section 6.1, just the level of confidence of these coefficients is generally higher. The control variables gender (male) and study programme (Bachelor) do not show any significant coefficients. So the conclusions do not differ from what has been mentioned in Section 6.1, although the few significant results there are not stable, when separating the deliberation variables according to the two actors. So, overall, the set of control variables does not differ from the models in Section 6.1 and therefore does not demand further interpretations.

6.4.2 Interpretation of the Substantive Outcomes Results Predicted by the Individual Deliberation

The last question remaining to be tackled in this subsection is the role of the individual deliberative quality of the two participants. What can be learned in addition to what could be observed in Section 6.1 already? In general, if language has an effect on the
6 The Effect of the Deliberative Quality on Substantive Outcomes

results, this effect decreased from T1 to T2, as can be seen by the generally flatter curves in Figure 6.4 compared to Figure 6.5. Comparing this result to Figures 6.1 and 6.2, this observation is even more obvious, here.

All random slopes that can be considered significant were observed in PD. Although these significant effects are considerably interesting, they also should not be over-interpreted. As can be seen in Figure 4.5, all but one single case of the Prisoner’s Dilemma at T1 end in the cooperative solution. Therefore the results suggest that in this single case, the levels of the index as well as the items for the dimensions of justification and accommodation must be very high. Dropping this case for the sake of an outlier analysis would leave PD with no variance left.

Taking a closer look at the different measures of deliberation, a general picture can be drawn as well. Focusing on the index variable, Ricky’s coefficients are much larger both at T1 and T2, while Chris’ level of deliberation only appears to correlate with the cooperative solution in RW. A striking difference exists between the results in Section 6.1 and here, as can be observed from Figures 6.1 and 6.4. When combining the values of both actors, almost no gradient of the probability to reach the cooperative solution was observable at T1 for PD, CH and RF and a strong decline could be detected for RW. When splitting the deliberation variables into the values for the two different actors, a sharp decline of the probability is observed when the level of Ricky’s index variable increases in PD, CH and RF, while there is almost no gradient in RW. However, looking at Chris, the gradient of PD, CH, and RF is almost zero, while a considerable rise can be observed in RW. This is in some way good news for the disadvantaged actor in RW: behaving according to the deliberative ideal apparently increases the probability of reaching the cooperative solution. This is however only the case, when the advantaged player does not engage in deliberative behaviour in return. When they both follow the deliberative ideal, the probability of reaching the cooperative solution declines. On the other hand, in all other preference constellations, if Ricky engages in deliberative behaviour, the probability of the cooperative solution drops. This is however only the case, if Chris does not behave particularly deliberative. To conclude, I have to reconsider the interpretation from Section 6.1 about mentioning the intention
to decide for the cooperative solution or not already at the table and the speculation that this affects the behaviour measured by the deliberative quality assessment. With these interpretations in mind, Ricky appears to be defending his/her position while Chris appears to actually try to convince Ricky of the better solution – potentially out of mere self-interest and only when in a disadvantage.

Looking at the justification dimension at T1, a similar pattern was observed as for the general index. When Ricky reaches high levels of justification, the probability to reach the cooperative solution is generally lower, while the opposite direction can be observed for Chris. This turns around for T2, however. The gradient of Ricky’s justification values is almost zero, while there is some evidence that the more arguments Chris uses, the less likely are the two partners to reach the cooperative solution at T2 – irrespective of the preference constellation. This result should therefore not be attributed to Chris’ role as the disadvantaged player in the asymmetric games but might rather be the result of the underlying conflict story, which is the same over all the four different preference constellations. But if this is the case, one has to conclude that the rock-climbing story might not be as convincing to last until the decision at the table, while the exam story is more convincing. The next chapter covers the actors’ convictions and will deal with further investigations about the conflict stories as well.

The respect values by Ricky appear to have the smallest effect, while in RW, at decision T1, the cooperation rate rises tremendously with higher values of Chris. In RF, however, it drops considerably. This result appears to be drawn by some outliers that could be observed already in Table 4.5.

The accommodation value of Ricky is not only interesting in PD, where one case leads to a large coefficient. Also in the other preference constellations, Ricky’s use of accommodating words is striking. In RW, accommodation clearly increases the probability of reaching the cooperative solution, while in CH and RF, the effect is reversed. Chris’ values do not have an effect for all preference constellations but RW, and there it is only a slight positive effect. Especially in RW, the picture is the complete opposite to the one in Section 6.1, where the overall accommodation value leads to a lower probability to reach the cooperative solution. Apparently, in those cases in which cooperation
was possible, only one participant used many accommodating words. This can be interpreted as a dialogue in which one person suggests alternative solutions, while the other side accepts. Whereas if both participants try to accommodate, they reject each other’s suggestions, which leads to higher values in the variable, but lower willingness to cooperate.

Answering the question of whether the deliberative quality of the Rambo-player is decisive for a cooperative solution, is not as straightforward from the results than would be suggested from the theory. While there is some supporting evidence from the accommodation dimension and from all dimensions at observation T2 for RW, the results of RF are clearly either not supportive of the hypotheses or even counter to the theoretical conjectures. The picture is generally diverse and needs further scrutiny.

6.5 A Quest for Causality

So far in this chapter, I present correlations and the co-occurrence of deliberative quality and the outcome variables. However, I also attempt to find out if the deliberative quality can actually cause a higher probability of attaining the fair or welfare efficient outcome of the decision-making process. The above results show few positive correlations, and even more negative correlations that reach acceptable significance standards only for some of the preference constellations in the partial-pooling environment of hierarchical models. I therefore aim at providing a blueprint for future studies on the effect of deliberation as well as clarifying whether a causal effect might be hidden due to a spurious relationship via unobserved variables in the data of this study.

In Chapter 4, I already discuss the difficulties of running a rigorous experimental study in the field of deliberation. Such a study would be well equipped to actually claim causal effects. However, due to the complexity of the concept of deliberation and since such behaviour can only be observed, I combine an observational study with an experimental setting. With an observational study design, it is very difficult to assess whether deliberation actually causes some of the outcomes that have been proposed.
by the (normative) theory. The reason is that in observational studies, claiming a causal relationship between two variables cannot be achieved by simply assessing the association between the concepts by regressing one variable on the other: correlation does not imply causation.

With this problem in mind, it is advisable to review the findings by those researchers who compared groups which they randomly assigned to pursue different tasks when talking to each other. For example, Grönlund et al. (2010) describe an experiment in which one group of participants was asked to come to a decision by secret ballot, while the other group’s given task was to come to a decision by formulating a commonly accepted statement within a one-day deliberation workshop. The authors compare the amount of knowledge about complex issues gained within the two groups. While both groups gained more knowledge (benefiting from deliberation – or rather a day of information and discussion) between a pre-deliberation-day survey and and a post-deliberation-day survey, Grönlund et al. were also able to show a significantly larger gain in knowledge in the common statement group – the group which was theorized to be more deliberative. Another example is reported in Schei et al. (2008). In this well designed experiment, participants were asked to engage in a fictitious debate on a construction plan in groups of three. Each participant was individually assigned one of two objectives: 1) maximize your own outcome or 2) maximize your own and the group outcome, thus creating four different types of groups with two group-types in which all participants where either individualistic (1) or cooperative (2) and two group-types in which either side was in the majority, but the other condition was present at the table as well. Results were higher levels of satisfaction but lower ‘joint gains’ in the cooperative groups – groups that consisted of two or three participants who had received the cooperative treatment and one or no participant who received the individualistic treatment.

In both papers, Grönlund et al. (2010) and Schei et al. (2008), there are some fundamental problems when trying to assess causality. It might be the case that a random process separated the groups and, thus, the error terms between the group assignment and the measured results can be considered uncorrelated in good conscience. But what
The Effect of the Deliberative Quality on Substantive Outcomes

lessons can be learned about deliberation (even if the theoretical basis had been reflected more thoroughly in the assigned tasks)? The only credible conclusion is that it is the assignment that has some effect on the outcomes. It remains unknown how the actual behaviour affects outcomes, nor is it possible to know if the results would remain the same if people were not induced to act individualistically – staying with the example of Schei et al. (2008) – but actually are individualistically motivated in their real life where there are no assignments at all.

This problem is mainly discussed in the statistical literature in the field of medicine. Does the prescription of a potential cure lead to recovery, or is the actual act of taking that cure decisive – especially if some patients are able to individually decide not to take the assigned cure? This is generally referred to as the intention-to-treat analysis. One suggested way to deal with this problem is the inclusion of instrumental variables and integrating these instruments in the statistical analysis.

In this section, I apply the concept of instrumental variable analysis to the study of deliberation. I begin with illustrating the problem by making use of directed acyclic graphs – DAGś⁴(Pearl 2009), and complete the description of the research design from Chapter 4 by introducing the implementation of the instrumental variable approach in this study. I then discuss the different assumptions that should be made when using an instrumental variable, assess the plausibility of these assumptions given the data of this study, apply estimation techniques for that causal effect, and reflect on possible ways of interpreting the results given the justifiable assumptions. A presentation of the results of these estimation techniques using the data of this study follows, before I conclude this section with the interpretation of these results. Can I identify a causal effect of the deliberative quality of communication on the substantive outcomes of the negotiations in this study?

⁴ DAGś are graphical representations of a structural model which represent a linear data generating process (DGP) as a path diagram. Their task is to identify a model that describes how the world works or rather how nature generates the values of the dependent variable in the specific observations.
6.5.1 DAGs and the Introduction of an Instrumental Variable

I am interested in the causal effect (b) of deliberative behaviour (D) on negotiation outcomes (O):

![Diagram](image)

**Figure 6.6: The Causal Effect of Deliberation on Negotiation Outcomes**

Thus, I draw an arrow that goes from D to O in Figure 6.6, representing a linear direct effect of D on O, as I hypothesise that there is a causal effect between the two. If the DAG in Figure 6.6 represented a true model of reality, that is, if in reality – not just in the data – there were no other relationships with any other variables that are left out of this graph, then I would be able to conclude that D causes O, and, in this case, the correlation between the two would quantify the causal relationship.

However, I cannot be sure that that the error terms on D and O are not marginally associated. In fact, I would expect that there are certain common cause variables that are not observed in this model, instead. This is represented by the dashed bi-headed arrow $C_{DO}$ between D and O.

![Diagram](image)

**Figure 6.7: Association of Deliberation with Negotiation Outcomes**

According to Figure 6.7, it is still possible to assert that D and O are correlated. Still this association does not necessarily represent a causal influence of D on O. In the case of this study, for example, the way people communicate and the way they decide in the end might both be completely determined by their interests. Because people have certain interests – that is, they prefer certain outcomes over others – they use the ability
6 The Effect of the Deliberative Quality on Substantive Outcomes

to communicate in order to ensure that their preferred outcomes will be the result of
the collective decision-making process. In this case, the DAG would be transformed
by replacing the bi-headed dashed line $C_{DO}$ with another node I (for interests) and
drawing arrows from I to both D and O.

As the assumption that this is the whole story for the association between D and O
is still hardly justifiable, the variable I and the arrows a and c are added to the DAG
in Figure [6.8]. The bi-headed dashed line $C_{DO}$ for any other unobserved variable that
affects both deliberative behaviour and negotiation outcome remains, however.

![Figure 6.8: The Effect of Deliberation on Negotiation Outcomes Under the Condition of Interests and an Unobserved Relationship](image)

Making use of DAGs, it is possible to clarify the problem of endogeneity and sug-
gest ways to deal with it by introducing the concept of paths, which can either be causal
or spurious as well as open or closed. A causal path between deliberation and outcome
would be any path in which all arrows point away from D and toward O. In a spurious

---

5 A careful reader might want to add dashed bi-headed arrows between interests and deliberation
behaviour as well as between interests and negotiation outcomes, claiming that it is impossible to
be sure that interests and behaviour (or outcomes) are not simultaneously affected by some other
variable such as personality for example. In the specific case of this experimental set-up, the interests
are imposed by randomly assigning a payment scheme to the participants. Through the process of
randomisation, it is possible to claim that the error terms are not correlated. However, a very critical
mind is right to claim that the influence of the payment scheme might differ from one participant
to another, which would complicate the model to such an extent that another variable – let’s call it
venality – would have to be added describing the extent to which the amount of money a participant
can receive influences his or her behaviour. If one gave credit to the consequences of this thought, the
linearity assumption would either be violated or the model would become a lot more complicated.
In line with most economic experiments, however, I assume in this model that such a variable does
not have an effect, even if general intuition strongly suggests that this does not represent the real
world.

222
path at least one arrow between D and O would point against this flow. An open path would be any path that does not contain a collider. A collider is a variable which has two arrowheads pointing towards it. Colliders are path-specific. Thus, a variable can be a collider for one path between two variables but not for the other (Pearl 2009).

In Figure 6.8, the only causal path between D and O is b. However, there are two causal paths between I and O: c (I → O) and a * b (I → D → O). Between D and O a spurious path a * c (D ← I → O) as well as $C_{DO}$ is observed. The open paths between D and O are $b$ (D → O), $a * c$ (D ← I → O) and $C_{DO}$. There are no closed paths between D and O. The only closed paths in Figure 6.8 are between interests and deliberative behaviour: $c * b$ (I → O ← D) has a collider in O. So does $c * C_{DO}$ (I → O ←→ D). Thus it is certain that the effect of interests on deliberative behaviour does not depend on the negotiation outcomes, which is plausible since the one (O) comes after the other (D).

The question is now whether observing data generated by the assumed DGP allows statements about causality. Wright’s (1921; 1934) method of path coefficients offers a way to move between causation and association, where causation is the relationship between the concepts that can be observed and association is the calculated relationship of the variables in the observed data, making use of covariance or regression. The possibility of estimating the causal effect from the data is called identification.

If the aim is to find out if deliberative behaviour actually causes negotiation outcomes, the matter of interest is the marginal (i.e., unconditional) association between the two variables. This can be derived by Wright’s path rules whose basic logic follows three steps: 1) If a causal effect exists, the data generating process leads to observable associations in the data. 2) Associations need an open path which they can travel along. Closed paths do not transmit association. 3) The association transmitted along open paths can be quantified. The covariance of two variables is the sum of the products along all open paths between the two variables. (Mathematically, the variables are standardised so that covariance and regression are the same.) If there is no open path between two variables, they are considered marginally independent. If at least one open path exists, they are considered marginally associated.
6 The Effect of the Deliberative Quality on Substantive Outcomes

In Figure 6.9, personality type (P) is added to the graph as another potential source of a spurious relationship. The arrows from interests are relabeled as \( a_I \) and \( c_I \) and arrows from personality type are added. They are called \( a_P \) and \( c_P \). \( I \) and \( P \) are marginally independent in this DAG as there is no path between the two variables which does not contain a collider. (\( I \rightarrow D \rightarrow O \leftarrow P \); \( I \rightarrow D \leftarrow P \); \( I \rightarrow O \leftarrow P \)) Either \( D \) or \( O \) are the colliders on these paths.\(^6\) I do not draw a direct arrow between \( P \) and \( I \), because \( I \) is randomly assigned in this study. In other contexts there would be no justification to assume that personality does not affect interests. With such an arrow, there would be an open path between \( I \) and \( P \) and the two variables would no longer be considered marginally independent.

As it is possible to quantify the association by summing up all open paths, one can also calculate conditional associations. When controlling for a variable, one can calculate the partial regression coefficient, which allows to identify the causal effect \( b \), if \( C_{DO} \) can be neglected. This can be done, because controlling for a non-collider blocks the flow of association through this variable.\(^7\) In this respect, Pearls’s d-separation rules are of importance (Pearl 2009, 16):

\(^6\) I neglect to mention \( C_{DO} \) in this list. The logic is the same.

\(^7\) Certain pitfalls about controlling for variables are described in Pearl (2009) and Elwert (2013): over-control bias, lack of association in spurious paths, and conditioning on a collider or a descendent of a collider (endogenous selection) (Elwert and Winship 2014). They do, however, not play an important role in the models presented above.
“A path between two variables […] is said to be *d-separated* (blocked or closed) if:

1. The path contains a noncollider that has been conditioned on […]; or
2. The path contains a collider that has not been conditioned on […], and no descendant of any collider on the path has been conditioned on either.

A path is said to be *d-connected* (unblocked or open) if it is not d-separated. We say that two (sets of) variables are d-separated if they are d-separated along all paths; they are d-connected otherwise.” (Elwert 2013, 252)

An important theorem in this respect is proven by Verma and Pearl (1988): “if two (sets of) variables A and B are d-separated by conditioning on a (possibly empty) set of variables C in a causal DAG, then A is statistically independent of B conditional on C” (Elwert 2013, 252)

In Figures 6.10 and 6.11, I present the DAG that can be used to describe the models in Section 6.1. I want to identify the causal effect of the deliberative quality (D) on the outcome (O). I have also used (I) and (P) as examples of control variables above. (I) represents the randomly assigned preference constellation and (P) represents the personality type - of which only agreeableness is used as control variable in the statistical models above. I also control for information on the personal background of the participants (B): gender, study degree (BA or not), field of study (Politics or not), and whether the participants knew each other before entering the lab. In addition, I control for their decision before moving to the negotiation table (T0). Finally, I include the lab conditions (L) to the DAG, since holding a variable constant is a form of conditioning.

The DAG in Figure 6.10 includes all observed variables and the possible relationships between these variables. If two variables are not connected with a directed arrow, I am confident that there is no causal link between the two. The lab conditions were fixed by intervention and the preference constellation is the result of a randomisation process (rolling a die). This is the reason why there are no arrows pointing towards these nodes. If two variables are connected, there is no justification for assuming that they are independent. The focus in working with DAGs lies in the assumption of in-
dependence. Only if the claim of independence can be justified is one allowed to not draw an arrow between two variables, while a drawn arrow only represents the possibility of a causal relationship. The aim is to ensure to block all open paths except the one of interest.

In the next step, I present what happens to the paths leading from D to O, when conditioning on the (sets of) variables presented above. In Figure 6.11 all closed paths are shaded out, so that only open paths are still black, following Pearle’s d-separation rules. Doing this, it is possible to block all spurious relations going through the presented control variables. There is thus reason to believe (given the assumptions) that there is no overcontrol bias (Elwert and Winship 2014), when controlling for the mentioned variables. Although it would be possible that an inclusion of some of the variables in the statistical model would make the estimator less efficient, the point here is that none of the variables introduce association that is not causal.

One fact remains, however: the identification of the causal effect is still tempered by the dashed line $C_{DO}$. No number of control variables would be able to remove this
second path which does not allow the identification of the direct effect of deliberative quality on negotiation outcomes. This is the point where instrumental variables come in. DAGs are able to visualise the idea of including instrumental variables in the DGP, even without making use of mathematical notation.

In Figure 6.12 I go back to the simple DAG of D causing O that was introduced in Figure 6.8. All other variables are left unobserved, and thus become part of $C_{DO}$, which is presented slightly different. I add a set of unobserved variables (U) which has an effect on both D and O. I have mentioned before that the effect of D on O is not identifiable, because D and O are confounded by the unobserved U. This does not change when including the instrument Z. However, there are now two paths from Z to O: $Z \rightarrow D \rightarrow O$ and $Z \rightarrow D \leftarrow U \rightarrow O$. The first path is an open path, while the second is closed with D being a collider. The effect of Z on O is thus identified: $a \ast b$. This is called the reduced form. With Z being randomised, the linear causal effect of Z on D is identified and quantified by $a$. This is called the first stage. When interested in the
causal effect of D on O \((b)\), it is now possible to divide the reduced form by the first stage: 
\[
\frac{a \times b}{a} = b.
\]
The result is the causal effect \(b\), which is the effect that is intended to be identified.

The challenge in this approach is finding a \(Z\) that actually allows this to happen. Two assumptions about this variable are essential, and they cannot both be tested with the data. The first assumption is the relevance of the instrument, which is also termed the existence of the first stage: there must be a clear link between \(Z\) and \(D\). This association does not necessarily need to reflect a causal relationship, though. Some mathematical notation helps to understand this point. The covariance of the instrument \(Z\) and the outcome \(O\) is divided by the covariance of the instrument \(Z\) and the treatment \(D\) – the deliberative quality:

\[
\frac{\text{Cov}[Z, O]}{\text{Cov}[Z, D]} = b + \frac{\text{Cov}[Z, e_O]}{\text{Cov}[Z, D]}
\]

The aim of this calculation is to derive \(b\) from this equation. For this, the last term has to move towards 0. From this equation, it is easy to observe why the instrument and the treatment need to be correlated: if \(\text{Cov}[Z, D]\) were 0, the term would no longer have a solution and thus the equation would no longer be solvable.

In addition, the correlation of the instrument with the error term needs to be zero:

\[
\text{Cov}[Z, e_O] = 0.
\]

This is represented in the DAG by the fact that there is no direct arrow

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\(^8\) This step assumes standardized variables for the math to work. The logic does however not depend on this transformation.
between Z and O. There is also no open path, whatsoever, connecting Z and O other than \( Z \rightarrow D \rightarrow O \). The assumption is that the instrument must not be associated with the outcome via any path other than those leading through D; otherwise \( \text{Cov}[Z, e_O] \neq 0 \), which would bias the estimator.

This second assumption – the *exclusion restriction* - is considered by the predominant literature on instrumental variables to be empirically not testable. Thus, when using any instrumental variable, a strong argument has to be made for why the exclusion can be assumed. However, in reality, there will always be a small correlation between Z and \( e_O \) due to noise - so that the approach depends on the strength of a big denominator to reduce the complete term to a number that is very close to zero and can thus be neglected in terms of bias. If \( \text{Cov}[Z, D] \) is small, a large sample size is required, since size increases the probability of \( \text{Cov}[Z, e_o] \) to be actually zero, if there is no systematic effect in the real world. With small and medium sample sizes, the logic depends heavily on a strong correlation between the instrument and the treatment variable. This third requirement for the approach to work is called the *strong first stage*.

As has been mentioned, the exclusion assumption cannot normally be tested empirically. It is, however, the most important part of any application of instrumental variables to justify the credibility of exclusion. It is therefore important to know how this assumption can fail. Three (major) types of exclusion violations can be distinguished (A) a direct effect of Z on O that does not go via the treatment D, (B) confounding of Z and O, and (C) selective attrition.

Figure 6.13 gives graphical representations of these violations. In Figure 6.13 A), Z has a direct effect on O. Controlling for D would not help, as it would open up the path via U \( (Z \rightarrow |D| \leftarrow U \rightarrow O) \) since controlling for a collider opens up the path via that collider. In Figure 6.13 B) the effect of Z on Y is confounded by unobserved variables. If one could be sure of the source of this confounding relationship, controlling for \( U_2 \) fixes the problem, if all sources are measured and controlled for. Another option would be to rely on real randomisation of Z, as this ensures that the value of Z does

\[
\text{Cov}[Z, e_O] = 0
\]

Some ways to do exactly that will be mentioned later.
not depend on anything but chance. In Figure 6.13(C), the loss of participants (attrition) leads to exclusion violation, since the existence of attrition (E in the graph) is an unintended condition. Conditioning on such a variable would open up the path via U, as conditioning on a descendant of a collider opens up the path as well. In the context of this study, attrition would mean that certain types of deliberative quality lead to a refusal to take a decision or to continue the experiment at all.

In an experimental setting, confounding can be excluded by random assignment. Since a researcher has complete control over the instrument one should be able to randomly assign participants to groups who are influenced in their deliberative behaviour but not directly in their decision making by the additional task descriptions. Selective attrition remains a problem that cannot be ruled out beforehand. As there is no attrition in this study, the problem can be neglected.
6.5 A Quest for Causality

In addition, it is possible to use pretests for testing if the first stage is actually strong. Revisions of the task descriptions are possible if it should turn out to be weak. In this study, such an approach was attempted but lacked a convincing measurement of deliberation at the time, when the actual data collection had to start. I therefore depend on the correlation that can be observed in the data now, risking a weak first stage if the instrumental variable and the deliberative quality should indeed not correlate as intended.

I use an instrument with two different task descriptions and a control group that does not get a specific task. I attempt to influence the way in which the participants deliberate by asking them to behave in a certain way, mentioning some major aspects of deliberative communication that are derived from the theory and the normative descriptions of deliberation. The other task description does exactly the opposite: telling people to behave in a way that is considered not deliberative. I take care that the wording of the second task description is not considered normatively bad, so that those who receive the instrumental task description do not reject it. These descriptions are randomly assigned to each pair of participants by rolling a die in the second half of data generation. The first half all belong to the control group.\(^{10}\) Each member of a pair of participants receives the same task description.

The exact wording of the task descriptions in the deliberative setting is:

Ein wichtiger Bestandteil des Experimentes ist es, dass Sie versuchen sollten, Ihre Standpunkte zu begründen, um eine Einigung zu erreichen und, dass Sie Ihre Verhandlungsentscheidung von den besten Argumenten abhängig machen. Bitte diskutieren Sie alle Alternativen und deren pro- und kontra- Argumente!

- Seien sie aufnahmefähig für die Begründungen Ihres Experimentalpartners / Ihrer Experimentalpartnerin!
- Lassen Sie sich überzeugen, wenn Sie gute Argumente hören und machen Sie Ihre Entscheidung von den veränderten Überzeugungen abhängig!

\(^{10}\) Since the complete process of generating the data took about 14 months, I am confident that there is no noteworthy difference between the students who participated in the first 120 experimental sessions (with no random assignment of the instrument and no additional task description for all) and the second half of the experimental sessions (in which each pair is randomly assigned one of the three possibilities of the instrumental variable: conflictive, neutral, or deliberative). I therefore consider the instrumental variable to be as good as random.
6 The Effect of the Deliberative Quality on Substantive Outcomes

- Bitte gehen Sie respektvoll miteinander um, räumen Sie Unklarheiten oder unterschiedliche Interpretationen aus, und nehmen Sie konstruktiv an der Verhandlung teil!

The opposite task description is phrased as follows:

Ein wichtiger Bestandteil des Experimentes ist es, dass Sie versuchen sollten verschiedene Verhandlungstaktiken anzuwenden, um Ihre Position durchzusetzen. Im folgenden sind beispielhaft Möglichkeiten genannt, von denen Sie Gebrauch machen können - so lange es in Ihrem Interesse ist:

- Sie können Ihrem Verhandlungspartner / Ihrer Verhandlungspartnerin Informationen vorenthalten.

- Wenn Sie merken, dass Sie gegenüber Ihrem Verhandlungspartner / Ihrer Verhandlungspartnerin einen Vorteil haben, können Sie diesen gerne ausnutzen.

- Sie müssen die Argumente Ihres Verhandlungspartners / Ihrer Verhandlungspartnerin nicht in Ihre Entscheidung mit einbeziehen, auch wenn diese sehr überzeugend sind.

Versuchen Sie während der Verhandlung Ihren Verhandlungspartner / Ihre Verhandlungspartnerin dazu zu bringen am Ende der Verhandlung eine Entscheidung zu treffen, die Ihnen zum Vorteil gereicht. Dafür sind seine/ihrer Motive diese Entscheidung zu treffen für Sie und Ihr Ergebnis irrelevant.

These task descriptions were carefully worded in order to reflect the ideal of deliberation (or its opposite) and they were phrased in such a way that they should not influence the participant’s decision independent of the communication at the negotiation table. What remains to be seen is the effect which these task descriptions have on the measure of deliberative quality. One of the strengths of using IVs in an experimental setting would be the possibility of testing the correlation between the IV and the treatment in a pretest and adapt the instrument accordingly, so that a strong first stage can be expected. As mentioned above, the measurement instrument for the deliberative quality was not completed by the time the task descriptions were introduced to the experiment so that I also have to test for relevance and a strong first stage now, without having a strong positive expectation about the first stage. In the next subsection I, therefore, present the tests of the IV assumptions and the choice of an appropriate estimator with which I can set out on the quest for causality in deliberation studies.
6.5 A Quest for Causality

6.5.2 Preparations: Testing the IV Assumptions

So far in this section, I apply the instrumental variables (IV) method as it can be found in many econometrics textbooks (e.g.: Angrist and Pischke\textsuperscript{2008}) to the study of deliberation and illustrate its logic making use of DAGs according to the introduction by Pearl\textsuperscript{2009}. I then introduce an additional task description to my study design that is intended to serve as such an instrumental variable. In the next paragraphs, I present the standard procedures to test if the use of the particular instrumental variable used in this study can help to identify any causal effects between the deliberative quality and the decisions taken by the two participants in the experimental sessions. One important task is to clarify whether the lack of a clear relationship in the above sections can be explained by an omitted variables bias. Such a bias might be able to hide a causal relationship that exists in the real world. Or is it possible to conclude that there actually is no such effect where it cannot be detected? What can be said about those conditional effects that can be interpreted as significant?

Two steps are required. First, I test if the assumptions of the IV model (exclusion restriction and relevance - also called the IV criterion) can be justified. Second, I reflect over the choice of an appropriate estimator for the IV point predictions considering the results of the tests in the first step. Since it is impossible in these models to make use of the hierarchical structure of the models presented in Section 6.1, I run said tests for the full dataset (complete pooling) and split datasets for each of the preference constellations (no pooling). I also look at the deliberative quality as an overall index as well as at the individual indicators in all datasets. Particular attention is given to the relationships that can be considered significant above: at T1, I look at justification in RF (Is it really negative?) and respect in PD (Is it positive?). At T2, special attention is again given to justification in RF (negative?) and to accommodation in PD, CH, and RF (all negative?).

Concerning the exclusion restriction, confounding can be ruled out here since the instrument was randomly assigned and it is thus safe to assume that there is no unobserved variable that simultaneously affects the assigned task description and the prob-
The Effect of the Deliberative Quality on Substantive Outcomes

ability of achieving the cooperative solution either at T1 or T2. I can be certain that the problem of attrition is not relevant either: no participants decided to discontinue the experimental session, after they read the task description. Thus, the deliberative quality in the discussion did not lead to attrition. The question of a causal direct effect remains. The additional task descriptions, which create the instrument, are formulated in such a way that reading this description is very unlikely to have an effect on the outcome variable other than through the deliberative process, since the task that is given only refers to the participants’ behaviour in the negotiation stage. This assumption can only be argued for, as I have just done, but generally cannot be tested empirically.

I now turn to the relevance assumption. When considering instrument relevance, three aspects create problems: the requirement for large samples, the requirement for strong instrumental variables, and the fact that many weak IVs create bias which could be avoided when using few strong IVs (Murray 2006a, 2006b). When I want to discover the causal effect \( b \), the term \( \text{Cov}(Z, e) \) has to become zero. In large samples this should not be a problem when the instrument is randomized. In small samples, however, \( \text{Cov}(Z, e) \) will hardly ever be zero, even if the instrument is valid – due to noise. If then, the first stage \( \text{Cov}(Z, D) \) is weak, the term will be inflated and the estimate is biased. If it is zero, the term is not identified and no conclusions can be drawn at all. Stock et al. (2002) suggest that an F-statistic for the joint significance of excluded IVs in the first stage can be calculated. The bigger the value of the F-statistic, the smaller the bias of a two-stage least-squares (2SLS) estimator. As a rule of thumb, an F-statistic > 10 is a sign of an appropriate strength of the excluded instruments.

\[ \text{More precisely: If the sample is large enough, the correlation between the error terms of the instrument and the outcome approaches zero in randomisation.} \]

\[ \text{To be precise, there are ways to use an overidentified model, which is characterized by including more instruments than endogenous variables (treatments), to test whether the effects across candidate instruments stay the same –} \ b \ \text{should not change, if another variable for} \ Z \ \text{is used. The results can be compared. If all results are equal, the careful conclusion is justified that all instruments are valid. This does however assume that at least one instrument is in fact valid, and the researcher should have a clear idea about which one it is, in order to rule out the invalid instruments as the test does not allow an identification of the invalid IV(s). I can exploit the fact that I have used two different task descriptions for a single treatment variable (the deliberative quality) and therefore have an overidentified model. Therefore, I also report a test for overidentifying restrictions, the so-called Sargan test, later in this section.} \]

\[ \text{As} \ F \ \text{goes to zero, it approaches the bias one faces with OLS. Adding more instruments decreases the standard errors, but if some of these instruments are weak, the} \ F \text{-statistic decreases. So lower standard errors are bought by increasing the bias, which is generally not a good idea.} \]
6.5 A Quest for Causality

With a sample size of 240 this study cannot be considered a small sample study. However, significant results in the above sections could only be identified in certain preference constellations. Splitting the dataset into the different preference constellations only leaves 60 cases left. Thus the sample size is a lot too small to accept a small first stage as it would inflate any noise. In addition, Stock et al. (2002) warn that the problem of weak instruments should not only be considered to be a small sample problem by citing Bound et al. (1995) who provide “an empirical example of weak instruments despite having 329,000 observations.” (Stock et al. 2002, p.518).

In Figure 6.14 I present a first overview of the relationship between the additional task description (the instrument) and the deliberative quality (the treatment), before I present the corresponding numbers in Table 6.7. The figure shows violin plots – a mixture of boxplots (with the 25, 50 and 75 % quantiles as black horizontal lines) and kernel density plots. The dots within the violins are the actual data (slightly jiggered for observability). The red lines connect the predicted values form the first stage regressions presented in Table 6.7. Solid lines are drawn, when the coefficients are significant at the 0.9 level of confidence. If the instrument worked as expected, one should observe violin plots that have increasing levels from left to right, that is the lowest values should be observed in the conflictive task description, middle values with no additional task description (neutral), and highest values with the deliberative task description.

Such a clear picture can evidently not be observed in any of the presented plots of Figure 6.14. Looking at the full dataset, one can gain the impression, that the two additional task descriptions do not generally have such an effect. The differences between the three groups are almost always negligible. In most cases, both task descriptions work in the same direction and often to the negative. Nonetheless, the deliberative task description apparently has a significantly negative coefficient against the reference value of no additional task description (neutral) for the justification and the accommodation indicators of deliberative quality. Scrutinising the plots of the split datasets, few ‘successful’ relationships (i.e. according to the expectation) can be observed: for only the PD cases, the overall index and the respect value are affected by the additional task descriptions as intended. In both cases, the conflictive task description is even
Note: Violin plots of the non-standardised values of the deliberative quality measures separated by the task description; data points as dots; areas within the violins are set as constant for each of the three violins within one plot; red lines connect predicted values from linear regression models on the deliberative quality with the task descriptions as single predictors; solid lines mark a significant coefficient to the baseline category “neutral” at the 0.9 level of confidence; N is 240 for the full dataset (1st column) and 60 for the split datasets (2nd - 5th column).

Figure 6.14: Relationship of Task Descriptions and Deliberative Quality (First Stage)
significant. All other plots do not follow this intuition. The overall index is generally lower with either of the task descriptions, as is the justification indicator and the respect indicator (with the exception of the PD dataset). The mean values of the participation indicator are generally higher when the participants received either of the two additional task descriptions. The accommodation indicator has individual patterns for each plot with a significant negative coefficient of the deliberative task description in CH (which probably draws the result in the full dataset). General comparisons across the plots of the different datasets shows that the preference constellations do not appear to have much of an effect.

Table 6.7: The Association of the Instrument with the Deliberative Quality (First Stage)

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Task Description</th>
<th>Full Data</th>
<th>PD</th>
<th>CH</th>
<th>RW</th>
<th>RF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>conflictive</td>
<td>−0.17</td>
<td>−0.52</td>
<td>−0.17</td>
<td>−0.10</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td>deliberative</td>
<td>−0.29</td>
<td>0.19</td>
<td>−0.43</td>
<td>−0.65</td>
<td>−0.27</td>
</tr>
<tr>
<td></td>
<td>(std.error)</td>
<td>(0.18)</td>
<td>(0.31)</td>
<td>(0.38)</td>
<td>(0.40)</td>
<td>(0.33)</td>
</tr>
<tr>
<td></td>
<td>(F-statistic)</td>
<td>1.58</td>
<td>1.92</td>
<td>0.67</td>
<td>1.34</td>
<td>0.43</td>
</tr>
<tr>
<td>Justification</td>
<td>conflictive</td>
<td>−0.17</td>
<td>−0.45</td>
<td>−0.04</td>
<td>−0.16</td>
<td>−0.04</td>
</tr>
<tr>
<td></td>
<td>deliberative</td>
<td>-0.38</td>
<td>−0.27</td>
<td>−0.20</td>
<td>−0.53</td>
<td>−0.53</td>
</tr>
<tr>
<td></td>
<td>(std.error)</td>
<td>(0.18)</td>
<td>(0.38)</td>
<td>(0.36)</td>
<td>(0.35)</td>
<td>(0.33)</td>
</tr>
<tr>
<td></td>
<td>(F-statistic)</td>
<td>2.55</td>
<td>0.82</td>
<td>0.16</td>
<td>1.19</td>
<td>1.27</td>
</tr>
<tr>
<td>Participation</td>
<td>conflictive</td>
<td>0.23</td>
<td>0.27</td>
<td>0.21</td>
<td>0.36</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>deliberative</td>
<td>0.14</td>
<td>0.29</td>
<td>0.12</td>
<td>−0.04</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>(std.error)</td>
<td>(0.18)</td>
<td>(0.28)</td>
<td>(0.43)</td>
<td>(0.35)</td>
<td>(0.35)</td>
</tr>
<tr>
<td></td>
<td>(F-statistic)</td>
<td>0.99</td>
<td>0.84</td>
<td>0.13</td>
<td>0.58</td>
<td>0.17</td>
</tr>
<tr>
<td>Respect</td>
<td>conflictive</td>
<td>−0.26</td>
<td>-0.65</td>
<td>−0.27</td>
<td>−0.13</td>
<td>0.02</td>
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<tr>
<td></td>
<td>deliberative</td>
<td>−0.08</td>
<td>0.43</td>
<td>−0.25</td>
<td>−0.42</td>
<td>−0.09</td>
</tr>
<tr>
<td></td>
<td>(std.error)</td>
<td>(0.18)</td>
<td>(0.33)</td>
<td>(0.35)</td>
<td>(0.38)</td>
<td>(0.36)</td>
</tr>
<tr>
<td></td>
<td>(F-statistic)</td>
<td>1.09</td>
<td>3.39</td>
<td>0.48</td>
<td>0.63</td>
<td>0.04</td>
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<tr>
<td>Accommodation</td>
<td>conflictive</td>
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<td>0.02</td>
<td>−0.05</td>
<td>0.03</td>
<td>0.26</td>
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<tr>
<td></td>
<td>deliberative</td>
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<td>-0.65</td>
<td>−0.57</td>
<td>−0.06</td>
</tr>
<tr>
<td></td>
<td>(std.error)</td>
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<td>(0.31)</td>
<td>(0.35)</td>
<td>(0.44)</td>
<td>(0.29)</td>
</tr>
<tr>
<td></td>
<td>(F-statistic)</td>
<td>1.74</td>
<td>0.02</td>
<td>1.79</td>
<td>0.88</td>
<td>0.50</td>
</tr>
</tbody>
</table>

N 240 60 60 60 60 60

Note: Results of linear regression models using lm from the R-package “stats” (R Core Team 2017) on the standardized values of the various operationalisations of the deliberative quality with the instrument as explanatory variable; standard errors in parentheses; data were produced at University of Konstanz between 2014 and 2016; significant results (at the 0.9 level of confidence) are marked in bold typeset; columns are the full dataset and the split datasets according to the interest constellation.
Table 6.7 now offers the corresponding numbers. I present the results of linear models with the respective indicator of deliberative quality as dependent variables and the two additional task descriptions as dichotomous predictor variables. The standard errors are always the same for both variables as the number of observations in each value of the instrument is the same. The F-statistic of the model corresponds to the above-mentioned F-statistic for the joint significance of excluded IVs. The degrees of freedom are 2 and 237 for the full dataset and 2 and 57 for the split datasets. The coefficients need no further attention. Just note that I present standardised values in Table 6.7 and non-standardised values in Figure 6.14. The F-statistics are, however, devastating for the IV approach. The highest value can be observed for respect in the PD dataset (one of the interesting combinations from Section 6.1. With 3.39 this value is too far away from the desirable value of > 10 to be considered a strong first stage. More than half of the models have F-values smaller than 1. Generally, if at least one additional task description is significant, the values are close to 2 or higher. Nonetheless, since there are ways to deal with a weak first stage and only few coefficients are very close to zero, I continue by presenting the reduced form. Do the decisions at T1 and T2 correlate with the additional task description?

Since the reduced form is divided by the first stage in order to estimate the value of the causal effect b, the reduced form should show a considerable covariance between the instrument and the outcome if the causal effect b is non-trivial. For such point calculations a number of further assumptions have to be made. According to Rosenbaum (1996), however, a nonparametric test (without any further assumptions but the IV criterion) can at least test if one can reasonable reject the null hypothesis that there is no effect of the treatment (deliberative quality) on the outcome. For further point predictions linearity and homoscedasticity should be assumed in addition to the general IV assumptions. For now, I present in Table 6.8 crosstables of the instrumental variable and the outcome variables of a cooperative solution at T1 and T2. I then calculate the $\chi^2$ distributions of these tables and present the p-values of the probability that the null hypothesis is true. To reject $H_0 = 0$ the p-value should be smaller than 0.05 in standard tests. The null hypotheses of no effect in the reduced form can clearly not be rejected in any of the presented tables. The smallest p-values are 0.51 and 0.66 in the CH dataset.
### 6.5 A Quest for Causality

#### Table 6.8: The Association of the Instrument with the Negotiation Outcomes at T1 and T2 (Reduced Form)

<table>
<thead>
<tr>
<th></th>
<th>Decision at T1</th>
<th>Decision at T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Full Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>conflictive</td>
<td>33</td>
<td>7</td>
</tr>
<tr>
<td>neutral</td>
<td>140</td>
<td>20</td>
</tr>
<tr>
<td>deliberative</td>
<td>36</td>
<td>4</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>209</td>
<td>31</td>
</tr>
<tr>
<td><strong>χ²</strong></td>
<td>1.07</td>
<td></td>
</tr>
<tr>
<td><strong>p-value</strong></td>
<td>0.9826</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Decision at T1</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>PD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>conflictive</td>
<td>10</td>
<td>0</td>
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<tr>
<td>neutral</td>
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<td>1</td>
</tr>
<tr>
<td>deliberative</td>
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<td>0</td>
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<td><strong>Sum</strong></td>
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<td><strong>χ²</strong></td>
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<tr>
<td><strong>p-value</strong></td>
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<tbody>
<tr>
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</tr>
<tr>
<td><strong>CH</strong></td>
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<tr>
<td>conflictive</td>
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<td>neutral</td>
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<td>1</td>
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<tr>
<td>deliberative</td>
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<td>1</td>
</tr>
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<td><strong>Sum</strong></td>
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<tr>
<td><strong>χ²</strong></td>
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<tr>
<td><strong>p-value</strong></td>
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<td>No</td>
</tr>
<tr>
<td><strong>RW</strong></td>
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<tr>
<td>conflictive</td>
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<tr>
<td>neutral</td>
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<tr>
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</tr>
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<td><strong>Sum</strong></td>
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<td><strong>p-value</strong></td>
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</tr>
<tr>
<td>conflictive</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>neutral</td>
<td>34</td>
<td>6</td>
</tr>
<tr>
<td>deliberative</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>51</td>
<td>9</td>
</tr>
<tr>
<td><strong>χ²</strong></td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td><strong>p-value</strong></td>
<td>0.9989</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Crosstables of the instrument with the outcome variables and results of respective $\chi^2$-statistics; df = degrees of freedom; data were produced at University of Konstanz between 2014 and 2016; no significant results can be reported; columns are the outcome variables at T1 and T2 respectively; tables are presented of the full dataset above and the split datasets according to the interest constellation below.
All other datasets are above 0.9, suggesting very strongly that the null hypothesis of no effect cannot be rejected.

I can already conclude here that most likely there is no causal effect between the deliberative quality, as measured in this project, and the cooperative solution in the given conflicts. The reduced form is very small and the first stage is weak in almost all specifications of the observed data. Nonetheless, I continue with presenting the probably biased results of several point estimators, considering the strengths and weaknesses of these estimators in the next section in order to continue the blueprint of how a causal effect of deliberative quality on negotiation outcomes could be detected elsewhere, if such an effect exists in the real world but was merely blurred by the specifics of the experimental design of this study.

### 6.5.3 Results and Considerations of an Appropriate IV Estimator

Before I present the predictors of a causal effect, I use standard test statistics to double-check my conclusions from above, concerning the IV criterion. In Table 6.9 I present the test statistics of the Weak Instruments test, the Wu-Hausman test and the Sargan test that are calculated for two-stage least-squares models making use of the ivreg() command of package AER (Kleiber and Zeileis 2008) in R.

The Weak Instruments test is a simple F-test of the first stage. In contrast to the F-statistic above, these values are adjusted for heteroscedasticity. Significant results permit to reject the null hypothesis that the combination of the two dichotomous instrumental variables (conflictive and deliberative task description) have no effect on the respective indicator of the deliberative quality. However, only a value above 10 allows the rule-of-thumb conclusion that a strong first stage exists.\(^\text{14}\) The first stage is the same in both models at T1 and T2. The highest value that can be observed is 6.61 for the overall index in the PD only dataset. It is significant at the 0.95 level of confidence as is the test statistic of the first stage using the respect value as the measure of

\(^{14}\) According to Stock et al. (2002) p.522) it should actually be above 11.59 when two instrumental variables are used.
### 6.5 A Quest for Causality

#### Table 6.9: Test Statistics for 2SLS Models

<table>
<thead>
<tr>
<th></th>
<th>Decision At The Table (T1)</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Full N=240</strong></td>
<td>Weak Instruments</td>
<td>1.72 (0.18)</td>
<td>2.96 (0.05)</td>
<td>1.14 (0.32)</td>
<td>1.38 (0.25)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.000 (0.99)</td>
<td>0.004 (0.95)</td>
<td>0.28 (0.60)</td>
<td>0.38 (0.54)</td>
</tr>
<tr>
<td></td>
<td>Sargan</td>
<td>1.07 (0.30)</td>
<td>1.05 (0.30)</td>
<td>0.68 (0.41)</td>
<td>0.40 (0.53)</td>
</tr>
<tr>
<td><strong>PD N=60</strong></td>
<td>Weak Instruments</td>
<td>6.61 (0.002)</td>
<td>1.13 (0.33)</td>
<td>1.23 (0.30)</td>
<td><strong>4.57</strong> (0.01)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.98 (0.33)</td>
<td>1.04 (0.31)</td>
<td>1.03 (0.32)</td>
<td>0.77 (0.39)</td>
</tr>
<tr>
<td></td>
<td>Sargan</td>
<td>0.42 (0.52)</td>
<td>0.03 (0.87)</td>
<td>0.001 (0.98)</td>
<td>0.49 (0.48)</td>
</tr>
<tr>
<td><strong>CH N=60</strong></td>
<td>Weak Instruments</td>
<td>0.74 (0.48)</td>
<td>0.20 (0.82)</td>
<td>0.12 (0.89)</td>
<td>0.51 (0.61)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.95 (0.34)</td>
<td>0.47 (0.49)</td>
<td>2.42 (0.13)</td>
<td>2.11 (0.15)</td>
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<tr>
<td></td>
<td>Sargan</td>
<td>1.44 (0.23)</td>
<td>1.20 (0.27)</td>
<td>0.005 (0.95)</td>
<td>0.15 (0.70)</td>
</tr>
<tr>
<td><strong>RW N=60</strong></td>
<td>Weak Instruments</td>
<td>1.80 (0.18)</td>
<td>1.83 (0.17)</td>
<td>1.04 (0.36)</td>
<td>0.70 (0.50)</td>
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<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.44 (0.51)</td>
<td>0.30 (0.59)</td>
<td>0.01 (0.91)</td>
<td>0.45 (0.50)</td>
</tr>
<tr>
<td></td>
<td>Sargan</td>
<td>0.009 (0.93)</td>
<td>0.03 (0.86)</td>
<td>0.37 (0.54)</td>
<td>0.03 (0.86)</td>
</tr>
<tr>
<td><strong>RF N=60</strong></td>
<td>Weak Instruments</td>
<td>0.74 (0.48)</td>
<td>1.29 (0.28)</td>
<td>0.25 (0.78)</td>
<td>0.06 (0.94)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.25 (0.62)</td>
<td>0.03 (0.87)</td>
<td>0.10 (0.75)</td>
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<td></td>
<td>Sargan</td>
<td>0.05 (0.83)</td>
<td>0.21 (0.64)</td>
<td>0.24 (0.62)</td>
<td>0.02 (0.90)</td>
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<table>
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<th>Decision After Returning to the PC (T2)</th>
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<tr>
<td><strong>Full N=240</strong></td>
<td>Weak Instruments</td>
<td>1.72 (0.18)</td>
<td>2.96 (0.05)</td>
<td>1.14 (0.32)</td>
<td>1.38 (0.25)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.12 (0.73)</td>
<td>0.05 (0.82)</td>
<td>0.89 (0.35)</td>
<td>1.32 (0.25)</td>
</tr>
<tr>
<td></td>
<td>Sargan</td>
<td>2.02 (0.16)</td>
<td>2.14 (0.14)</td>
<td>0.80 (0.37)</td>
<td>0.35 (0.56)</td>
</tr>
<tr>
<td><strong>PD N=60</strong></td>
<td>Weak Instruments</td>
<td>6.61 (0.002)</td>
<td>1.13 (0.33)</td>
<td>1.23 (0.30)</td>
<td><strong>4.57</strong> (0.01)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.41 (0.53)</td>
<td>0.27 (0.60)</td>
<td>0.50 (0.48)</td>
<td>0.71 (0.40)</td>
</tr>
<tr>
<td></td>
<td>Sargan</td>
<td>0.66 (0.42)</td>
<td>0.46 (0.50)</td>
<td>0.23 (0.63)</td>
<td>0.55 (0.46)</td>
</tr>
<tr>
<td><strong>CH N=60</strong></td>
<td>Weak Instruments</td>
<td>0.74 (0.48)</td>
<td>0.20 (0.82)</td>
<td>0.12 (0.89)</td>
<td>0.51 (0.61)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>1.29 (0.26)</td>
<td>0.51 (0.48)</td>
<td><strong>3.99</strong> (0.05)</td>
<td>3.31 (0.07)</td>
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<tr>
<td></td>
<td>Sargan</td>
<td>2.02 (0.16)</td>
<td>1.82 (0.18)</td>
<td>0.91 (0.01)</td>
<td>0.24 (0.63)</td>
</tr>
<tr>
<td><strong>RW N=60</strong></td>
<td>Weak Instruments</td>
<td>1.80 (0.18)</td>
<td>1.83 (0.17)</td>
<td>1.04 (0.36)</td>
<td>0.70 (0.50)</td>
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<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.09 (0.76)</td>
<td>0.08 (0.78)</td>
<td>0.13 (0.72)</td>
<td>0.04 (0.84)</td>
</tr>
<tr>
<td></td>
<td>Sargan</td>
<td>0.12 (0.73)</td>
<td>0.15 (0.70)</td>
<td>0.06 (0.81)</td>
<td>0.15 (0.70)</td>
</tr>
<tr>
<td><strong>RF N=60</strong></td>
<td>Weak Instruments</td>
<td>0.74 (0.48)</td>
<td>1.29 (0.28)</td>
<td>0.25 (0.78)</td>
<td>0.06 (0.94)</td>
</tr>
<tr>
<td></td>
<td>Wu-Hausman</td>
<td>0.12 (0.74)</td>
<td>0.07 (0.80)</td>
<td>0.01 (0.91)</td>
<td>0.21 (0.65)</td>
</tr>
<tr>
<td></td>
<td>Sargan</td>
<td>0.14 (0.70)</td>
<td>0.29 (0.59)</td>
<td>0.31 (0.58)</td>
<td>0.06 (0.81)</td>
</tr>
</tbody>
</table>

**Note:** Test statistics for 2SLS models testing the causal effect of deliberative quality (specification in columns) on the negotiation outcomes at T1 (top) and T2 (bottom); p-values in brackets; significant test scores at the 0.9 level of confidence are in **bold** typeset.

Deliberative quality. The other significant values are significant only at the 0.9 level of confidence. In the full dataset, justification and accommodation are significantly correlated with the two instruments. The latter is also significant in the CH only dataset. In
all other cases, I cannot conclude with considerable certainty that the first stage actually exists. It could also be zero and the correlation value would then only be the result of noise in the data generation.

The Wu-Hausman test (Wu 1973; Hausman 1978) states the null hypothesis that the IV model is equally consistent as OLS. A significant value rejects this null hypothesis, stating that the IV model is consistent while OLS is not, because of an endogeneity problem. This test fails to reject the null hypothesis in all models of T1. At T2 it is significant for the CH only dataset when using participation and respect as indicators for deliberative quality in the IV models. It is noteworthy that in both cases in which the Wu-Hausman test rejects the null hypothesis, the corresponding instruments represent a considerably weak first stage that might not exist at all.

The Sargan test (Sargan 1958, 1988) is mentioned in Footnote 12 above in the discussion about testing the exclusion restriction. With this test the excess information of an overidentified model can be used. The null hypothesis states that all exogenous instruments are indeed uncorrelated with the model residuals. Thus, for successfully making use of the IV approach, this null hypothesis should not be rejected. If the null is rejected, one has to conclude that at least one of the instruments is not valid. However, failing to reject the null hypothesis has the problem that one can never be certain that the instruments are indeed exogenous. A significant test statistics just gives the certainty that at least one of the intended instrumental variables is not valid. Theoretical justification is still necessary. In the presented models, this is the case in the CH only dataset when using accommodation as the indicator for the deliberative quality at both decisions T1 and T2. The fact that this test is not significant in most applications does not necessarily lead to the naïve conclusion that I generally have consistent IV variables. The test only works if at least one instrument is indeed valid and it then tests if all instruments are equally valid. Although I am considerably certain that the randomization of the additional task description leads to independence between the task descriptions and the error term of the outcome, I also need to conclude that if one of the task descriptions is not valid, the other one probably is not either, as they are mutually exclusive. It all boils down to the way the additional task description was
phrased. If the participants are affected by the task description in a way that influences their decisions at T1 and/or T2 that is irrespective of the way they communicate, the IV approach is doomed to fail. Considerable care has been given to the phrasing of these variables in order to avoid this problem. However, a careful reader might find ways that contradict this assumption that I am not aware of and should thus neglect the validity of the presented instruments.

Overall, the presented additional tests do not paint a brighter picture for my case of using an IV approach in order to come nearer to causal conclusions on the relationship between the deliberative quality and the negotiation outcome. Nonetheless, I continue with the presentation of various predictors that can be used to assess a causal effect if it were to exist. In the interpretation of the specific results, I will take into consideration in how far the necessary assumptions can be defended.

I therefore turn to Tables 6.10 and 6.11. In these tables, I present the results of different IV estimators that are calculated with the ivmodel() command from the package ivmodel (Jiang et al. 2017) in R. In these tables I present four different point predictors: OLS (ordinary least-squares), 2SLS (two-stage least-squares), Fuller and LIML (Limited Information Maximum Likelihood).

OLS does not need further explanation. If there is endogeneity between the treatment (deliberative quality) and the outcome, the predictors are biased – in this case most likely due to omitted-variable bias. That is why 2SLS is used in the IV model. 2SLS was first introduced by Theil (1953) and has become the standard estimator in the IV-approach. However, as Murray (2006b, p.30) puts it, “[e]conometric theorists agree that 2SLS is a poor estimation strategy when instruments are weak. Point estimates and confidence intervals based on 2SLS are likely to be misleading. The point estimates might suffer considerable bias and the estimated confidence intervals are likely to be too narrow”. One more problem with 2SLS lies in the interpretation: in a case where the instrument is randomized but the participants of the study do not always adhere to the additional task description, the interpretation of the estimator is only valid for those participants who actually comply with the randomized task de-
Table 6.10: Causal Effects of the Deliberative Quality on Negotiation Outcomes at T1

<table>
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<tbody>
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<td>OLS</td>
<td>-0.008 (0.02)</td>
<td>-0.035 (0.02)</td>
<td>0.009 (0.02)</td>
<td>0.019 (0.02)</td>
<td>-0.017 (0.02)</td>
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<tr>
<td>2SLS</td>
<td>-0.006 (0.19)</td>
<td>-0.027 (0.15)</td>
<td>-0.127 (0.26)</td>
<td>0.174 (0.25)</td>
<td>-0.136 (0.19)</td>
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<tr>
<td>LIML</td>
<td>-0.004 (0.23)</td>
<td>-0.025 (0.17)</td>
<td>-0.191 (0.34)</td>
<td>0.207 (0.29)</td>
<td>-0.154 (0.21)</td>
</tr>
<tr>
<td>Fuller</td>
<td>-0.006 (0.19)</td>
<td>-0.027 (0.15)</td>
<td>-0.105 (0.23)</td>
<td>0.139 (0.21)</td>
<td>-0.119 (0.18)</td>
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</table>

Full Data, N=60

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<td>OLS</td>
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<td>[-∞, ∞]</td>
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<td>2480182</td>
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<tr>
<td>2SLS</td>
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<td>0.47 (0.78)</td>
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<td>LIML</td>
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<td>0.24 (0.78)</td>
<td>[-∞, ∞]</td>
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<td>Fuller</td>
<td>-0.081 (0.17)</td>
<td>[-∞, ∞]</td>
<td>0.113 (0.26)</td>
<td>[-∞, ∞]</td>
<td>0.156 (0.21)</td>
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PD: N=60

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<tr>
<td>OLS</td>
<td>3.43 (0.14)</td>
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<td>2SLS</td>
<td>0.211 (0.25)</td>
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<td>LIML</td>
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<td>Fuller</td>
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<td>2.12 (0.13)</td>
<td>[-∞, ∞]</td>
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CR: N=60

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<tbody>
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<tr>
<td>LIML</td>
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<td>[-∞, ∞]</td>
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</table>

RW: N=60

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<tbody>
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<td>OLS</td>
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<td>[-∞, ∞]</td>
<td>0.19</td>
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<tr>
<td>2SLS</td>
<td>-0.144 (0.29)</td>
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<td>LIML</td>
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<td>Fuller</td>
<td>-0.239 (0.46)</td>
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<td>0.19 (0.83)</td>
<td>[-∞, ∞]</td>
<td>0.19</td>
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</table>

RF: N=60

Note: IV-models testing the causal effect of deliberative quality on the negotiation outcomes at T1; point estimators OLS, 2SLS, LIML, and Fuller (standard errors in brackets); test statistics for CLR and A-R tests (p-values in brackets).
6.5 A Quest for Causality

scription – the estimator is thus only interpreted as a local average treatment effect (LATE). I discuss below, why this is a problem in this study.

The results in the two tables are interesting in comparison with Table 6.1 from Section 6.1. For T1, the hierarchical logit-models, the OLS models and the 2SLS models at least agree in the direction of the effect in 13 specifications (dataset and indicator for deliberative quality). This is also the case when looking at justification in RF, where the negative coefficient in OLS is even significant; the absolute random slope of justification in RF is also bigger than 1.96 times the standard error of that variable in the hierarchical logit model. In 2SLS, the coefficient becomes slightly smaller but the standard error increases so that the coefficient for 2SLS is no longer significant. The other result that can be considered significant above is the positive coefficient of respect in PD. Here OLS also shows a positive coefficient, which is however not significant. In 2SLS it turns negative but remains insignificant. Even though this specification passed the weak instruments test (yet only with an F-statistic of 4.57) suggesting that one can be quite certain that the first stage exists, the coefficients are so small that the conclusion of no effect is most likely correct. In six more specifications, the sign of the coefficient agrees between the hierarchical logit and OLS but turns around in 2SLS. In three more specifications, the hierarchical logit is the odd one out and participation in PD shows agreement between the logit and 2SLS, while OLS is different.

For T2, agreement between the three models can be found in 11 specifications. Among them are two of the specifications that are considered significant in the hierarchical logit model: justification and accommodation in RF. They both show negative coefficients in all three models. At OLS, they are also still significant, but turn insignificant at 2SLS due to much greater standard errors. While the negative coefficient of justification in RF shrinks to half the size when comparing 2SLS and OLS, it even more than doubles for accommodation – yet, the standard error is much larger. In both cases, I cannot be certain that the first stage actually exists. The accommodation coefficients in PD and CH, which could be considered negatively significant in the hierarchical logit model remain negative in OLS but turn positive in 2SLS. The absolute values of the coefficients are multiply larger in 2SLS, but again the standard errors grow even
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<td><strong>RF: N=60</strong></td>
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</tr>
<tr>
<td>OLS</td>
<td>-0.040 (0.06)</td>
<td>-0.130 (0.06)</td>
<td>-0.026 (0.06)</td>
<td>0.069 (0.05)</td>
<td>-0.115 (0.07)</td>
</tr>
<tr>
<td>2SLS</td>
<td>-0.199 (0.52)</td>
<td>-0.065 (0.28)</td>
<td>0.054 (0.75)</td>
<td>-0.544 (2.57)</td>
<td>-0.298 (0.55)</td>
</tr>
<tr>
<td>LIML</td>
<td>-0.229 (0.58)</td>
<td>-0.057 (0.29)</td>
<td>0.323 (1.96)</td>
<td>-1.034 (5.48)</td>
<td>-0.298 (0.55)</td>
</tr>
<tr>
<td>Fuller</td>
<td>-0.119 (0.35)</td>
<td>-0.080 (0.24)</td>
<td>-0.0004 (0.42)</td>
<td>0.021 (0.41)</td>
<td>-0.205 (0.37)</td>
</tr>
<tr>
<td><strong>CLR test</strong></td>
<td>0.18 (0.82)</td>
<td>0.04 (0.89)</td>
<td>0.04 (0.94)</td>
<td>0.28 (0.85)</td>
<td>0.31 (0.75)</td>
</tr>
<tr>
<td><strong>A-R test</strong></td>
<td>0.16 (0.86)</td>
<td>0.16 (0.86)</td>
<td>0.16 (0.86)</td>
<td>0.16 (0.86)</td>
<td>0.16 (0.86)</td>
</tr>
<tr>
<td><strong>A-R power</strong></td>
<td>0.06</td>
<td>0.05</td>
<td>0.05</td>
<td>0.06</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>A-R size</strong></td>
<td>3464</td>
<td>10692</td>
<td>104174</td>
<td>4024</td>
<td>1784</td>
</tr>
</tbody>
</table>

|                |        |         |         |        |        |
| **PD: N=60**   |        |         |         |        |        |
| OLS            | -0.074 (0.06) | -0.002 (0.05) | 0.022 (0.07) | -0.052 (0.05) | -0.114 (0.06) |
| 2SLS           | 0.065 (0.25) | -0.146 (0.32) | 0.274 (0.44) | 0.072 (0.42) | 1.813 (8.97) |
| LIML           | 0.093 (0.28) | -0.198 (0.39) | 0.311 (0.49) | 0.083 (0.18) | 1.841 (9.16) |
| Fuller         | 0.052 (0.23) | -0.107 (0.27) | 0.191 (0.34) | 0.062 (0.16) | -0.028 (0.44) |
| **CLR test**   | 0.13 (0.76) | 0.33 (0.69) | 0.54 (0.60) | 0.23 (0.66) | 0.75 (0.66) |
| **A-R test**   | 0.38 (0.69) | 0.38 (0.69) | 0.38 (0.69) | 0.38 (0.69) | 0.38 (0.69) |
| **A-R CI**     | [−∞, ∞]   | [−∞, ∞]   | [−∞, ∞]   | [−0.41, 1.82] | [−∞, ∞] |
| **A-R power**  | 0.06     | 0.07     | 0.09     | 0.06     | 0.11    |
| **A-R size**   | 7734     | 2310     | 1154     | 2982     | 746     |

|                |        |         |         |        |        |
| **CH: N=60**   |        |         |         |        |        |
| OLS            | 0.007 (0.05) | -0.009 (0.05) | 0.027 (0.04) | 0.024 (0.05) | -0.015 (0.05) |
| 2SLS           | 0.351 (0.43) | 0.467 (1.06) | -1.343 (2.71) | 0.793 (0.88) | 0.097 (0.21) |
| LIML           | 1.132 (1.83) | 4.364 (23.25) | -1.412 (2.91) | 0.985 (1.18) | 0.809 (1.29) |
| Fuller         | 0.333 (0.41) | 0.137 (0.39) | -0.259 (0.38) | 0.433 (0.42) | 0.259 (0.39) |
| **CLR test**   | 4.57 (0.08) | 5.21 (0.07) | 5.49 (0.06) | 5.31 (0.06) | 2.43 (0.17) |
| **A-R test**   | 2.75 (0.07) | 2.75 (0.07) | 2.75 (0.07) | 2.75 (0.07) | 2.75 (0.07) |
| **A-R CI**     | [−∞, ∞]   | [−∞, ∞]   | [−∞, ∞]   | [−∞, ∞]   | [−∞, ∞] |
| **A-R power**  | 0.16     | 0.09     | 0.52     | 0.43     | 0.07    |
| **A-R size**   | 420      | 1096     | 110      | 134      | 2460    |

|                |        |         |         |        |        |
| **RW: N=60**   |        |         |         |        |        |
| OLS            | -0.062 (0.23) | -0.058 (0.28) | -0.101 (0.34) | -0.067 (0.31) | -0.066 (0.24) |
| 2SLS           | -0.082 (0.27) | -0.082 (0.33) | -0.176 (0.48) | -0.100 (0.41) | -0.108 (0.31) |
| LIML           | -0.085 (0.27) | -0.087 (0.34) | -0.185 (0.50) | -0.110 (0.44) | -0.113 (0.31) |
| Fuller         | -0.062 (0.23) | -0.058 (0.28) | -0.101 (0.34) | -0.067 (0.31) | -0.066 (0.24) |
| **CLR test**   | 0.10 (0.81) | 0.07 (0.84) | 0.15 (0.81) | 0.06 (0.88) | 0.14 (0.79) |
| **A-R test**   | 0.10 (0.90) | 0.10 (0.90) | 0.10 (0.90) | 0.10 (0.90) | 0.10 (0.90) |
| **A-R CI**     | [−∞, ∞]   | [−∞, ∞]   | [−∞, ∞]   | [−∞, ∞]   | [−∞, ∞] |
| **A-R power**  | 0.06     | 0.05     | 0.06     | 0.05     | 0.06    |
| **A-R size**   | 5882     | 8634     | 3740     | 9276     | 4094    |

**Table 6.11**: Causal Effects of the Deliberative Quality on Negotiation Outcomes at T2; point estimators OLS, 2SLS, LIML, and Fuller (standard errors in brackets); test statistics for CLR and A-R tests (p-values in brackets).
more, so that the positive coefficients are no longer significant. At PD, the first stage is particularly weak. At CH, the weak instruments test supports the existence of a first stage, but the Sargan test identifies at least one IV to be inconsistent. The pattern of agreement between logit and OLS and the opposite direction in 2SLS appears 7 more times among the 25 different specifications of modelling the decision at T2. The logit is the odd one out in one more specification, while OLS is the odd one out in four more specifications.

Already in 1949, Anderson and Rubin (1949) developed the Limited Information Maximum Likelihood (LIML) estimation. When Bekker (1994) figured out feasible standard errors, this technique became more and more popular as it can deal much better than 2SLS with many weak instruments as it is median unbiased. However it is less precise with even wider standard errors and therefore needs a considerably larger sample to achieve meaningful point predictions. One way to deal with the problem of weak instruments is suggested by Angrist and Pischke (2008): if 2SLS and LIML come out with very similar coefficients, the bias in 2SLS is most likely not that strong. This is the reason for reporting the results in Tables 6.10 and 6.11, even though 60 or 240 cases is by far not the sample size required for a successful point estimation with LIML. However, Murray points out that LIML “far too often yields widely wrong parameter estimates when instruments are weak” (Murray 2006b, p. 30). Thus some modifications of LIML were introduced by Fuller (1977) which have proven to perform reasonably well in a case of weak instruments. Murray continues, however, by admitting that several econometricians still prefer LIML over Fuller’s estimates.

The different estimation techniques are presented here in order to compare the estimates with each other. If they remain similar, one can cautiously conclude that the bias from weak instruments is considerably small and the predictors are therefore quite stable. Even though none of the point estimates are significant in Tables 6.10 and 6.11, consistency in the estimators gives a sign of hope that there might actually be an effect in the real world that just could not be detected in the data because the sample is too small. Turning back to the tables, the first observation is that the three estimators point in the same direction in all but three cases – all of the exceptions are at T2. The
coefficients of justification in the RF only dataset are very similar at slightly below -0.1 at T1. In the models predicting the decision at the table (T1), two more specifications have consistent point estimators over the three procedures, the index at the PD only dataset and justification at the full dataset. The other specification of particular interest (respect in PD only) has too small coefficients for any conclusions but the suggestion that the effect is very likely zero. The index at the full dataset has similar coefficients. In 13 specifications the coefficients are quite similar, although only two of the three estimation techniques agree in 11 of these specifications. In 7 specifications, the bias seems to be so large, that all three estimates are very different. They still point in the same direction.

At T2, I cannot present any consistent estimators and in 13 specifications, the estimates are completely different. Among them is one of the specifications of particular interest: accommodation in the CH only dataset. For all indicators of deliberative quality in the RW only dataset, 2SLS and LIML are consistent or very similar but the estimate gained by the Fuller estimator are slightly off, even if not completely different. This can also be said about justification and accommodation in the RF only dataset – two of the particularly interesting specifications due to their coefficients in Section 6.1. Accommodation in the PD only dataset has similar point predictions when comparing 2SLS and LIML. Fuller however deviates strongly. Even the direction of the effect changes here and now agrees with OLS and the hierarchical logit models. In three more specifications, one point estimator is completely off, while two are similar and one final observation has three similar but not quite consistent estimates.

There is yet another way to deal with weak instruments in overidentified models, which Murray (2006a) calls the state of the art. The Conditional Likelihood Ratio (CLR) test for structural models (Moreira 2003; Andrews et al. 2006) calculates confidence intervals that are conditioned on the data. This test only works with one troublesome explanator, which is the case in the models under observation here. In addition, the Anderson-Rubin test (Anderson and Rubin 1949) is also presented with the confi-

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15 I arbitrarily define consistency here as a difference of the point predictor of less than 0.01 and this difference is smaller than 10 % of the value. I speak of similar coefficients when the point estimates differ with less than 0.05.


dence intervals created from this test. Generally CLR is preferred “due to its generally favourable power” (Jiang et al., submitted 8), but I present the Anderson-Rubin test nonetheless, because the ivmodel() command allows to calculate its power and especially provides an estimate of how large a sample size would have to be if newly gathered data should present the same parameters in the same model in order to reach a power of 0.8 (which is the general acceptance rate for a type two error in which one fails to reject the null hypothesis even though it is actually false).

The results in Tables 6.10 and 6.11 are even more disillusioning about the use of the IV approach in this study than any of the results presented so far. Apart from one specification (respect in PD) in the models predicting the decision at the table (T1), the confidence intervals reach from negative infinity to positive infinity: any conclusions about a potential relationship of the deliberative quality and the decision in this experimental setting cannot be justified by the data. The p-values of both tests are generally closer to one than to zero. An exception concerning the p-values are the models calculated with the dataset that only consists of cases with the Chicken preference constellation. Here, the needed sample size to be confident in a rejected null hypothesis for the A-R test states a three digit number in all but the accommodation specification. In contrast, for the full dataset when using the index as the indicator for deliberative quality, a sample size of almost 2.5 million would be needed if the model with such a dataset would result in the same parameters. For the models on the decision at T2, the same conclusions have to be drawn. Here, one can even witness a peculiarity from the CLR test: in the CH only dataset, using respect and participation as explanatory variables, the confidence intervals are disjoint. This means that the true values can be anything but between 0.04 and 0.15 (for participation) and between -0.20 and -0.08 (for respect). As Murray (2006b) explains, this can happen if none of the instrument variables are actually correlated with the treatment. This is also his explanation for the completely uninformative confidence intervals in the rest of the specifications. The only way to remedy such results is the use of stronger instruments – a tactic that was no longer feasible after the data collection of this experiment was completed.
6  The Effect of the Deliberative Quality on Substantive Outcomes

6.5.4 Summarizing the Quest for Causality

In this final section, I claim that studying the effects of deliberation would strongly benefit from the instrumental variables approach. Thus, I incorporate the approach in my study design and randomly assign different additional task descriptions that are supposed to influence how the participants in the experimental sessions communicate with each other without affecting the decisions at the table and the PC-equipped work station in any other way than through their communicative performance. I argue that the exclusion restriction is not problematic in this study, due to the randomisation of the instrument.

However, I find that the existence of a first stage must be put into question. The correlation between the instrumental variable and the deliberative quality is either weak or should not be expected to exist at all, when looking at the different indicators of the deliberative quality and when using different sub-samples according to the randomly assigned preference constellations. In addition, once I find a significant correlation between the additional task description and the indicator for deliberative quality, the direction of this relationship is in many specifications opposed to the initial intuition. At this point, I can only speculate about different reasons why the first stage failed so tremendously. One potential reason could be a failure to measure the concept that should be triggered by the additional task description with the indicators of the deliberative quality. Another potential reason could be that the level of deliberative quality cannot be influenced. Maybe the deliberative performance of people is highly invariable and an expression of the participants’ personality. Or an unobserved variable affects the deliberative quality in a much stronger way than the additional task description.

The first speculation does have its merits. I mention above that the measurement was still not completed by the time when the phrasing of the additional task description was decided upon. Therefore, the wording is oriented towards the conceptual ideal of deliberative quality rather than towards the trigger words that are recognised by the measurement. Yet, if the measure fails to take up the conceptual ideal, as it was
supposed to be triggered by the additional task description, one needs to question the validity of the measurement. This critique puts in doubt the general possibility of inferring from the results to any theoretical advances. However, it can only hold if the participants were actually affected by the task description and only the measurement did not pick up this effect.

The second speculation questions exactly this assumption. Were the participants affected to behave more according to the deliberative ideal when they were assigned to the deliberative task description? Certain norms might affect the deliberative quality as well as the negotiation outcome. Some participants might be set to cooperate no matter what they are told to do in the experiment as is mentioned in the discussion of T0 as a control variable in Section 6.1. This would affect both their communication and the decision at the end. Besides norms, an instrumental rationality could be another comprehensible explanation. The participants might decide at a certain point what they want to achieve in the experiment and communicate accordingly. Of course, in this case the decision also determines or at least strongly influences their choice. Such unobserved confounding variables are the exact reason for turning to the instrumental variables approach in the first place. However, if the confounding variable affects the treatment much stronger than the instrument does, a weak first stage is no surprise.

All of these considerations assume that the level of deliberative quality can actually be changed. This is not necessarily the case. Maybe, participants just behave the way they always do even in an artificial setting such as the one in this experiment. However, there is one detail that points towards the strong confounder suspicion: the first stage can weakly be supported for some indicators only in the symmetric preference constellations, while there is not a single significant weak instruments test in the asymmetric ones. This suggests that in the symmetric games, the additional task descriptions have a slight influence that is being sidelined by the asymmetric constellations.

\[16\] The term “instrumental” refers to two completely different concepts in this dissertation when referring to “instrumental variables” and an “instrumental rationality”. The first is used when describing a methodological approach, the second appears in the theoretical discussion as an antagonist to communicative rationality. Since the context in which the two terms appear is generally decisive and clear to recognise, I am convinced that this terminology does not lead to confusion.
Such a strong influence of a confounding variable or a lack of variability in the deliberative quality point to another greatly discussed problem in analysing treatment effects with instrumental variables. With successful 2SLS, the coefficient can only be interpreted as the local average treatment effect (LATE) of the complier population. Compliers are those participants that behave more deliberative, if they are (randomly) assigned to do so, but would have a lower level if they were in the comparison (neutral) group. In my IV design, compliers also show a lower deliberative quality, if they receive the conflictive task description compared to what they would normally do if they were not to receive an additional task description. The logic follows the potential outcomes approach (Rubin 1974). For any randomised instrument, four potential groups exist if the treatment is dichotomous. In this study design, I would assume a threshold, above which the participants are considered to behave according to the deliberative ideal and below which they are considered not to behave according to this ideal. Compliers are those participants who are above the threshold, if they are told to behave more deliberative, and below if they are not told anything. Always-takers are those participants who have a level of deliberative quality above the threshold no matter what they are told. Never-takers are below the threshold even if they received the additional task description to behave more deliberative. And defiers would only be above the threshold if they do not receive an additional task description and below, if they did receive it. In the data, we can only observe one of the two states. Therefore compliers cannot be separated from always takers in a case in which they are told to behave deliberative and actually do. They can also not be distinguished from never-takers if they do not receive an additional task description and are actually below the threshold. The same logic applies to defiers, just in the opposite direction. If one wants to be able to draw any conclusions, one has to assume monotonicity. This means that the instrument only has an effect in one direction. Generally this is achieved by arguing that defiers do not exist. Then those participants who are still below the threshold but have received the additional task description are interpreted as never-takers. This allows to calculate the percentage of compliers in the dataset. This information then allows to estimate how complying to the instrument affects the outcome.
6.5 A Quest for Causality

Keeping in mind these methodological considerations, the presented calculations of the first stage put in doubt that monotonicity can be assumed in this study. For one, the opposing task descriptions often show an effect in the same direction. Second, the intended direction can be observed in some specifications of deliberation indicator and sub-sample, while the opposite direction is observed in other specifications. Some additional task descriptions produce significantly different values in certain indicators of deliberative quality. Thus the instrument does seem to have some effect. Yet if the task description triggers different behaviours for different people, some participants might become more deliberative after reading the deliberative task description while others become less deliberative compared to how they would behave if they were not told anything. Unfortunately these potential outcomes cannot be observed at the same time.

Brushing aside all the mentioned worries about not being able to make the necessary assumptions, there was one specification in which all point predictors were quite consistent: the results of justification in RF. For the sake of argument, I now dare to conclude that the relative amount of arguments actually has a small causal effect on the cooperative solution. Since the deliberative task description decreases the level of justification and a lower justification value correlates with a higher probability to come to the cooperative solution, one has to ask if a higher proportion of arguments actually reflects a more deliberative behaviour. Is the relationship between the measurement and the theoretical ideal really linear? If so, should we conclude that in a setting in which cooperation is potentially easy to find, a higher level of argumentation leads to more conflict and thus less cooperation? Do participants interpret the exchange of validity claims and the use of reasoning as a means to further ones own self interest? If one actor is motivated by a communicative rationality, but his or her interlocutors interpret all opposition as strategic action, they might become less and less willing to cooperate even if they would have been willing to cooperate after much more shallow communication. A higher deliberative quality would then be a double-edged sword. If I still maintain that a high level of deliberation has the potential to lead to results that are closer to a common good, but I conclude from this study that people become less willing to cooperate when faced with too much argumentative opposition, one should
be very careful in applying the deliberative ideal to a negotiation situation in which one actually aims for the best solution for all affected by that decision.

In a final step, I present the sample sizes a researcher would have to generate in order to ascertain himself that there actually is no effect in the real world, if the data produces the same parameters as this study has done. The numbers are far from any feasible study design in most specifications. The only way forward for any serious quest for causality is therefore a tremendous effort to find an instrumental variable which can be randomly assigned to the study population and which strongly correlates with the measure of deliberative quality one uses in that study.

### 6.6 Summary and Discussion

In this chapter, I test Hypotheses H3 through H6 from the theory chapter. I analyse, if the level of deliberative quality in the experimental set-up is associated with the probability that both participants decide to take the shift at the conference centre in the fictitious conflict which they discuss. In order to learn more about this association, I also investigate the decisions they take before communication and test if the level of deliberative quality is already affected by other variables in the dataset. I then differentiate between the two actors and interpret their interactions in reference to the outcomes they can achieve. In a last step, I attempt to move from a correlative analysis to causal inferences and introduce an instrumental variable and the respective analyses.

Overall, I conclude that considering the verve of deliberation research and the promises the normative literature makes for the positive effects of deliberation, the results presented in this chapter are disillusioning. None of the hypotheses derived in the theory chapter can be supported. If the language variables included in the presented models are significant at all, the direction of the coefficients are contradictory to the hypothesised effects in most individual analyses. I must therefore conclude that, so far, I cannot produce any evidence that deliberation actually works on the level of
face-to-face interactions in ways as was promised in the literature – at least if I consider deliberation to be more than mere communication.

Having said this, one observation is striking: the results differ, when looking at the different indicators of deliberative quality, they differ, when looking at the different preference constellations in which the participants have to make their decisions, and they differ between the two points of decision making. Generally, the language variables have a stronger association with the decision at the table, compared to the decision the participants take five minutes later at the PC-equipped work station, where the cooperation rate is also considerably lower. Thus, I conclude in Section 6.1 that the indicators for deliberative quality affect the process of coordinating the decision and adapting to the position of the other participant rather than influencing whether the actors are actually convinced of the best solution when they take their decision. This pattern of a stronger correlation with the decisions at T1 becomes even more obvious in Section 6.4, where I separate the deliberative quality variables of the two actors. In total, I maintain that the deliberative quality in the interaction has less power over self-interested actors when they no longer need to justify or defend their decisions.

When looking at the individual results of some specifications, I speculate in Section 6.1 that high levels of justification and accommodation in asymmetric games that did not end in the cooperative solution (S1) – a particularly strong pattern in RW – might be explained by the disadvantaged actor’s unsuccessful efforts to sway the advantaged actor to decide in their favour. In Section 6.4 this interpretation can be supported by the results for justification and accommodation in T2. In T1, however, the probability of the cooperative solution rises much more with the accommodation value of Ricky, compared to the rather flat rise of Chris and the probability to reach a cooperative solution at T1 sinks with higher levels of justification from Ricky (in RW) and slightly rises with higher levels from Chris. Thus, the behaviour of Ricky appears to influence the outcome a lot stronger. An accommodating Ricky might convince him- or herself to finally cooperate. Or the accommodation value is driven by offers to make Chris accept the worse outcome, which a self-interested but considerate Ricky does not dare to force over Chris without agreement. The justification value can be the result of Rickys
6 The Effect of the Deliberative Quality on Substantive Outcomes

... trying to find acceptable arguments for their decision not to cooperate so that they are not the evil ones who take advantage of their luck to have drawn the better position. Apparently, they want their respective Chris to accept a worse outcome due to reasons that are being exchanged rather than because the situation is as it is.

In the other preference constellations, a higher level of *justification* from Chris decreases the probability of a cooperative solution at T2 (but not at T1). Since this pattern can be observed in the symmetric games (as well as in RF), one can speculate if the background story plays a role as well, since there is no other difference between Chris and Ricky that would explain such a pattern. Maybe, the reasons that are being exchanged do not stick long enough. A Ricky might think at the table that the rock-climbing trip with kids is a nice thing to do and should be supported, but when there is time for the decision, his or her exam is just a more convincing reason, no matter what arguments Chris put forward at the table. It is probably more difficult to be egotistic face-to-face with the negotiation partner, but less so when the two participants are back at their PC-equipped work station. The difference between the correlations of the *justification* indicator with the decisions at T1 and T2 points to the suspicion, that is, those Rickys who decide not to cooperate at T2 (after cooperating at T1) who were already difficult to convince at the table.

Taking another look at the *accommodation* value in RW at T2, I find in Section 6.4 that a high *accommodation* value of one actor (both Chris or Ricky) leads to a cooperative solution. However, in Section 6.1 a high value is associated with a lower probability of the cooperative solution. Thus, if one actor accommodates while the other accepts they agree to cooperate. But if both actors accommodate, the cooperative solution becomes less likely. This is the case if offers from one actor are rejected and answered with counteroffers. Such a pattern can be interpreted as conflictual behaviour.

These patterns suggest one more reading of the data: one can speculate that the students participating in this study are generally prone to cooperate. However, they become less and less willing not to take advantage of the situation the more conflict they have to endure. This sort of conflict is recorded especially by the two indicators *accommodation* and *justification*. *(Participation* is not associated with any change of the
probability to cooperate and respect is generally positive – with the exception of a small negative association in RW.)

In addition to the potential effects of the deliberative quality, this chapter provides a number of observations about the preference constellations and other control variables. Concerning the preference constellations, I conclude that a lack of fairness appears to be more important for the participants in their decisions than a lack of efficiency. This would explain why RW is usually the odd one out in all analyses. From Section 6.2 I can also conclude that actors tend to avoid their worst outcome and do not even wish to risk ending there for a chance of their best outcome. This is tested at the decision before meeting at the negotiation table (T0). However, the general observations from T1 and T2 are in line with this argument. Participants only decide not to cooperate, once they are reasonably sure that they do not risk to end up with their worst outcome.

In the above analyses, gender also plays an interesting role. Especially in Sections 6.2 and 6.3, this control variable significantly correlates with the variables under investigation. The decision at T0 is affected by the gender of the two participants. One has to keep in mind that since this correlation is more important in the symmetric games, the difference seems to be driven by the background story rather than by the preference constellations. In Section 6.2 I also find that men’s level of justification is prone to be affected by the advantage from asymmetric preference constellations, while women are not affected in their use of arguments.

In a final step, I introduce an instrumental variables approach to this study in order to investigate whether any of the reported patterns can be considered causal. The tests of the necessary assumptions, however, make apparent that it is not possible to draw any conclusions towards that end. The additional task description, which was randomly assigned to the participants as an instrumental variable, correlates neither sufficiently with the level of deliberative quality, nor with the outcome variables. This pattern does give further insight in the dataset however. One either has to conclude that the measure of deliberative quality that is used in this study insufficiently takes up the theoretical conceptualisation of the deliberative ideal. Or one has to maintain that the level of deliberative quality is not easily manipulated, since it is either a personal
trait that is not very volatile or because it is strongly affected by other considerations such as the outcome the participants want to achieve.

In this chapter, I analyse either the decisions at T1 or the decisions at T2 independent of each other. However, as has been observed with the decision at T0, later decisions are not independent of the previous ones. Therefore, the next chapter deals with the dependencies between the decisions at T1 and T2, investigating if there are any signs for a correlation between the deliberative quality and an actual conviction of the participants to have decided in the best possible way.
This third and final analysis chapter tackles the question of whether higher deliberative quality supports consensus decisions. In the theory chapter, I break the cycle of a circular argument by defining consensus as a decision that is the result of a process of autonomous will-formation. This is operationalised in two ways: first, I ask if decisions are stable after returning to the PC-equipped work station. Second, I use several satisfaction indicators from the post-discussion questionnaire. Both these indicators are assessed in hierarchical statistical models – against the backdrop of the preference constellations.

The organisation of the sections follows the dependent variables. Thus, Hypotheses H7 and H9 are assessed before Hypotheses H8 and H10 are tested. Each section first deals with the general influence of the deliberative quality within each observation (H7 and H8), before the individual deliberative quality is assessed in order to get a clearer picture how the two roles react to the symmetry or asymmetry of the preference constellations (H9 and H10). In the summary and discussion section completing this chapter, a comparison between the two operationalisations of consensus serves the purpose of further elaborating the relationship between the deliberative quality and the participants’ will-formation autonomy.
7 Deliberative Quality as a Predictor for Consensus Decisions

7.1 Does the Level of Deliberative Quality Affect Decision Stability?

In this section, I deal with Hypotheses H7 and H9. In Section 3.6, I postulate that the deliberative quality of communication positively affects the probability that actors stick to the agreed upon norms (H7). I also propose that an increased probability of decision stability in asymmetric games is explained by a higher deliberative quality of the advantaged actor (H9). Decision stability – one aspect of consensus decisions – is operationalised as a comparison between the decisions at the table (T1) and at the PC-equipped work station (T2). In Chapter 6, I look at the relationship between the deliberative quality and the decision at T2. I do this without considering the results at T1. In this chapter, I now consider both decisions simultaneously. I externally define S1 – the cooperative solution – as the “best solution” that should be the result of true deliberation according to the theoretical hypotheses. I also claim that participants express their conviction of having decided in the best possible way by confirming their decision to work when being asked again at the work station. Therefore, this final decision is the ‘positive’ outcome which I intend to explain by the level of deliberative quality.

For this reason, I only look at the 209 observations in which both participants have decided at the table (T1) to take the shift at the seminar in this first section. Because each participant does not know the other participant’s choice by the time he or she is asked to confirm whether or not he or she is taking the shift, I use the individual participant’s decision as the dependent variable rather than the joint result. This is in contrast to the previous chapter. Since it is very likely that the decisions of the two participants depend on one another, I analyse them in different models rather than only controlling for the role. I rather compare different models with each other in which

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1 According to the actual theoretical framework, a best solution can never be externally defined since it is the deliberative process among all participants that makes a solution the best one. However, the chosen approach is necessary for being able to measure any kind of success in this experimental set-up and for breaking through a circular argument.

2 Alternatively, one could control for this potential multicollinearity by adding the observation as a level in the hierarchical models. With only two cases per observation, however, the within-group coefficients would be imprecise.
the dependent variable is either Ricky’s or Chris’ decision to stick with the decision to cooperate. The explanatory variables are the same in these models. In addition, I can observe different effects of the control variables depending on whose decision I aim to predict.

### Table 7.1: Decision to Continue Cooperating at T2: Overview

<table>
<thead>
<tr>
<th></th>
<th>Ricky</th>
<th></th>
<th></th>
<th></th>
<th>Chris</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PD</td>
<td>CH</td>
<td>RW</td>
<td>RF</td>
<td>PD</td>
<td>CH</td>
<td>RW</td>
<td>RF</td>
</tr>
<tr>
<td>defect at T2</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>keep cooperating at T2</td>
<td>52</td>
<td>52</td>
<td>38</td>
<td>47</td>
<td>189</td>
<td>54</td>
<td>53</td>
<td>43</td>
</tr>
<tr>
<td>Sum</td>
<td>59</td>
<td>56</td>
<td>43</td>
<td>51</td>
<td>209</td>
<td>59</td>
<td>56</td>
<td>43</td>
</tr>
</tbody>
</table>

**Note**: Absolute numbers of decisions at T2 of all 209 observations in which both Ricky and Chris decided to cooperate at the table (T1).

In Table 7.1 I present the raw numbers of the dependent variables: few participants change their minds at T2. 20 Ricky players and 10 Chris players do so. (In 2 observations, both players decide to defect.) The larger number of Ricky players defecting overall is apparently resulting from Rickys’ defections in the asymmetric preference constellations. However, also in the symmetric constellations, more Ricky players decide to defect. In the following, I assess whether and, if so, how the deliberative quality affects the two participants’ decisions to confirm their cooperation or to defect after having returned to the PC-equipped work station. I start with presenting the statistical models for Hypotheses H7 and H9. They are both assessed on the same data with the same dependent variable(s). The combined deliberative quality of the two participants is specified as the explanatory variable for Hypothesis H7. When testing Hypothesis H9, the individual deliberative qualities of the two participants are assessed controlling for each other. Is a Ricky player more affected by his or her own deliberative quality, or is he or she more affected by the deliberative quality of the Chris player? What influences Chris’ decision to confirm cooperation: Is it affected by the way Ricky speaks, or more how Chris speaks him- or herself? Finally, the question arises whether differences between the dimensions of the deliberative quality can be observed.
In this section, I again run hierarchical logit regression models on the decisions of either Ricky or Chris to confirm their cooperation after having returned from the negotiation table to the work station. The reasons for using hierarchical models have been mentioned in previous chapters already. In this chapter, I use two different dependent variables. The first is Ricky’s decision to cooperate at T2. The other is the same decision by Chris. So, \( y_i \) is 0, if the respective participant decides not to stick to the agreed upon solution. It is 1, if he or she does. The following models estimate the probability that Ricky or Chris actually stick to their agreement in separate models. The main explanatory variables are again the different indicators for deliberation \( (x_i) \) – first the index, then the individual indicators and finally all indicators included in one model. For Hypothesis H7, I include the game-level values of these variables. For Hypothesis H9, I include the speaker-level variables of both Ricky and Chris in each model. The unit of analysis remains at the game-level. The following formula shows the hierarchical structure of the models.

\[
\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_j[i] + x_i \beta_{\text{deliberation}} + \mathbf{X}_i \mathbf{B}_{\text{controls}}); \text{ for } i = 1, \ldots, 209 \text{ observations}
\]

with
\[
\alpha_j = \gamma_0^\alpha + \epsilon_j^\alpha; \text{ for } j = 1, \ldots, 4 \text{ constellations}
\]

and
\[
\beta_{\text{deliberation}} = \gamma_0^\beta + \epsilon_j^\beta; \text{ for } j = 1, \ldots, 4 \text{ constellations}
\]

The main control variable is the preference constellation, which is included as a hierarchical level of a random intercepts – random slopes model. This allows to interpret the effect of the deliberative quality on the decision to stick to the agreed upon solution individually for each preference constellation. In the models for Hypothesis H9 \( \beta_j^{\text{deliberation}} \) is separated in a random slope for Ricky’s level of deliberative quality in each preference constellation, and one for Chris. Other control variables are selected as before: if they significantly correlate with the dependent variable as single predictor
variable, they are included in the model in order to test if their inclusion affects the correlation between the deliberative quality and the decision at T2.

### 7.1.1 Results Testing Hypothesis H7

The results of the models testing Hypothesis H7 are presented in Tables 7.2 and 7.3 as well as in Figures 7.1 and 7.2. In the following paragraphs, I present the main observations from the mentioned tables and figures. For both tables, I first present the coefficients of Model - Index. I then compare the models of the individual indicators before presenting the models in which all individual indicators are included. I first work through Table 7.2 in this way, before elaborating on the differences of the models with and without control variables. The presentation of Table 7.3 therefore first looks at the explanatory variables. To make the presented observations more tangible, I refer to the figures of the predicted probabilities. Only after the potential effects of the deliberative quality are sufficiently described will I consider the control variables and present the most important observations concerning them.

**Index:** An examination of Models Index – Ricky and Index – Chris reveals that the association between the level of deliberative quality and the probability that Ricky sticks to the solution at the table is virtually non-existent, while a higher level of deliberative quality correlates with a lower probability of Chris to stay true to his or her word. Both associations are generally not significant. The intercepts reveal what is already apparent from Table 7.1: a Chris player is more likely to stick to his or her decision than a Ricky player. A look at the random intercepts and random slopes reveals that Ricky’s decision to stay true to his or her word does not appear to be affected by the preference constellations either. The picture is different for Chris’ decision: the intercepts vary to some extent and also the negative effect of the deliberative quality index is bigger in the two symmetric games. For PD the random slope can even be considered significant at the 0.9 level of confidence.

---

3 I explain in Section 6.1 why this parameter is only considered significant and not actually reported as such.
Table 7.2: The Relationship of Deliberation and the Decision to Continue Cooperating at T2

<table>
<thead>
<tr>
<th>Role</th>
<th>Index</th>
<th>Justification</th>
<th>Participation</th>
<th>Respect</th>
<th>Accommodation</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
</tr>
<tr>
<td>Index</td>
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<td>0.09</td>
<td>-0.46</td>
<td>0.15</td>
<td>-0.62</td>
</tr>
<tr>
<td></td>
<td>(0.23)</td>
<td>(0.34)</td>
<td>(0.23)</td>
<td>(0.32)</td>
<td>(0.22)</td>
<td>(0.44)</td>
</tr>
<tr>
<td>Justification</td>
<td></td>
<td></td>
<td>0.09</td>
<td>-0.46</td>
<td>0.15</td>
<td>-0.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.23)</td>
<td>(0.32)</td>
<td>(0.22)</td>
<td>(0.44)</td>
</tr>
<tr>
<td>Participation</td>
<td></td>
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<td>-0.62</td>
<td>0.07</td>
<td>-0.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.23)</td>
<td>(0.41)</td>
</tr>
<tr>
<td>Respect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.10</td>
<td>-0.29</td>
</tr>
<tr>
<td></td>
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<td>(0.29)</td>
</tr>
<tr>
<td>Accommodation</td>
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<td></td>
<td>-0.15</td>
<td>-0.83</td>
</tr>
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<td></td>
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<td></td>
<td>(0.29)</td>
<td>(1.08)</td>
</tr>
<tr>
<td>(Intercept)</td>
<td></td>
<td></td>
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<td>3.16</td>
<td>2.25</td>
<td>3.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.24)</td>
<td>(0.11)</td>
<td>(0.24)</td>
<td>(0.38)</td>
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</table>

Random Intercepts

<table>
<thead>
<tr>
<th>Role</th>
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<th>CH</th>
<th>RW</th>
<th>RF</th>
<th>std dev</th>
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<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
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</table>

Random Slopes

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<th>CH</th>
<th>RW</th>
<th>RF</th>
<th>std dev</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>(0.00)</td>
</tr>
<tr>
<td></td>
<td>-0.61</td>
<td>-0.48</td>
<td>-0.37</td>
<td>-0.45</td>
<td>(0.00)</td>
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<tr>
<td></td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>(0.00)</td>
</tr>
<tr>
<td></td>
<td>-0.47</td>
<td>-0.46</td>
<td>-0.46</td>
<td>-0.46</td>
<td>(0.00)</td>
</tr>
</tbody>
</table>

Deviance 131.9  75.6  131.7  77.9  131.5  77.9  131.8  75.4  121.8  79.3  119.0  60.0
DIC 131.9  73.7  131.7  77.8  131.5  77.9  131.8  72.0  115.3  79.3  111.8  49.1

Note: Results of hierarchical logit regression models using glm() (family = binomial (link = “logit”)) with either optimizer “bobyqa” (b) or “Nelder_Mead” (NM) from the R-package “lme4” (Bates et al. 2015) on the participants’ decision to continue cooperating after returning to the PC (at T2); standard errors in parentheses; N=207 (31 of the 240 cases did not end in the cooperative solution at the table); data were produced at University of Konstanz between 2014 and 2016; only intercepts are significant; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; “std dev” reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion.

Indicators: Looking at the four dimensions of deliberative quality individually, the observations are similar to the overall index for justification, participation and respect. Chris is negatively correlated, while Ricky shows a much smaller positive correlation. This positive correlation is however larger than the coefficient for the index. This can be explained by the negative correlation between the value of accommodation and Ricky’s
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

decision to confirm his decision at the table. The preference constellations reveal some more interesting observations: in Models Justification and Participation, the random intercepts and random slopes are either zero or negligible. The same cannot be said about the Models Respect and Accommodation. For respect, Model Respect – Ricky does not show any differences for the preference constellations, but Model Respect – Chris does. The standard deviations of the random intercepts show considerable variation in the probability of Chris sticking to solution S1. The random slopes also show variation over the different preference constellations for the correlation of the respect value with said solution. Models Accommodation behave completely against this pattern. While Model Accommodation – Chris shows no differences for the preference constellations, Model Accommodation – Ricky shows a strong negative correlation with the probability to confirm the cooperative solution in PD. This negative correlation can be considered significant at the 0.95 level of confidence. However, for the other preference constellations the correlation between the accommodation indicator and the decision at T2 is positive and quite substantially so for RW – yet not significant.

All: In Models All, I include all individual dimensions in the same model. With this, I hold the other deliberation indicators constant when looking at the effect of each indicator individually. Considering the models just described, some surprising observations can be made in these final two models. This concerns mainly Model All – Chris. In Model All – Ricky, positive coefficients for the first three dimensions of deliberative quality and a negative coefficient for accommodation can be observed. This negative coefficient is driven by a large negative random slope in the Prisoner’s Dilemma. More surprising observations can be made in Model All - Chris: even though all individual indicators were negatively correlated when included on their own, I can now observe a rather large positive coefficient for the respect indicator, when holding all other indicators constant. This result is driven by a large positive random slope in RF, which can be considered significant at the 0.95 level of confidence. The random slopes of the symmetric games are even negative. For the accommodation indicator this pattern is reversed. The symmetric games have positive random slopes while the asymmetric games show negative random slopes. Again the parameter for RF can be considered significant at the 0.95 level of confidence.
7 Deliberative Quality as a Predictor for Consensus Decisions

Deliberation with Control Variables: I now turn to Table 7.3. No real changes to the interpretation of the deliberation index can be observed in Model Index – Ricky when the control variables are included. However, the coefficient increases from 0.02 to 0.14. It is still not significant and there is no variation over the preference constella-

Table 7.3: The Relationship of Deliberation on the Decision to Continue Cooperating at T2; Including Control Variables

<table>
<thead>
<tr>
<th></th>
<th>Index Risky</th>
<th>Justification Risky</th>
<th>Participation Risky</th>
<th>Respect Risky</th>
<th>Accommodation Risky</th>
<th>All Risky</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>0.14</td>
<td>−0.47</td>
<td>(0.24)</td>
<td>(0.41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Justification</td>
<td>0.14</td>
<td>−0.47</td>
<td>(0.25)</td>
<td>(0.38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
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<td>(0.24)</td>
<td>(0.64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respect</td>
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<td>(0.24)</td>
<td>(0.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accommodation</td>
<td>−0.12</td>
<td>−0.22</td>
<td>−0.24</td>
<td>−0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both cooperate at T0</td>
<td>1.51</td>
<td>−0.03</td>
<td>1.49</td>
<td>0.22</td>
<td>1.49</td>
<td>−0.24</td>
</tr>
<tr>
<td>(0.60)</td>
<td>(0.97)</td>
<td>(0.60)</td>
<td>(0.86)</td>
<td>(0.60)</td>
<td>(0.91)</td>
<td>(0.60)</td>
</tr>
<tr>
<td>Self: BA</td>
<td>−0.09</td>
<td>−0.65</td>
<td>−0.09</td>
<td>−0.41</td>
<td>−0.12</td>
<td>−0.61</td>
</tr>
<tr>
<td>(0.50)</td>
<td>(0.97)</td>
<td>(0.50)</td>
<td>(0.93)</td>
<td>(0.50)</td>
<td>(0.96)</td>
<td>(0.50)</td>
</tr>
<tr>
<td>Self: Economics</td>
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<td>−0.32</td>
<td>−0.15</td>
<td>−0.20</td>
<td>−0.13</td>
<td>−0.30</td>
</tr>
<tr>
<td>(1.11)</td>
<td>(0.53)</td>
<td>(1.11)</td>
<td>(0.87)</td>
<td>(1.11)</td>
<td>(0.11)</td>
<td>(1.12)</td>
</tr>
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<td>Age Difference</td>
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<td>−0.12</td>
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<td>−0.20</td>
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<td>(0.29)</td>
<td>(0.49)</td>
<td>(0.28)</td>
<td>(0.48)</td>
<td>(0.28)</td>
<td>(0.47)</td>
<td>(0.30)</td>
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<td>Agreeableness</td>
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<tr>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.04)</td>
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<tr>
<td>(Intercept)</td>
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<td>−0.38</td>
<td>−0.03</td>
</tr>
<tr>
<td>(1.24)</td>
<td>(2.54)</td>
<td>(1.25)</td>
<td>(2.50)</td>
<td>(1.23)</td>
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<td>(1.24)</td>
</tr>
<tr>
<td>Random Intercepts</td>
<td>PD</td>
<td>0.00</td>
<td>−0.95</td>
<td>−0.01</td>
<td>−1.23</td>
<td>0.00</td>
</tr>
<tr>
<td>(0.30)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
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<tr>
<td>Random Slopes</td>
<td>PD</td>
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<td>−0.58</td>
<td>0.14</td>
<td>−0.47</td>
<td>0.20</td>
</tr>
<tr>
<td>(0.00)</td>
<td>(0.14)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
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<td>(0.05)</td>
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<tr>
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<td>47.9</td>
<td>116.9</td>
<td>49.7</td>
<td>116.5</td>
<td>48.0</td>
</tr>
<tr>
<td>(116.9)</td>
<td>(47.9)</td>
<td>(116.9)</td>
<td>(49.7)</td>
<td>(116.5)</td>
<td>(48.0)</td>
<td>(116.3)</td>
</tr>
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<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
<td>N</td>
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</table>

Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit")) with either optimizer “bobyqa” (b) or “Nelder_Mead” (NM) from the R-package ”lme4“ (Bates et al. 2015) on the participants’ decision to continue cooperating after returning to the PC (at T2); standard errors in parentheses; N=209 (31 of the 240 cases did not end in the cooperative solution at the table); data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant at the 0.05 level of confidence; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; “std dev” reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion; Model Accommodation – *Chris* failed to converge with max | grad | = 0.0108; Model All – *Ricky* failed to converge with max | grad | = 0.0042.
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

<table>
<thead>
<tr>
<th>Role / Model</th>
<th>Justification</th>
<th>Participation</th>
<th>Respect</th>
<th>Accommodation</th>
</tr>
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<td>PD</td>
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<td>0.28</td>
<td>0.37</td>
<td>-0.87</td>
</tr>
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<td>CH</td>
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<td>0.23</td>
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</tr>
<tr>
<td>RW</td>
<td>0.04</td>
<td>0.15</td>
<td>0.20</td>
<td>0.25</td>
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<td>RF</td>
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<td>0.13</td>
<td>0.18</td>
<td>0.62</td>
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<tr>
<td>std dev</td>
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<td>(0.08)</td>
<td>(0.07)</td>
<td>(0.10)</td>
</tr>
</tbody>
</table>

Model Index – Chris shows exactly the same negative coefficient of -0.47. Only the standard error increases. The random intercepts vary slightly more while the random slopes vary slightly less over the preference constellations. Thus the negative correlation of the index with the decision to cooperate in PD can no longer be considered significant, even though it only drops from -0.61 to -0.58.

In the models with the individual indicators there are also no real changes to the above results in terms of significance of individual coefficients. What can be observed is an increase in the absolute values of all coefficients in the Ricky models, while the standard errors remain virtually the same. However, they still are all not significant – far from it. Only the random intercept at PD in Model Accommodation – Ricky remains large enough to be considered significant at the 0.95 level of confidence. In the Chris Models, all standard errors increase considerably. The coefficients increase for justification and respect, they decrease for participation and accommodation. In Model Participation – Chris, the random intercepts start varying considerably and the random slopes vary slightly. Both standard deviations are zero in the models without control variables. The same happens in Model Accommodation *Chris*. This model however failed to converge with a first gradient of the Maximum Likelihood function of 0.0108. Generally, a gradient of only 0.001 can be tolerated.

Finally, Models All show some slight changes. Model All – *Ricky* did not converge, while Model All – Chris did. In Model All – *Ricky* no changes of significance can be reported. Only the coefficients for respect and accommodation have larger absolute values. In Model All – Chris, the general coefficients of three indicator variables change quite substantially: only participation is similar. However, the random slopes for respect and accommodation at RF can no longer be considered significant when the control variables are included. The overall respect coefficient drops from 0.60 to 0.03.
The overall *accommodation* coefficient drops from -0.83 to -0.06. And the overall *justification* coefficient increases from -0.18 to -0.41. These changes are noteworthy mainly because the individual indicator models saw more changes in the Ricky models, while there are more changes in the Chris model of Models All.

**Figures:** Before I move to a discussion of the control variables, I present some observations from Figures 7.1 and 7.2 that are less obvious in the tables. The figures are created from the Models with control variables. The x-axis indicates 100 equally distributed values of the respective main explanatory variable reaching from the minimum to the maximum. On the y-axis the figures depict the predicted probability if the deliberation variable were x. This is calculated by including each x in all 209 cases and using the actual values of each case in all other variables. The solid line is the mean predicted probability over all cases in one preference constellation, the ribbons go from the 0.25 to the 0.75 quantiles. If there are differences between the preference constellations, the different colours represent the game theoretic constellations.

In Figure 7.1 I look at the five models with Ricky’s decision to stay true to his or her word as the dependent variable. Apart from *accommodation*, there is no difference between the preference constellations and the predicted probability increases – if only slightly – with higher levels of the respective deliberation variable. For *accommodation*, this slight increase remains true but for the PD games. Here, it is obvious that the more the two participants used agreement speech acts in comparison to disagreement speech acts, the less likely the Ricky players were to confirm their decision at the table.

Comparing Figure 7.2 with these pictures, three points leap to the eye. First, the predicted probabilities are much higher. Second, even though there are some differences between the preference constellations, they are hardly ever decisive for the general picture – with the exception of *respect*. And third, even though the impression is even weaker than in Figure 7.1, there is a tendency that an increase in the deliberative quality relates to a lower probability of Chris deciding to cooperate at T2, even though he or she has agreed to do so at the table. Turning to the obvious negative effect of the *respect* value one can see that the *respect* level of those observations in which Chris
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

Figure 7.1: Predicted Probability of Ricky Choosing to Continue Cooperating at T2
Figure 7.2: Predicted Probability of Chris Choosing to Continue Cooperating at T2
decided not to stay true to his or her word must have been rather high compared to the other PD observations.

All in all, I cannot conclude that Hypothesis H7 gains credibility from the presented data. None of the coefficients for the deliberative quality are significant. Having said this, a few more observations can be made, but they do not hold beyond reasonable doubt. The probability for Chris to stick with the decision appears to be more and throughout negatively correlated with the various indicators of deliberative quality. Ricky’s probability to stick with the decision at the table is much less correlated – apart from accommodation at PD the correlation is generally positive.

**Control Variables:** Finally, what can be said about the control variables? Unlike in the previous chapters, I refrain from including the socio-graphic variables of both actors (and their interaction) in the model. The reason is that most models did not converge. Therefore, I only include the variables that were significantly correlated with the decision of either Ricky or Chris to continue cooperating at T2. I include them in both sets of models for consistency reasons. It is important to note that studying at the BA-level, studying economics and the agreeableness value are the respective values for Ricky in the Ricky models and for Chris in the Chris models. They can therefore not be compared in the same way as it was possible in previous chapters. The age difference is an absolute difference between the normed age groups, as was used in previous chapters. It does not consider which of the two participants is older.

Secondly, the differences across the models are the inclusion of the various deliberation indicator variables. Therefore, the coefficients of the control variables should not change a lot – unless the respective variable co-varies with the deliberation variables. Among the non-significant coefficients, this does happen; especially for the cooperation at T0 in the Chris models and to some extent also for studying at the BA-level – also in the Chris models. More specific observations are dealt with in the following paragraphs.

I begin with the cooperation at T0. This variable is strongly and positively correlated with Ricky’s decision to remain true to his or her word. In the accommodation
model, the coefficient is considerably smaller than in the other models, suggesting that some form of collinearity exists. Substantially, the value of 1.49 in most Ricky models according to the ‘divide-by-four rule’ suggests that the effect of both participants co-operating at T0 increases the probability of Ricky staying true to his or her word by 37.25 % at most. In the Chris models, this variable is insignificant and very unreliable. Thus, I refrain from reporting any general effect.

Studying at the BA-level is never significant, but all coefficients are negative. Participants playing Ricky are generally less affected by this fact, while participants playing Chris are more affected and show a higher covariance between the deliberation variables and the fact that they study at the BA-level.

Studying economics is also negatively correlated throughout all models. Especially participants playing Chris show a considerable and significant negative effect. In Model Index – Chris, the probability of deciding to take the shift at the conference centre after having agreed to do so at the table decreases by a maximum of 75.5 % if the Chris player studies economics compared to a case in which the Chris player does not; all else equal.

Another negative influence on the decision to continue cooperating at T2 is the age difference between the two participants. In Models Ricky, this negative influence is significant. The variable can take values between 0 and 4. If it increases by 1, in Model Index – Ricky, the probability of staying true to his or her word decreases by no more than 16 %. Thus a Ricky who’s probability to continue cooperating with a Chris of the same age were 0.8, the same Ricky would have a probability of 0.4 to continue cooperating with a Chris that is either much older or much younger. In Models Chris, this relationship is not significant. In Model Respect – Chris, the coefficient even turns slightly positive.

Throughout the models, the best positive predictor for the decision to cooperate at T2 is the participants’ agreeableness. The variable is positive in all models. Chris is affected to a larger extent. Among the 209 cases, the minimum value of agreeableness for Ricky is 12. The maximum value is 47. The respective range for Chris is 17 to 46.
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

Each step on this variable leads to a maximum increase of the probability to continue cooperating of 2% for Ricky and of 4.5% for Chris, when using the coefficients of Models Index. Due to the large range of this variable, the effect is very substantial.

7.1.2 Results Testing Hypothesis H9

Hypothesis H9 aims at better explaining the relationship between the deliberative quality and the preference constellations by investigating if the deliberative quality of one of the two actors is decisive for the decision to continue cooperating of either of them. Theoretically, I would assume no difference between the two actors in symmetric games. In the asymmetric games, however, the Chris player has no incentive to defect at the PC-equipped work station, while the Ricky player is always tempted to do so. Thus, the Chris player would try to convince the Ricky player to cooperate at the table out of his or her own interest. This might be successful and lead to a higher cooperation rate of the Ricky player. The consensus argument from the theory chapter is slightly different. There, I argue that a Ricky player who engages in a high level of deliberative quality should be more likely to decide by consensus, and thus refrain from stabbing in the other player’s back once given the opportunity. Accordingly, it is Ricky’s deliberative quality that affects Ricky’s decision. The only reason why a Chris player would decide to no longer cooperate is out of self-interest and only if the Chris player is convinced that the Ricky player will stay true to his or her word.

In the following paragraphs, I report the results of the models that are presented in Tables 7.4 and 7.5 as well as Figures 7.3 and 7.4. The difference between the models in this subsection and the previous one is the inclusion of differently aggregated deliberation variables. The dependent variables are the same. So are the control variables. The participation indicator for deliberation is not meaningful in a comparison between the two actors.

Index: Starting with the index models, I maintain that the deliberative quality of communication does not significantly correlate with the decision of either Ricky or Chris to cooperate at T2 after having agreed to cooperate at the negotiation table. What
is interesting, however, is the negative coefficient for both index variables in Model Index – Ricky and the positive coefficients in Model Index – Chris. This is especially noteworthy, since the observation-level values in Table 7.2 behave differently. Above, the deliberation index correlates only slightly but positively with Ricky’s decision to continue cooperating at T2 and considerably and negatively with the same decision by Chris. The pattern is reversed here: is this a sign of collinearity? The values of Ricky and Chris correlate significantly with a Pearson’s product correlation of 0.54. So one has to assume that the true correlation of either of the two or both variables is larger than reported. The reversed signs point to the fact, that medium cases in the overall index value have extreme values in the role-specific index values. Such observations must be quite influential to reverse the signs; but not influential enough to produce significant results. This suspicion is plausible because the absolute differences between Ricky’s index value and Chris’ index value range from 0.002 to 3.57. Both variables are scaled to a mean of 0 and a standard deviation of 1 (of the values in the overall dataset of 240 observations).

It is also worthwhile to have a look at the random effects. In Model Index – Ricky, the random intercepts have a standard deviation of 0.00. The standard deviation of the random slopes for Ricky’s index value is almost zero, while the one for Chris’ values is considerably large with 0.37. Although none of the random slopes can be considered significant when applying the same logic as in previous chapters, it is noteworthy that the negative values at the two welfare games are considerably larger than the negative value at Rambo-Fairness. At CH, the random slope of Chris’ index value is even positive. Comparing the different preference constellations, I observe that the correlation between Chris’ index value and Ricky’s probability to remain true to his or her word is always lower in the asymmetric games, but the welfare vs. fairness dimension appears to play an even more important role.

Turning to Model Index – Chris, a different but similarly clear pattern can be observed: PD is generally the odd one out. It has the lowest random intercept, a negative random slope of almost zero for Ricky’s index variable, and the smallest positive random slope for Chris’ index variable. On the opposite side is RW. This is not surprising,
since not a single participant playing Chris in a Rambo-Welfare game decides to defect at the PC after agreeing to cooperate at the table. The random slopes at the two fairness games are similar to the RW ones. So apparently, the deliberation index in the

Table 7.4: The Relationship of Individual Deliberation on the Decision to Continue Cooperating at T2

<table>
<thead>
<tr>
<th>Role</th>
<th>Index</th>
<th>Justification</th>
<th>Respect</th>
<th>Accommodation</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
</tr>
<tr>
<td>Ricky</td>
<td>−0.16</td>
<td>0.20</td>
<td>(0.29)</td>
<td>(0.48)</td>
<td></td>
</tr>
<tr>
<td>Chris</td>
<td>−0.22</td>
<td>0.29</td>
<td>(0.32)</td>
<td>(0.44)</td>
<td></td>
</tr>
</tbody>
</table>

| Justification Ricky | −0.03 | 0.56         | (0.27)  | (0.48)        | −0.02     | 0.58 |
|                     | (0.31) | (0.43)       | (0.35)  | (0.36)        |           |
|                      | −0.30 | −0.30        | (0.28)  | (0.64)        | −0.32     | 0.82 |
| Respect Ricky       | 0.00  | 0.72         | (0.31)  | (0.46)        | 0.24      | 1.47 |
| Respect Chris       |       |              |         |               |           |

| Accommodation Ricky | 2.38  | 3.19         | (0.27)  | (0.51)        | 3.20      | 3.58 |
|                     | 2.30  | 2.38         | (0.25)  | (0.51)        | 2.36      | 3.58 |
|                     | 3.28  | 3.28         | (0.28)  | (0.81)        | 3.26      | 3.58 |
|                     | 2.36  | 3.19         | (0.31)  | (0.40)        | 3.21      | 3.58 |
|                     | 3.58  | 3.20         | (0.43)  | (0.43)        | 3.21      | 3.58 |
|                     | 2.41  | 3.00         | (0.33)  | (0.33)        | 3.00      | 3.33 |
|                     | 3.03  | 3.03         | (0.33)  | (0.33)        | 0.33      | 0.33 |
|                     | 2.74  | 2.74         | (0.27)  | (0.51)        | 3.20      | 3.58 |
|                     | 3.30  | 3.30         | (0.27)  | (0.51)        | 2.36      | 3.58 |
|                     | 2.29  | 2.29         | (0.27)  | (0.51)        | 3.26      | 3.58 |
|                     | 2.80  | 2.80         | (0.27)  | (0.51)        | 3.26      | 3.58 |
|                     | 2.74  | 2.74         | (0.27)  | (0.51)        | 2.36      | 3.58 |
|                     | 2.88  | 2.88         | (0.27)  | (0.51)        | 3.26      | 3.58 |
|                     | 2.43  | 2.43         | (0.27)  | (0.51)        | 3.26      | 3.58 |
|                     | 2.70  | 2.70         | (0.27)  | (0.51)        | 3.26      | 3.58 |

| Random Slopes: Ricky | 0.15  | −0.20        | (0.32)  | (0.31)        | 0.38      | 0.86 |
|                     | −0.35 | 0.06         | (0.32)  | (0.31)        | −0.28     | 0.12 |
|                     | 0.15  | −0.20        | (0.32)  | (0.31)        | 0.38      | 0.86 |
|                     | 0.30  | 0.30         | (0.32)  | (0.31)        | 0.30      | 0.30 |
|                     | 0.30  | 0.30         | (0.32)  | (0.31)        | 0.30      | 0.30 |
|                     | 0.21  | −0.20        | (0.32)  | (0.31)        | 0.21      | 0.21 |
|                     | −0.22 | −0.22        | (0.32)  | (0.31)        | −0.22     | −0.22 |
| Random Slopes: Chris | 0.15  | −0.20        | (0.32)  | (0.31)        | 0.38      | 0.86 |
|                     | 0.30  | 0.30         | (0.32)  | (0.31)        | 0.30      | 0.30 |
|                     | 0.21  | −0.20        | (0.32)  | (0.31)        | 0.21      | 0.21 |
|                     | −0.22 | −0.22        | (0.32)  | (0.31)        | −0.22     | −0.22 |

| Deviance  | 124.7 | 76.3         | 128.9   | 74.1           | 125.3     | 70.3  |
| DIC       | 120.8 | 73.6         | 127.8   | 70.0           | 121.1     | 65.9  |

Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit")) with either optimizer “bobyqa” (b) or “Nelder_Mead” (NM) from the R-package “lme4” (Bates et al. 2015) on the participants’ decision to continue cooperating after returning to the PC (at T2); standard errors in parentheses; N=209 (31 of the 240 cases did not end in the cooperative solution at the table); data were produced at University of Konstanz between 2014 and 2016; only intercepts are significant; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; “std dev” reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion; Model Respect – “Ricky” failed to converge because of a degenerate Hessian with one negative eigenvalue; Model All – “Ricky” failed to converge with max | grad l | = 0.5219.
few cases that see Chris defecting at T2 is not as influential as in PD. However, even in PD, the level of deliberative quality of the Chris player positively correlates with the decision by that player not to defect, while the level of deliberative quality of the Ricky player apparently has no effect.

**Indicators:** Moving on to the individual dimensions of the deliberative quality, I maintain that none of the deliberation variables significantly correlate with the decision of the participants playing either role to defect after agreement. One model, Model Respect – *Ricky*, does not converge and is only reported for consistency reasons. There is no clear pattern that can be used to generally describe the coefficients. However, like for the index models, the coefficients most of the time show a different sign than would be expected from Table 7.2. The problem of collinearity exists in all models. The justification variables correlate with 0.54, the respect variables correlate with 0.34, and the accommodation variables correlate with 0.25.

Looking at justification, first, there is only a small negative correlation between Ricky’s own level of argumentation with his or her decision to cooperate at T2. However, a Chris with a higher argumentation level apparently cannot achieve what is intended: the probability of Ricky to stay true to his or her word decreases considerably when Chris uses more arguments. This pattern is stronger in the welfare games. Chris, on the other hand, can apparently be convinced by Ricky’s number of argumentation EDUs. The effect is smallest in PD, however. Chris’ own number of argumentation EDUs has a negative correlation, with the largest random slope at PD.
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

I now discuss the respect models. Model Respect – *Ricky* failed to converge. The results are therefore not reliable. In addition the coefficients are not significant. At face value, however, if Ricky uses more words with positive connotation, he or she is less likely to keep cooperating. The random slopes behave different to the Models Index – Ricky and Justification – Ricky. In PD and RW – the welfare games – the negative correlation is stronger than in the fairness games. Furthermore, the asymmetric games have larger negative coefficients than their respective symmetric games. In this model, Chris and Ricky share a similar pattern. However, Chris’ level of respect even correlates positively with Ricky’s decision to cooperate at T2 in the fairness games. In the welfare games, the correlation is negative. This leads to an overall coefficient of virtually zero.

Model Respect – Chris is very similar to Model Index – Chris, just with larger coefficients. The respect values of both Ricky and Chris correlate positively with Chris’ decision to stay true to his or her word. The random intercepts of the asymmetric games are larger than the intercepts of the symmetric games, and so are the random slopes of both Ricky’s and Chris’ respect values. Ricky’s respect value at PD correlates a lot less with Chris’ decision at T2, and the correlation is also weaker at CH. The same can be said about Chris’ respect values, even though the standard deviation of random slopes is much smaller. On the other hand both random slopes of Chris’ respect value at the asymmetric games can be considered significant at the 0.9 level of confidence.

The Models Accommodation also have their own particularities. Accommodation apparently works similar on both the partner’s decision at T2 and the own decision, irrespective of the role the participants are playing. Yet again, the overall coefficients are not significant. At face value, however, the more agreement speech acts are used by a Ricky player, the more likely is this Ricky player to also remain true to his or her word. This is particularly true in the fairness games. On the other hand, the more agreement speech acts are used by a Chris player, the less likely is the respective Ricky player to remain true to his or her word. This pattern is stronger in the welfare games. Indeed, both random slopes of Chris’ accommodation value in Model Accommodation – Ricky can be considered significant at the 0.9 level of confidence.
In Model Accommodation – Chris, one can observe the exact same logic, just with smaller coefficients. The more agreement speech acts Chris uses, the more likely he or she is to cooperate at T2. Among the random slopes, RW breaks the pattern. While PD has the lowest correlation (which turns even negative), RW has the largest correlation. Of course this is the effect of zero defection cases, but the other participant’s accommodation level also correlates with defection, like in the Ricky model. The higher Ricky’s value in the accommodation variable, the less likely is Chris to remain true to his or her word. The standard deviation of these random slopes is 0.02, so there is almost no difference among the preference constellations concerning this pattern.

**All:** I can now finish the description of Table 7.4 by turning to Models – All. Comparing Model All – *Ricky*, which failed to converge, with the individual indicator models that use Ricky’s decision to cooperate at T2 as the dependent variable, there are not many surprises. Keeping the other indicators constant does change the strength of the coefficients but never the signs. Noteworthy is the coefficient for the level of respect by Chris. This is 0.00 in Model Respect – *Ricky* and 0.24 in Model All - *Ricky*. The larger coefficient goes in line with larger positive random slopes in the fairness games – the one at CH can even be considered significant at the 0.9 level of confidence – and smaller negative random slopes in the welfare games. On the other hand, the accommodation values for Chris show a generally smaller negative correlation when controlling for the other indicators and the negative random slopes in the welfare games can no longer be considered significant. Yet throughout all indicator variables the random slopes have larger standard deviations in Model All – *Ricky*.

Model All – Chris sees larger changes in comparison to the individual indicator models. All signs and most patterns of random slopes stay the same, but all general coefficients are much larger – with the exception of Ricky’s justification value. The most extreme changes happen for the respect values. Yet, the overall coefficients remain not significant. The random slopes change as such: Ricky’s respect value at RF can be considered significant at the 0.95 level of confidence. Chris’ respect value can no longer be considered significant at RW but remains quasi-significant at RF at the 0.9 level of confidence. In addition, Ricky’s accommodation value at RF can now be considered
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

significant at the 0.95 level of confidence and the general pattern of the *accommodation* variable differs from Model Accommodation – Chris. In the individual indicator model, the random slopes are almost the same with larger negative values for the symmetric games. In Model All – Chris, the random slopes at the symmetric games become slightly smaller while the random slopes at the asymmetric games are almost ten times as large. Moreover, Chris’ *accommodation* values no longer show a pattern with similar random slopes in the fairness games but show a strong divide with negative random slopes for the symmetric preference constellations and positive random slopes for the asymmetric games.

In Table 7.5, I present the results of the models that include the same control variables as in Table 7.3. The predicted probabilities from these models are visually portrayed in Figures 7.3 and 7.4. The figures give an intuitive understanding of the results, while the discussion of the table is focused on the detailed differentiations. In the following paragraphs, I only deal with the differences from Table 7.4 when the control variables are added. Starting with Models Index, no noteworthy changes have to be reported. Of course the coefficients vary, but they are not significant nor do the general patterns of the coefficients or the random intercepts and slopes change from the Models Index without control variables.

**Deliberation with Control Variables:** In the individual indicator models, however, a few changes have to be reported. First, Model Justification – *Ricky* fails to converge when the control variables are added to the model. The overall coefficient of Ricky’s level of justification is still close to zero but changes its sign. The standard deviation of random slopes also becomes smaller. Model Respect – *Ricky* still does not converge. Here, the coefficient of Chris’ respect value turns from 0.00 to -0.11. The general pattern of the random slopes remains. Yet, the negative coefficients become bigger, while the positive coefficients become smaller. The random slope of RF changes its sign. In Model Respect – Chris, the influence of Ricky’s respect value decreases from 0.56 to 0.09, when including the control variables. The standard deviation of the random slopes also shrinks considerably. In Model Accommodation – Ricky the random slope at PD is no longer significant when including the control variables. Model Ac-
7 Deliberative Quality as a Predictor for Consensus Decisions

Table 7.5: The Relationship of Individual Deliberation on the Decision to Continue Co-operating at T2; Including Control Variables

<table>
<thead>
<tr>
<th>Role</th>
<th>Index Ricky</th>
<th>Index Chris</th>
<th>Justification Ricky</th>
<th>Justification Chris</th>
<th>Respect Ricky</th>
<th>Respect Chris</th>
<th>Accommodation Ricky</th>
<th>Accommodation Chris</th>
<th><em>All</em> Ricky</th>
<th><em>All</em> Chris</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Ricky</td>
<td>-0.17</td>
<td>0.14</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Justification Ricky</td>
<td>0.04</td>
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<td>0.03</td>
<td>1.82</td>
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<td></td>
<td>(0.32)</td>
<td>(0.56)</td>
<td>(0.35)</td>
<td>(1.13)</td>
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<td>(0.44)</td>
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<td>-0.67</td>
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<td>-0.53</td>
<td>-0.43</td>
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<tr>
<td></td>
<td>(0.27)</td>
<td>(0.58)</td>
<td>(0.35)</td>
<td>(0.82)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Both cooperate at T0</td>
<td>1.46</td>
<td>-0.09</td>
<td>1.46</td>
<td>0.10</td>
<td>1.49</td>
<td>0.11</td>
<td>1.45</td>
<td>-0.12</td>
<td>1.71</td>
<td>-0.22</td>
</tr>
<tr>
<td></td>
<td>(0.62)</td>
<td>(0.93)</td>
<td>(0.60)</td>
<td>(0.96)</td>
<td>(0.62)</td>
<td>(0.94)</td>
<td>(0.62)</td>
<td>(0.98)</td>
<td>(0.79)</td>
<td>(1.23)</td>
</tr>
<tr>
<td>Self: BA</td>
<td>-0.04</td>
<td>-0.66</td>
<td>-0.19</td>
<td>-0.59</td>
<td>-0.07</td>
<td>-0.52</td>
<td>0.02</td>
<td>-0.67</td>
<td>0.01</td>
<td>-0.43</td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(1.01)</td>
<td>(0.51)</td>
<td>(0.99)</td>
<td>(0.52)</td>
<td>(1.06)</td>
<td>(0.52)</td>
<td>(0.98)</td>
<td>(0.59)</td>
<td>(1.31)</td>
</tr>
<tr>
<td>Self: Economics</td>
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<td>-3.11</td>
<td>-0.14</td>
<td>-3.13</td>
<td>0.04</td>
<td>-3.21</td>
<td>-0.02</td>
<td>-3.24</td>
<td>0.32</td>
<td>-4.37</td>
</tr>
<tr>
<td></td>
<td>(1.15)</td>
<td>(0.91)</td>
<td>(1.14)</td>
<td>(0.98)</td>
<td>(1.17)</td>
<td>(0.97)</td>
<td>(1.15)</td>
<td>(0.98)</td>
<td>(1.43)</td>
<td>(1.63)</td>
</tr>
<tr>
<td>Age Difference</td>
<td>-0.61</td>
<td>-0.19</td>
<td>-0.60</td>
<td>-0.60</td>
<td>-0.30</td>
<td>-0.58</td>
<td>-0.28</td>
<td>-0.59</td>
<td>-0.61</td>
<td></td>
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<tr>
<td></td>
<td>(0.29)</td>
<td>(0.48)</td>
<td>(0.28)</td>
<td>(0.51)</td>
<td>(0.29)</td>
<td>(0.50)</td>
<td>(0.29)</td>
<td>(0.50)</td>
<td>(0.53)</td>
<td>(0.72)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.08</td>
<td>0.17</td>
<td>0.08</td>
<td>0.18</td>
<td>0.08</td>
<td>0.19</td>
<td>0.09</td>
<td>0.20</td>
<td>0.10</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.04)</td>
<td>(0.09)</td>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.04)</td>
<td>(0.09)</td>
<td>(0.04)</td>
<td>(0.13)</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-0.12</td>
<td>-0.39</td>
<td>0.01</td>
<td>-0.84</td>
<td>-0.18</td>
<td>0.23</td>
<td>-0.23</td>
<td>-0.16</td>
<td>-0.43</td>
<td>-1.37</td>
</tr>
<tr>
<td></td>
<td>(1.27)</td>
<td>(2.53)</td>
<td>(1.25)</td>
<td>(2.73)</td>
<td>(1.30)</td>
<td>(2.74)</td>
<td>(1.27)</td>
<td>(2.67)</td>
<td>(1.40)</td>
<td>(3.75)</td>
</tr>
</tbody>
</table>

Random Intercepts

| PD | -0.12 | -1.24 | 0.01 | -1.37 | -0.18 | -1.09 | -0.26 | -2.05 | -0.57 | -3.67 |
|    | (0.05) | (0.74) | (0.01) | (0.52) | (0.08) | (1.12) | (0.07) | (0.66) | (0.29) | (1.48) |

Random Slopes: Ricky

| PD | -0.17 | -0.25 | 0.04 | 0.44 | -0.37 | -0.09 | 0.03 | -0.69 | *   | *   |
|    | (0.12) | (0.35) | (0.05) | (0.40) | (0.04) | (0.15) | (0.27) | (0.35) | (+) | (+) |

Random Slopes: Chris

| PD | -0.28 | 0.10 | -0.40 | -0.72 | -0.10 | 0.39 | -0.39 | 0.26 | *   | *   |
|    | (0.36) | (0.10) | (0.08) | (0.02) | (0.36) | (0.54) | (0.15) | (0.25) | (+) | (+) |

Deviance

| Deviance | 111.4 | 46.8 | 114.7 | 45.9 | 111.4 | 43.2 | 111.7 | 45.9 | 99.4 | 31.3 |

Note: Results of hierarchical logit regression models using glmer(family=binomial(link="logit")) with either optimizer “bobyqa” (b) or “Nelder_Mead” (NM) from the R-package “lme4” (Bates et al. [2015]) on the participants’ decision to continue cooperating after returning to the PC (at T2); standard errors in parentheses; N=209 (31 of the 240 cases did not end in the cooperative solution at the table); data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant at the 0.05 level of confidence – coefficients in **bold italics** at the 0.9 level; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; “std dev” reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion; Model Justification – *Ricky* failed to converge with max | grad | = 0.034; Model Respect – *Ricky* failed to converge with max | grad | = 0.083; Model *All* – *Ricky* failed to converge with max | grad | = 0.0016; and Model *All* – *Chris* failed to converge with max | grad | = 0.5425.
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Justification</th>
<th>Respect</th>
<th>Accommodation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
</tr>
<tr>
<td>PD</td>
<td>-0.25</td>
<td>-0.38</td>
<td>-0.33</td>
</tr>
<tr>
<td>CH</td>
<td>-0.60</td>
<td>-0.07</td>
<td>-0.22</td>
</tr>
<tr>
<td>RW</td>
<td>0.51</td>
<td>-0.48</td>
<td>-0.36</td>
</tr>
<tr>
<td>RF</td>
<td>-0.04</td>
<td>-0.27</td>
<td>-0.29</td>
</tr>
<tr>
<td>std dev</td>
<td>(0.46)</td>
<td>(0.17)</td>
<td>(0.06)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Justification</th>
<th>Respect</th>
<th>Accommodation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
</tr>
<tr>
<td>PD</td>
<td>-0.92</td>
<td>-1.89</td>
<td>-0.51</td>
</tr>
<tr>
<td>CH</td>
<td>1.94</td>
<td>-1.96</td>
<td>-0.21</td>
</tr>
<tr>
<td>RW</td>
<td>1.92</td>
<td>-2.00</td>
<td>-0.15</td>
</tr>
<tr>
<td>RF</td>
<td>1.95</td>
<td>-2.01</td>
<td>-0.13</td>
</tr>
<tr>
<td>std dev</td>
<td>(0.56)</td>
<td>(0.12)</td>
<td>(0.26)</td>
</tr>
</tbody>
</table>

The patterns of the random slopes. While the overall coefficient of Ricky’s accommodation value changes from -0.20 to -0.27, the standard deviation of this variable’s random slopes changes from 0.02 to 0.35. The variable has a much stronger negative correlation with Chris’ probability to continue cooperating in the symmetric games, once the control variables are included, while there is almost no difference between the four preference constellations in the model without control variables. A similar observation can be made about the accommodation value of the Chris player. The overall coefficient turns negative (from 0.06 to -0.04) and the standard deviation of the random slopes more than doubles. In this model, it is additionally noteworthy that the random slope of PD is the only positive random slope, and the Rambo games see the biggest negative random slopes while the pattern was more or less the opposite in the models without control variables.

Finally turning to Models *All*, the very first observation is both models failing to converge. A closer look at Model *All* – *Ricky*, reveals no big difference between the same model without control variables. Only among the random slopes, few noteworthy changes can be mentioned. First, the random slope at CH for Ricky’s respect value aligns much more with the other random slopes: it is also negative and the standard deviation of the random slopes of this variable decreases from 0.22 without control variables to 0.06 with control variables. Secondly, the random slope at CH for Ricky’s accommodation value can now be considered significant at the 0.95 level of confidence. The general pattern of the random slopes remains as described above.
In Model *All* – *Chris* almost every coefficient deserves special attention – when ignoring the fact that this model, too, fails to converge with a gradient at the maximum of 0.5 after one million iterations\[4\]. The overall coefficients for Chris’ justification and respect values are now significant at the 0.9 level of confidence. The coefficients for Ricky’s respect value as well as both Ricky’s and Chris’ accommodation values change their sign. The random slopes also appear of interest. Both justification variables can be considered significant in almost all preference constellations. The only exception is Ricky’s justification value in PD, which has the lowest positive correlation among the four random slopes. The random slopes of Ricky’s respect value are all negative now, and its standard deviation of random slopes drops from 2.49 to 0.26. The rank order of the preference constellations remains, however. The same can be said about Chris’ respect value. All but the random slope at PD can even be considered significant at the 0.9 level of confidence. Looking at the accommodation values, the strongest difference to Model All – Chris without control variables can be observed. Above, all random slopes are negative for Ricky’s accommodation value. Here, only the random slope at PD is negative (and quasi-significant) while the random slopes at all other preference constellations are positive. This also differs from the random slopes of Model Accommodation – Chris with control variables. Even though at that model, the negative random slope at PD is the biggest among all negative random slopes, the accommodation value of Chris shows the exact opposite pattern: a positive random slope at PD and negative random slopes at all other preference constellations. This is in line with Model Accommodation – Chris. For checking which of the control variables can be made responsible for the changes in Model *All* – *Chris*, I ran this models with each control variable at a time. It turns out that the biggest changes among the deliberation variables are made, when including whether or not the participant is studying economics.

**Control Variables:** I refrain from discussing the control variables here, because irrespective of minor differences of the coefficients they are exactly the same as in the above subsection. So, while I can conclude that an inclusion of the control variables in the models does sometimes affect the deliberation variables, the control variables

\[4\] As has been mentioned before, a gradient of 0.001 is considered acceptable.
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

**Figure 7.3:** Predicted Probability of Ricky Choosing to Continue Cooperating at T2; by Speaker
Figure 7.4: Predicted Probability of Chris Choosing to Continue Cooperating at T2; by Speaker
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

are stable, when changing the game-level aggregated deliberation variables for the speaker-level aggregated deliberation variables.

7.1.3 Interpretation of the Decision Stability Results

So, what does all this mean? Unlike in the previous chapters, I can be confident that the causal direction is not tempered with in the above presented models. While the participants are at the negotiation table, they do not yet know that they will be given the opportunity to defect when returning to the PC. So, if they behave strategically, they do so in order to manipulate the decision at the table. Once back at the PC-equipped work station, they have no more opportunity to interact with their experimental partner. In addition, I only include those observations in which both actors have agreed to take the shift at the conference centre while sitting at the table. Thus, those participants who do not stay true to their word make a conscious decision to defraud their experimental partner. And this decision can only happen after the negotiation process has finished.

Like in the previous chapters, the data does not provide a clear support for the hypotheses derived in Chapter 3. However, the Ricky players tend to behave more in line with the theoretical expectations of Hypothesis H7. Higher levels of deliberative quality tend to be positively correlated with their decision to continue cooperating. Yet, this is only true when both actors behave on a similar level of deliberative quality. If only one actor scores high on the index variable, the Ricky player becomes more likely to defect. Looking only at Ricky, one might be tempted to conclude that a Ricky who behaves according to the deliberative ideal might be frustrated with a Chris who does not. This frustration could lead to the negative decision at T2. On the other hand, if Chris behaves according to the deliberative ideal and Ricky is not willing to engage in this behaviour, he or she might be swayed to cooperate at the table without actually being convinced. This Ricky then defects when given the chance.

Why is the pattern reversed for Chris? In the asymmetric games, Ricky’s position power could serve as an explanation. If that were the case, the symmetric random
Deliberative Quality as a Predictor for Consensus Decisions

slopes would have to be similar, however, while the random slope of the asymmetric games differ. Such a picture cannot be observed in the data, either. So, the biggest difference between the two roles is the background story. I fail to find a convincing explanation why Ricky’s provided reasons for not working should lead to one pattern while the reasons given to Chris lead to another pattern, however. One could speculate that the story of having to revise for a final exam is more intuitive for the student participants and that the Ricky player therefore has a normative advantage in the symmetric games as well.

Although the patterns are not completely consistent over the individual dimensions, the general intuition is in line with what has been said about the index. However, I want to speculate about one observation that is mentioned above. I realise that Chris can be made to stay true to his or her word by the level of justification by Ricky. This pattern is supportive of the hypothesised causal explanation from Hypothesis H9. However, the negative correlation between Chris’ own level of justification and the consensus indicator is peculiar. Maybe, a Chris who uses many arguments believes to have successfully convinced the other participant and only for this reason dares to defect.

Some patterns of the control variables also deserve explanations. First, I ask why the cooperation at T0 is only significant for Ricky players? One plausible explanation could be that some participants do not understand or refuse to accept their strategic advantage in the asymmetric games. They only look at the background story and consider it fair if both people work. When they enter the discussion with this mindset, the discussion itself will probably not change their opinion as Chris will do as little as possible to make his or her experiment partner aware of the fact that the preference constellation gives Ricky a strategic advantage. Or maybe, this argument has to be turned around. Only those Ricky players who already understand the strategic advantage at the decision point T0 consider at T2 the possibility of choosing their personal gain over the cooperative solution. In contrast, a Chris who cooperates at T0 might already be aware of the disadvantage and therefore chooses to work at T0. Among those 10 Chris players who defect at T2, they get an impression of their negotiation partner
7.1 Does the Level of Deliberative Quality Affect Decision Stability?

at the table. If they do not like the other person they might decide to punish them for
their behaviour at the table. Or if they are egoistically motivated they might realise
that the other participant is naïve or friendly enough not to defect at T2. So they have
a chance of getting their preferred outcome at the costs of the other persons financial
reimbursement, because they might be convinced to have secured Ricky’s cooperation.

Concerning the cooperation at T0, there is another observation that deserves spe-
cial attention. In the Chris models, this variable is never significant. However, it varies
strongly even though the only difference between the models is the respective delib-
erative quality indicator included in the model. In the Ricky model, the coefficient is
rather stable. Apparently, the Chris players make their use of the various indicators
much more dependent on their expectation how the conflict can be solved before they
enter the negotiation at the table. The results presented in Table 6.4 are already quite
indicative of this interpretation: the correlation between the role of Chris and the level
of deliberative quality used varies quite strongly across the different indicators. So,
there is varying collinearity between the deliberation indicators and the decision at T0
in the Chris models that leads to such unstable coefficients.

Secondly, I observe that studying economics is only significant for Chris. The prob-
ability to defect increases tremendously. The logic might be similar to the one above.
I assume that economy students are aware of the game theoretic implications of the
strategic situation they are in. So they will probably decide to cooperate at T0 and also
at the table, because they know that the other participant can easily retaliate, which
would lead to a worse outcome. Once given the chance, they realise that they can now
defect without consequences – either because they expect their partner to stick to their
deal, or because they understand the instability of the cooperative solution in the Prisoner’s Dilemma. Some might even argue that students of economics are more willing
than others to be guided by their individual advantages. Yet the most plausible expla-
nation is the understanding of the strategic constellation. This argument still does not
explain, why the variable is only significant for Chris. Maybe this is due to the fact
that more Ricky players defect in the asymmetric games. In these preference constel-
Deliberative Quality as a Predictor for Consensus Decisions

lations the potential for private gain are more obvious so that non-economy students start defecting as well – leading to a non-significant negative coefficient.

Yet another variable is only significant for one role. The Age difference increases the probability that Ricky defects. I have mentioned above that the 30 minutes of discussion allows the participants to get an impression of the other participant. Defection can be understood as a sign of a participant not caring about the financial benefits of the other participant. A reasonable explanation for this to happen is that the two participants do not connect with each other. A larger age difference could lead to this impression. So, especially in the asymmetric games, a Ricky could take advantage of the strategic situation, leading to a significant coefficient only for Ricky players.

Finally, I observe a positive association between a participants agreeableness value and their probability to stick to their agreed upon decision. This is stronger for Chris players than for Ricky players. Since the number of defections is bigger for Ricky, reaching the same coefficient would need a larger number of Ricky players with a low value in this variable or lower values of the same number of participants. Yet the lower values for Ricky can also be explained by the larger incentives to defect in the advantaged position of being the Rambo player. Generally, the explanation for this positive association is straight forward. Agreeableness is defined as a personality trait that describes interpersonal behaviour. High values are associated with altruism, goodwill and sympathy. People who score high on the questions concerning agreeableness tend to trust other people and are more likely to cooperate. The questions are of course answered by the participants themselves. One can see clearly that their answers in the questionnaire and their actual behaviour in the experiment are in line.

7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

Testing Hypotheses H8 and H10 in this section finalises the analysis chapters of this dissertation. The hypotheses differ from the above tested hypotheses (H7 and H9) only
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

in the way of operationalising consensus. Above, I use decision stability as an indicator for the participant’s conviction that he or she has chosen the best possible solution, as there is always a temptation to change one’s decision if one is not convinced. In this section, I ask, whether the participants are satisfied with several aspects of the deliberative process. Although satisfaction might not be exactly the same as conviction, one still can get a good impression from the answers. Participants that are convinced of having decided in the best possible way are expected to report higher satisfaction.

I introduce the four individual measures and the index in Section 4.2.4. There, one can observe a skewed distribution of the satisfaction variables – leaning towards quite satisfied participants. Nonetheless, there are differences in the satisfaction values of the different participants and I present, in this section, the models that intend to predict the satisfaction values with the level of deliberative quality (in its various dimensions).

In the following analyses, the unit of analysis is the individual participant. 476 of the 480 participants answered all four questions on satisfaction and are thus included in the models. For testing Hypothesis H8, I use the deliberative quality at the table as predictor variable. For Hypothesis H10, I use the individual levels of deliberative quality and split the dataset into the two roles. This allows to basically interact all variables with the role. 237 Ricky players responded to all satisfaction questions and 239 Chris players did.

**Statistical Models**

The individual satisfaction questions are measured on a 5-point-scale. A standardised continuous variable was created by combining the four questions in a weighted additive index. In both cases, I assume linearity and therefore use linear models. Like in all previous analyses, I test the role of the level of deliberative quality against the backdrop of the preference constellations by using hierarchical models with random intercepts and random slopes.

So, in the equation beneath, $y_i$ represents the satisfaction value of the individual participant. This is predicted by a random intercept $\alpha_{j[i]}$ and a random slope $\beta_{deliberation,j[i]}$. 
7 Deliberative Quality as a Predictor for Consensus Decisions

which are allowed to differ for the four preference constellations, as well as the matrix of control variables $X_i$, and the vector of coefficients for these control variables $B_{controls}$. Like in the above section, I use two random slopes – one for Ricky’s deliberation level and one for the deliberation level of Chris – in the second hypothesis (H10). The equation has to be adjusted accordingly. It would be analogous to the equation in Section 6.4.

\[
y_i = \alpha_j[i] + x_i \beta_{deliberation}[i] + X_i B_{controls}; \text{ for } i = 1, \ldots, 476 \text{ participants}
\]

with

\[
\alpha_j = \gamma_0^\alpha + \epsilon_j; \text{ for } j = 1, \ldots, 4 \text{ constellations}
\]

and

\[
\beta_{deliberation} = \gamma_0^\beta + \epsilon_j; \text{ for } j = 1, \ldots, 4 \text{ constellations}
\]

7.2.1 Results Testing Hypothesis H8

For testing Hypothesis H8, I first want to get an impression how the deliberative quality affects the individual satisfaction items. The results are presented in Table 7.6. I then turn to Table 7.7 which portrays the influence of the deliberative quality on the satisfaction index – with and without control variables. A visualisation of the effect of the deliberation variables in these models is presented in Figure 7.5.

**Satisfaction Indicators:** In Table 7.6, the values of the individual satisfaction indicators – the dependent variables – range from 1 to 5, with 5 representing the highest satisfaction. The models are calculated without control variables. Overall, I observe that the deliberation index does not have a significant effect on any of the participants’ satisfaction items. Also, none of the random slopes can be considered significant. The random intercepts show some differences between the satisfaction values over the four preference constellations. These differences can also not be considered significant, but are noteworthy nonetheless. The largest standard deviation of random intercepts can be found in the model which uses the satisfaction with the individual result as a dependent variable. Here, the highest satisfaction values can be found in RW, the lowest satisfaction values appear in RF. PD leans more towards RW, while CH leans more to-
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

Table 7.6: The Relationship of Deliberation and the Individual Satisfaction Indicators

<table>
<thead>
<tr>
<th>Satisfaction with Individual Result</th>
<th>Satisfaction with General Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deliberation</td>
<td>0.03</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.88</td>
</tr>
<tr>
<td>PD</td>
<td>3.86</td>
</tr>
<tr>
<td>RW</td>
<td>4.05</td>
</tr>
<tr>
<td>RF</td>
<td>3.79</td>
</tr>
<tr>
<td>std dev</td>
<td>(0.12)</td>
</tr>
</tbody>
</table>

Random Intercepts

| PD | 0.03 | 0.05 | 0.06 | −0.02 | 0.06 | −0.06 | −0.06 | 0.02 | −0.04 | −0.05 |
| CH | 0.03 | 0.05 | 0.05 | −0.02 | 0.07 | −0.05 | −0.04 | 0.01 | −0.05 | −0.01 |
| RW | 0.001 | 0.03 | 0.11 | −0.03 | −0.02 | −0.06 | −0.07 | 0.03 | −0.03 | −0.07 |
| RF | 0.04 | 0.06 | 0.05 | −0.02 | 0.08 | −0.01 | 0.10 | −0.04 | −0.09 | 0.11 |
| std dev | (0.02) | (0.01) | (0.03) | (0.001) | (0.04) | (0.03) | (0.08) | (0.04) | (0.03) | (0.08) |

Deviance

| 1254.3 | 1253.3 | 1252.0 | 1254.5 | 1252.9 | 1287.8 | 1286.0 | 1288.5 | 1287.2 | 1286.2 |
| DIC | 1254.3 | 1253.3 | 1252.0 | 1254.5 | 1252.9 | 1287.8 | 1286.0 | 1288.5 | 1287.2 | 1286.2 |

<table>
<thead>
<tr>
<th>Satisfaction with Process</th>
<th>Satisfaction Out of Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deliberation</td>
<td>0.02</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.31</td>
</tr>
<tr>
<td>PD</td>
<td>4.35</td>
</tr>
<tr>
<td>CH</td>
<td>4.33</td>
</tr>
<tr>
<td>RW</td>
<td>4.32</td>
</tr>
<tr>
<td>RF</td>
<td>4.26</td>
</tr>
<tr>
<td>std dev</td>
<td>(0.05)</td>
</tr>
</tbody>
</table>

Random Intercepts

| PD | −0.01 | 0.01 | 0.03 | 0.01 | −0.05 | −0.07 | −0.003 | 0.19 | −0.04 | −0.10 |
| CH | 0.01 | 0.01 | 0.03 | 0.03 | −0.02 | −0.01 | 0.03 | −0.11 | −0.02 | −0.004 |
| RW | 0.02 | 0.01 | 0.04 | 0.03 | −0.01 | −0.03 | 0.001 | 0.08 | −0.03 | −0.04 |
| RF | 0.07 | 0.01 | 0.02 | 0.07 | 0.05 | 0.07 | 0.11 | 0.05 | −0.02 | 0.03 |
| std dev | (0.04) | (0.001) | (0.01) | (0.03) | (0.05) | (0.07) | (0.07) | (0.13) | (0.02) | (0.07) |

Deviance

| 1173.0 | 1173.9 | 1173.2 | 1172.7 | 1172.9 | 1397.8 | 1397.6 | 1393.9 | 1398.3 | 1397.6 |
| DIC | 1173.0 | 1173.9 | 1173.2 | 1172.7 | 1172.9 | 1397.8 | 1397.6 | 1393.9 | 1398.3 | 1397.6 |

Note: Results of hierarchical linear regression models using the lmer() command from the R-package “lme4” (Bates et al. 2019) on the individual satisfaction indicators; standard errors in parentheses; N=476 individual participants; data were produced at University of Konstanz between 2014 and 2016; coefficients in **bold** _italic_ s are significant at the 0.9 level of confidence; random slopes in _italic_ s can be considered quasi-significant at the 0.9 level of confidence; “std dev” reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the _deviance information criterion_.

wards RF. When asking for the satisfaction with the general result (for both players), the pattern is the same, but PD shows satisfaction values that are almost as high as the ones for RW. The satisfaction with the process is lowest among the asymmetric games. And for the satisfaction outside of the role, the welfare games show higher satisfaction values again, with PD overtaking RW. On the other hand, the random slopes always
point the other direction. They are more positive or less negative in the games in which the random intercepts are lower.

I now move from satisfaction item to satisfaction item, pointing out some noteworthy observations when using the individual deliberation items. Looking at the satisfaction with the individual result, *justification*, *participation*, and *accommodation* are positive, while *respect* has a negative overall coefficient. *Participation* is significant at the 0.9 level of confidence. This is drawn by the fairly large random slope of 0.11 in RW, which can be considered significant at the 0.95 level of confidence. Only the *accommodation* item shows random slopes in both directions. Here, the positive random slope of 0.08 at RF can be considered significant at the 0.9 level of confidence.

The satisfaction with the general result (for both players) has no overall significant coefficients. One reason might be that the random slopes at RF point in the opposite direction as the random slopes at the other preference constellations for *justification*, *participation*, and *accommodation*. *Justification* and *accommodation* are positive at RF and the latter can be considered significant at the 0.9 level of confidence. For *respect*, all random slopes are negative and the random slope at RF can be considered significant at the 0.95 level of confidence.

The satisfaction with the process shows no random slopes that can be considered significant. The overall coefficients are positive for all deliberation dimensions but *accommodation*. Here, the random slope at RF is positive and the random slopes at the other preference constellations are negative, even if only just so at CH and RW. The largest random slope among all the models is 0.07. It appears in the model with the *respect* indicator at RF. It is slightly beneath the threshold of significance.

The overall coefficients of the deliberation indicators regressed on the satisfaction value for the participant in person, out of his or her role, are positive for *justification* and *participation*, and negative for *respect* and *accommodation*. None of these coefficients are significant. Two random slopes, however, can be considered significant. The *justification* value at RF is positive and quasi-significant at the 0.9 level of confidence. In addition, the positive *participation* value at PD can be considered significant at the
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

0.95 level of confidence. The standard deviation of random slopes in the participation model is the largest among all models in this table, and there is a considerably large (but not quasi-significant) negative random slope at CH. At Model Accommodation, the negative random slope at PD is on the verge of being considered significant, but there is a positive random slope at RF, which reduces the value of the overall coefficient.

**Satisfaction Index:** After this description of the regression models on the individual satisfaction items, I now turn to an evaluation of the overall satisfaction index. In these models, I also include several control variables. Table 7.7 shows the results of the models with and without control variables next to each other. I now first discuss the deliberation values in the different models before presenting the results of the control variables. Overall, I maintain that all general deliberation indicators (index and individual dimensions) do not affect the value of the satisfaction index.

From the index models, I observe that the overall intercept is 0. Yet the random intercepts vary considerably: The welfare games have higher satisfaction values when the deliberation index is at its mean, while the fairness games are lower. At RF, the intercept value is even significantly lower than the overall intercept. On the other hand, the random slopes are negative in all preference constellations but RF.

In the models with the individual deliberation dimensions, one can observe small but positive coefficients in Models Justification, Participation and Accommodation, and negative coefficients in Models Respect. When looking at the justification models, the inclusion of the control variables increases the coefficient, while the coefficient decreases in the participation model. In the last two models (Models All), the overall coefficients are virtually untouched by the inclusion of the control variables.

Turning to the random slopes, a few quasi-significant results can be reported. In Models Justification, a considerably large positive random slope can be found at RF. This is significant at the 0.9 level of confidence in the model without control variables and at the 0.95 level with control variables – even though the value itself decreases. All other random slopes lead to larger satisfaction values in the model with control vari-
### Table 7.7: The Relationship of Deliberation and the Satisfaction Index

- **Control Variables:** N, Y
- **Justification:** Index, Participation, Respect, Accommodation

<table>
<thead>
<tr>
<th>Role: Ricky</th>
<th>Intercept</th>
<th>0.01</th>
<th>0.02</th>
<th>0.01</th>
<th>0.02</th>
<th>0.01</th>
<th>0.02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperate at T0</td>
<td>-0.13</td>
<td>(0.08)</td>
<td>0.08</td>
<td>(0.08)</td>
<td>0.08</td>
<td>(0.08)</td>
<td>0.08</td>
</tr>
<tr>
<td>Both Cooperate at T1</td>
<td>-0.56</td>
<td>(0.34)</td>
<td>0.34</td>
<td>(0.34)</td>
<td>0.34</td>
<td>(0.34)</td>
<td>0.34</td>
</tr>
<tr>
<td>Cooperate at T2</td>
<td>-1.60</td>
<td>(0.25)</td>
<td>0.25</td>
<td>(0.25)</td>
<td>0.25</td>
<td>(0.25)</td>
<td>0.25</td>
</tr>
<tr>
<td>T0 * T1</td>
<td>-0.43</td>
<td>(0.43)</td>
<td>0.43</td>
<td>(0.43)</td>
<td>0.43</td>
<td>(0.43)</td>
<td>0.43</td>
</tr>
<tr>
<td>T0 * T2</td>
<td>-0.50</td>
<td>(0.54)</td>
<td>0.54</td>
<td>(0.54)</td>
<td>0.54</td>
<td>(0.54)</td>
<td>0.54</td>
</tr>
<tr>
<td>T1 * T2</td>
<td>2.04</td>
<td>(0.47)</td>
<td>0.47</td>
<td>(0.47)</td>
<td>0.47</td>
<td>(0.47)</td>
<td>0.47</td>
</tr>
<tr>
<td>T0 * T1 * T2</td>
<td>0.48</td>
<td>(0.63)</td>
<td>0.63</td>
<td>(0.63)</td>
<td>0.63</td>
<td>(0.63)</td>
<td>0.63</td>
</tr>
<tr>
<td>Self: BA</td>
<td>0.02</td>
<td>(0.11)</td>
<td>0.11</td>
<td>(0.11)</td>
<td>0.11</td>
<td>(0.11)</td>
<td>0.11</td>
</tr>
<tr>
<td>Partner: BA</td>
<td>-0.22</td>
<td>(0.11)</td>
<td>0.11</td>
<td>(0.11)</td>
<td>0.11</td>
<td>(0.11)</td>
<td>0.11</td>
</tr>
<tr>
<td>Both BA</td>
<td>0.09</td>
<td>(0.15)</td>
<td>0.15</td>
<td>(0.15)</td>
<td>0.15</td>
<td>(0.15)</td>
<td>0.15</td>
</tr>
<tr>
<td>Self: Economics</td>
<td>-0.19</td>
<td>(0.18)</td>
<td>0.18</td>
<td>(0.18)</td>
<td>0.18</td>
<td>(0.18)</td>
<td>0.18</td>
</tr>
<tr>
<td>Partner: Economics</td>
<td>-0.29</td>
<td>(0.18)</td>
<td>0.18</td>
<td>(0.18)</td>
<td>0.18</td>
<td>(0.18)</td>
<td>0.18</td>
</tr>
<tr>
<td>Both Economics</td>
<td>0.93</td>
<td>(0.47)</td>
<td>0.47</td>
<td>(0.47)</td>
<td>0.47</td>
<td>(0.47)</td>
<td>0.47</td>
</tr>
<tr>
<td>Know Partner</td>
<td>-0.11</td>
<td>(0.09)</td>
<td>0.09</td>
<td>(0.09)</td>
<td>0.09</td>
<td>(0.09)</td>
<td>0.09</td>
</tr>
</tbody>
</table>

### Random Intercepts

| PD | 0.06 | 0.38 | 0.39 | 0.03 | 0.38 | 0.38 | 0.04 | 0.38 | 0.39 | 0.06 | 0.06 | 0.39 | 0.39 | 0.06 | 0.37 |
| CH | 0.00 | 0.28 | 0.30 | -0.01 | 0.29 | -0.01 | 0.28 | 0.00 | 0.29 | 0.01 | 0.29 |
| RW | 0.07 | 0.51 | 0.50 | 0.10 | 0.54 | 0.07 | 0.52 | 0.09 | 0.52 | 0.09 | 0.50 |
| RF | -0.12 | 0.26 | 0.24 | -0.10 | 0.24 | -0.10 | 0.26 | -0.12 | 0.25 | -0.13 | 0.21 |

### Random Slopes

| PD | -0.03 | -0.00 | -0.02 | 0.04 | 0.05 | 0.02 | -0.03 | -0.03 | -0.03 | -0.01 | * | * |
| CH | -0.00 | 0.01 | 0.01 | 0.06 | 0.03 | -0.02 | -0.02 | -0.02 | -0.02 | 0.01 | * | * |
| RW | -0.04 | -0.02 | -0.03 | 0.00 | 0.07 | 0.10 | -0.03 | -0.02 | -0.05 | -0.05 | * | * |
| RF | 0.06 | 0.01 | 0.10 | 0.08 | -0.00 | -0.05 | -0.02 | -0.02 | -0.03 | 0.10 | 0.04 | * | * |

**Note:** Results of hierarchical linear regression models using the lmer()-command from the R-package “lme4” (Bates et al. 2015) on the satisfaction index; standard errors in parentheses; N=476 individual participants; data were produced at University of Konstanz between 2014 and 2016; **bold** coefficients are significant at the 0.95 level of confidence – coefficients in **bold italics** are at the 0.9 level; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; “std dev” reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion.
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

<table>
<thead>
<tr>
<th>Control Variables</th>
<th>Justification</th>
<th>Participation</th>
<th>Respect</th>
<th>Accommodation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>PD</td>
<td>−0.02</td>
<td>0.03</td>
<td>0.06</td>
<td>0.03</td>
</tr>
<tr>
<td>CH</td>
<td>0.01</td>
<td>0.06</td>
<td>0.04</td>
<td>−0.01</td>
</tr>
<tr>
<td>RW</td>
<td>−0.05</td>
<td>−0.00</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>RF</td>
<td>0.11</td>
<td>0.14</td>
<td>−0.02</td>
<td>−0.08</td>
</tr>
<tr>
<td>std dev</td>
<td>(0.08)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.07)</td>
</tr>
</tbody>
</table>

ables, compared to the model without. At PD and RW, the negative random slopes turn positive when the control variables are included. In Models Participation, the positive random slope at RW increases and turns quasi-significant when the control variables are included. The other random slopes decrease and at CH, the random slope becomes negative. In Models Respect, the random slopes vary only slightly and there are no noteworthy changes from the model without to the model with control variables. In Model Accommodation without control variable, the random slope at RF can be considered significant at the 0.9 level of confidence. However it drops considerably and is no longer quasi-significant when the control variables are added to the model. The random slopes at PD and CH change slightly towards more positive / less negative values.

In Model All – N (no control variables), there is a tiny increase of the negative coefficient of the respect value, when the other deliberation variables are controlled for. In Model All – Y (with control variables), this increase is slightly bigger. In addition, the coefficient of the justification variable also increases a bit. Yet all those differences are not substantial. The random slopes in these models behave almost the same as in the models with the individual indicators. Justification is positive and quasi-significant at RF, participation is quasi-significant at RW in the model with control variables and accommodation can be considered significant at RF in the model without control variables. In addition, the random slopes of respect have a larger standard deviation and the negative random slope at RF can be considered significant at the 0.9 level of confidence in the model with control variables.

Figures: In Figure [7.5], the predicted values of the deliberation measures in the models with control variables are presented. The graphs are generated in the same way as above: the deliberation value is split into 100 values from its minimum to its
Figure 7.5: Predicted Values of the Satisfaction Index
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

maximum and those values are added to the equation for every observation. Of the 476 observations, I plot the mean value as a solid line and the coloured ribbons go from the 0.25 to the 0.75 quantiles.

One can clearly see the higher satisfaction values in the Rambo-Welfare game (violet). Also the satisfaction values in Chicken (red) and Rambo-Fairness (blue) are very much alike and show the lowest values in general. When looking at the deliberation index value, the slopes are almost zero. For justification there appears to be a slight rising trend – stronger in the fairness games – and for respect the trend seems to be declining. Participation and accommodation show opposing trends for Rambo-Welfare on the one hand and the fairness games on the other that cut across at either end of the deliberation variable. The satisfaction values in the Prisoner’s Dilemma (green) appear least affected by the level of the respective deliberation item.

**Control Variables:** From the above presented results, I cannot conclude that the deliberation variables clearly affect the satisfaction index values of the participants. Yet, some combinations of preference constellation and deliberation dimension appear noteworthy. But this is not the end of the story. Returning to Table 7.7, I present the results of the control variables. I include the role, the various result options over the three decision points, the level of experience measured by studying at the BA-level, whether or not the participants study economics and whether or not they know their partner. As in all previous analyses, the choice of control variables depends on the question of whether or not the respective variable significantly correlates with the satisfaction index if used as a single predictor. Corresponding variables for the participants themselves or their partners as well as their interactions are included as well.

Since the unit of analysis is the individual participant, I control for the role this participant is playing. Surprisingly, Ricky-players are less satisfied, even though they are in the advantaged position in half of the preference constellations. The coefficient of -0.13 is, however, not very strong, considering that the satisfaction index variable is standardised with a mean of zero and a standard deviation of one.
The next set of control variables is the decisions at the three decision points. They are included in the model as a three-way interaction, allowing to interpret each possible combination of decisions. I include the individual decision of the consulted participant only at T0 and T2, since this participant cannot be aware of the other person’s decision at T2, when asked about his or her level of satisfaction. The decision at T1 is common knowledge. Therefore, I include the joint cooperation at this decision point.

All three decisions without interaction are significant. The decision at T0 is significant at the 0.9 level of confidence and the other two variables on the 0.95 level. In addition, the interaction of T1 and T2 is significant at the 0.95 level of confidence. Since the coefficients have to be added up for each combination, I present the calculated effects on the satisfaction index in Table 7.8.

<table>
<thead>
<tr>
<th>Rank</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>Coef</th>
<th>Note: calculated interaction coefficients for all possible decision combinations for T0, T1, and T2; sorted by decreasing satisfaction, all else equal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.12</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-0.34</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-0.56</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-1.45</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-1.60</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7.8: Interaction Coefficients of the Decision Combinations

From this table, one can observe that those participants that cooperate before communicating, do not end in the cooperative solution at the table, and decided to defect at the PC-equipped work station are the most satisfied. This is followed by participants who cooperate throughout all decision points. No cooperation at any decision point is the baseline. All other participants report lower satisfaction values than the baseline category. It is noteworthy to see that participants who do not cooperate at T0, but see a cooperative solution at T1 and remain true to their word are less satisfied than the baseline participants. Even more dissatisfied are participants who see the cooperative solution at T1 but decide to defect. Among those, the participants who do not cooperate at T0 are even more dissatisfied than the ones who do. The least satisfied participants are the ones that cooperate, even though they do not reach a cooperative solution at the table – maybe the other participant made clear that he or she will not work at the seminar already at the table. Those cooperating at T0 are slightly more satisfied than those who do not. The overall range of the calculated interaction coefficients

---

5 The partner’s decision at T0 might be mentioned at the table, but the information whether such a statement actually occurred was not collected.
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

suggests a difference on the satisfaction index of more than two standard deviations. This can be considered a rather substantial effect which is in part significant.

Next, I have a look at the level of experience measured by the fact whether the participants study at the BA-level or not. BA students with a non-BA partner are the most satisfied participants while the non-BA participants who had to deal with a BA student are the least satisfied. This latter coefficient is significant at the 0.95 level of confidence and accounts for a fifth of a standard deviation of the satisfaction index. Studying at the BA-level oneself alleviates the pain of being partnered up with a BA student to some extent, but not completely. Non-BA participants among themselves are only slightly less satisfied than BA students that had a non-BA partner.

Another striking result is the satisfaction of participants who had at least one economy student in the pair. Being partnered with an economy student, while not studying economy oneself, co-occurs with the lowest satisfaction values. The opposite constellation also sees low satisfaction values. Only the partner studying economics variable is significant at the 0.9 level of confidence, however – and only in some of the models. Although participants in pairs that did not have to deal with economy students where quite satisfied, it is economy students that are paired with other economy students who report the highest satisfaction. Participants in such pairs are about half a standard deviation more satisfied than participants in a pair without economy students. The interaction coefficient is significant in all models. In most models, the level of confidence is on 0.95.

Finally, I have a look at the question of whether the participants know their experiment partner. This variable is negative, but not significant. This is surprising since one would assume people who do the experiment with someone they know to behave more in a way in which both are satisfied afterwards. The data does not measure up to this expectation. Since the variable is not significant, however, the result might just be the effect of mere chance.
7 Deliberative Quality as a Predictor for Consensus Decisions

7.2.2 Results Testing Hypothesis H10

According to Hypothesis H10, I suggest that it is the Rambo-player’s quality of deliberative communication that is decisive for the satisfaction levels of the two players. Therefore, I assess the individual deliberative quality, like in the previous section and the other analysis chapters. Since the dependent variable is a measure at the level of the individual participant, I split the dataset into responses from Ricky and responses from Chris in order to establish whether or not the satisfaction of either role is affected by either participant’s quality of deliberative communication. This approach also allows to interact all control variables with the role.

I follow the established pattern of describing the results. First, I have a look at Table 7.9 and point out any noteworthy observations from the deliberation index, the individual dimensions and the models in which all dimensions are included simultaneously. I then compare these results with the results from Table 7.10, where the same control variables are used as in the above subsection. Does the inclusion of control variables change any substantial results? The models that are presented in Table 7.10 are then visualised in Figures 7.6 and 7.7 before I have a closer look at the control variables. My interpretation of the presented results concerning H8 and H10 then follows in the next subsection.

Index: The index models, like in most other analyses, do not produce any significant overall results. The most interesting observation from Model Index – Ricky is the fact that Ricky’s level of satisfaction does not differ across the four preference constellations and the coefficients are the same for the Ricky player’s own deliberative quality and the respective deliberative quality from Chris. Both are negatively but not significantly correlated. In Model Index – Chris, however, a difference between the two variables can be observed. They are both not significant overall, yet a Chris who uses a higher deliberative quality is predicted to have a higher satisfaction value, while the satisfaction of a Chris is negatively correlated with a high deliberative quality of the corresponding Ricky. This negative correlation does not differ a lot across the four preference constellations, and all random slopes as well as the overall coefficient just
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

scrape past significance on the 0.9 level of confidence. However, there is a fair amount of variation among the random intercepts and the random slopes for Chris’ own level of deliberative quality. The pattern of the random intercepts shows higher satisfaction values in the welfare games and lower satisfaction values in the fairness games, with the asymmetric games marking the two ends of the spectrum. The random slopes of

Table 7.9: The Relationship of Individual Deliberation and the Satisfaction Index by Role

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Index</th>
<th>Justification</th>
<th>Respect</th>
<th>Accommodation</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
</tr>
<tr>
<td>Index: Self</td>
<td>-0.05</td>
<td>0.07</td>
<td>(0.07)</td>
<td>(0.08)</td>
<td></td>
</tr>
<tr>
<td>Index: Partner</td>
<td>-0.05</td>
<td>-0.12</td>
<td>(0.06)</td>
<td>(0.08)</td>
<td></td>
</tr>
<tr>
<td>Justification: Self</td>
<td>-0.08</td>
<td>0.05</td>
<td>(0.06)</td>
<td>(0.10)</td>
<td>-0.09</td>
</tr>
<tr>
<td>Justification: Partner</td>
<td>0.00</td>
<td>-0.14</td>
<td>(0.06)</td>
<td>(0.09)</td>
<td>0.05</td>
</tr>
<tr>
<td>Respect: Self</td>
<td>0.01</td>
<td>0.07</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>0.08</td>
</tr>
<tr>
<td>Respect: Partner</td>
<td>-0.04</td>
<td>-0.06</td>
<td>(0.05)</td>
<td>(0.08)</td>
<td>0.00</td>
</tr>
<tr>
<td>Accommodation: Self</td>
<td>-0.07</td>
<td>-0.03</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>0.08</td>
</tr>
<tr>
<td>Accommodation: Partner</td>
<td>-0.12</td>
<td>-0.02</td>
<td>(0.06)</td>
<td>(0.08)</td>
<td>-0.14</td>
</tr>
</tbody>
</table>

(Intercept) -0.01 0.00 -0.01 0.01 -0.01 0.01 -0.01 0.01 -0.01 0.00 0.00 0.00

Random Intercepts

|         | Ricky | Chris | (Intercept) | PD          | 0.01 0.02 -0.01 0.02 -0.01 0.05 -0.01 0.07 0.03 0.04 |
|---------|-------|-------|-------------|-------------|--------|--------|--------|--------|--------|--------|
| Random Slopes: Self |          |       |             |             |        |        |        |        |        |
| PD      | -0.05 | 0.08  | -0.08       | 0.06        | 0.01   | 0.07   | -0.06 | 0.00   | *      | *      |
| CH      | -0.05 | 0.03  | -0.08       | 0.01        | 0.01   | 0.07   | -0.09 | -0.10  | *      | *      |
| RW      | -0.05 | 0.13  | -0.08       | 0.22        | 0.01   | 0.07   | -0.07 | 0.02   |        |        |
| RF      | -0.05 | 0.03  | -0.08       | -0.09       | 0.01   | 0.07   | -0.05 | -0.03  | *      | *      |

Random Intercepts

|         | Ricky | Chris | (Intercept) | PD          | -0.05 -0.12 0.00 -0.14 -0.04 -0.04 -0.11 0.04 * | *      |
|---------|-------|-------|-------------|-------------|--------|--------|--------|--------|--------|--------|
| Random Slopes: Partner |          |       |             |             |        |        |        |        |        |
| PD      | -0.05 | -0.12 | 0.00        | -0.10       | -0.04  | -0.07  | -0.17 | -0.09  | *      | *      |
| CH      | -0.05 | -0.12 | 0.00        | -0.29       | -0.04  | -0.04  | -0.12 | 0.05   | *      | *      |
| RW      | -0.05 | -0.12 | 0.00        | -0.01       | -0.04  | -0.09  | -0.08 | -0.07  | *      | *      |
| RF      | -0.05 | -0.12 | 0.00        | (std dev)   | (std dev) | (std dev) | (std dev) | (std dev) | (* *) | (* *) |

Deviance 569.9 660.9 570.2 657.1 572.1 662.4 563.4 662.1 558.0 653.7
DIC 569.9 660.9 570.2 657.1 572.1 662.4 563.4 662.1 532.1 630.6
N 237 239 237 239 237 239 237 239 237 239

Note: Results of hierarchical linear regression models using the lmer()-command from the R-package “lme4” (Bates et al. 2015) on the satisfaction index with split datasets according to the role; standard errors in parentheses; data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant at the 0.95 level of confidence; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; “std dev” reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion; Model All – “Chris” failed to converge due to a degenerate Hessian with a negative eigenvalue.
### 7 Deliberative Quality as a Predictor for Consensus Decisions

#### Random Slopes at Models All

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Justification Ricky</th>
<th>Justification Chris</th>
<th>Respect Ricky</th>
<th>Respect Chris</th>
<th>Accommodation Ricky</th>
<th>Accommodation Chris</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>-0.02</td>
<td>0.10</td>
<td>0.05</td>
<td>0.04</td>
<td>-0.05</td>
<td>0.01</td>
</tr>
<tr>
<td>CH</td>
<td>-0.25</td>
<td>0.04</td>
<td>0.13</td>
<td>0.03</td>
<td>-0.16</td>
<td>-0.16</td>
</tr>
<tr>
<td>RW</td>
<td>-0.06</td>
<td>0.20</td>
<td>0.06</td>
<td>0.08</td>
<td>-0.09</td>
<td>0.03</td>
</tr>
<tr>
<td>RF</td>
<td>-0.04</td>
<td>-0.11</td>
<td>0.07</td>
<td>0.10</td>
<td>-0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>std dev</td>
<td>(0.12)</td>
<td>(0.15)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.12)</td>
</tr>
</tbody>
</table>

#### Random Slopes: Self

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Justification Ricky</th>
<th>Justification Chris</th>
<th>Respect Ricky</th>
<th>Respect Chris</th>
<th>Accommodation Ricky</th>
<th>Accommodation Chris</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>-0.02</td>
<td>-0.17</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.07</td>
<td>0.04</td>
</tr>
<tr>
<td>CH</td>
<td>0.19</td>
<td>-0.08</td>
<td>0.06</td>
<td>-0.01</td>
<td>-0.32</td>
<td>-0.09</td>
</tr>
<tr>
<td>RW</td>
<td>0.03</td>
<td>-0.32</td>
<td>0.01</td>
<td>0.00</td>
<td>-0.14</td>
<td>0.06</td>
</tr>
<tr>
<td>RF</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.06</td>
<td>-0.11</td>
<td>-0.01</td>
<td>-0.06</td>
</tr>
<tr>
<td>std dev</td>
<td>(0.11)</td>
<td>(0.16)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.15)</td>
<td>(0.09)</td>
</tr>
</tbody>
</table>

Chris’ own level of deliberative quality strengthen this positive picture. While the random slopes in the fairness games are only slightly positive, the random slopes in the welfare games are considerably larger. At Rambo-Welfare, Chris’ level of deliberative quality can even be considered to significantly correlate with Chris’ satisfaction on the 0.9 level of confidence.

**Indicators:** Among the individual dimensions, the general picture diversifies. I first take a look at the Ricky models. While there is a negative coefficient for Ricky’s own level of justification, Chris’ level of justification does not correlate with Ricky’s satisfaction value at all. On the respect dimension the pattern is reversed but weaker. The more words with positive connotation Chris uses the less satisfied is Ricky. Ricky’s respect value is positively correlated – but only just. None of the coefficients are significant. They also do not differ among the four preference constellations. Accommodation on the other hand sees a negative correlation between the ratio of agreement vs. disagreement speech acts of Chris and Ricky’s satisfaction level that is significant at the 0.95 level of confidence. Ricky’s own accommodation level is also negative but not significant. In this Model, the random intercepts show no variation, the random slopes of Ricky’s accommodation vary only slightly, and the random slopes of Chris’ accommodation vary a bit more. Here PD and RW are very similar and the negative random slopes can be considered significant at the 0.9 level of confidence. RF and CH are at the opposing ends. While the random slope at RF is least negative, the random slope at CH shows the strongest negative correlation. The value can even be considered significant at the 0.95 level of confidence.
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

I now turn to the Chris models. Here, the overall coefficient patterns align for the justification and the respect dimensions while accommodation follows its own course. The number of arguments brought forward by Chris him- or herself is positively but not significantly correlated with Chris’ satisfaction level. The random slope at RW shows a substantial relationship that can be considered significant at the 0.95 level of confidence. On the other hand, the random slope at RF is negative. Ricky’s justification level, in contrast, is negatively correlated with Chris’ satisfaction. This negative relationship is strongest at RW and can be considered significant at the 0.95 level of confidence as well. The random slope at RF does not change the sign but is very close to zero and on the other end of the spectrum. The general pattern of a positive correlation for the self variable and a negative correlation of the partner variable can also be observed in Model Respect – Chris. The random slopes have no (self) or only a small (partner) variation and none of them are quasi-significant. Finally, Model Accommodation – Chris sees both overall coefficients slightly below zero and not significant. The random slopes of the accommodation variables of both roles cannot be considered significant either, but they both follow the above-mentioned pattern of being negatively correlated with the satisfaction index at the fairness games and positively but weaker correlated with the satisfaction index at the welfare games.

All: Finally, I observe changes from the individual models to Models All. In Model All – Ricky, there are few minor changes of the coefficients. None of them are significant here, when they have not been significant before. The correlation of Chris’ justification value with Ricky’s satisfaction is 0.05 when including all deliberation variables in the same model compared to 0.00 in the individual model. Ricky’s respect value correlation changes from 0.01 to 0.08. And the negative correlation of Chris’ respect value (-0.04) turns to zero. The accommodation level of Chris has an even larger negative coefficient, but this is no longer significant due to a larger standard error. In this model, the random slopes vary stronger than in the individual models and some random slopes can even be considered significant. Among them are both justification measures (self and partner) at CH as well as Ricky’s respect and accommodation at CH. Chris’ accommodation in Model All – Ricky is still significant at CH even though the overall coefficient is no longer significant. The random slope at CH has doubled, but
the random slopes at PD and RW can no longer be considered significant due to the larger standard error.

Model All – Chris did not converge and should therefore not be trusted. Still, most results are as expected from the individual dimension models. Only the negative coefficient of ‘Respect: Partner’ sees a change towards a smaller negative correlation. Of the random slopes a few more can be considered significant. Chris’ own justification level at RW remains quasi-significant at the 0.9 level of confidence. Ricky’s justification level sees a much larger variation between the preference constellations, compared to the model in which only justification is included. All random slopes are negative but the one at RW stands out. An increase in Ricky’s justification value by one standard deviation decreases Chris’ satisfaction by a third of a standard deviation. This is not a large correlation, but more discernible than most other correlations so far. The respect value does not produce any noteworthy random slopes but generally the standard deviation is bigger than in Model Respect – Chris. And Chris’ own accommodation value at CH can now be considered significant at the 0.9 level of confidence.

**Deliberation with Control Variables:** How do these coefficients react to the inclusion of control variables? For answering this question, I now turn to Table 7.10. Throughout the table, one can observe that the coefficients are subject to stronger changes in the Chris models but do not change their level of significance. In contrast, some coefficients in the Ricky models are now or no longer significant. In Model Index – Ricky, the negative correlation between Ricky’s own deliberation value and his or her satisfaction slightly increases, while ‘Index: Partner’ stays almost the same. In Model Index – Chris, both variables (self and partner) become almost zero and change their sign. The standard deviations of the random slopes of both deliberation variables increase, however. For Chris’ own deliberation index, the fairness games have negative random slopes, while the slopes are positive in the welfare games. At PD the random slope is just above zero. The random slope at RW can be considered significant at the 0.9 level of confidence.

More interesting results can be reported from the individual dimensions. In the Ricky models, the coefficients of ‘Justification: Self’ and ‘Accommodation: Self’ have
Table 7.10: The Relationship of Individual Deliberation and the Satisfaction Index by Role; Including Control Variables

<table>
<thead>
<tr>
<th>Data Set</th>
<th>Index</th>
<th>Justification</th>
<th>Respect</th>
<th>Accommodation</th>
<th><em>All</em></th>
<th><em>Chris</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
<td>Ricky</td>
<td>Chris</td>
</tr>
<tr>
<td>Index: Self</td>
<td>−0.09 (0.06)</td>
<td>−0.02 (0.08)</td>
<td>−0.11 (0.06)</td>
<td>0.03 (0.07)</td>
<td>−0.12 (0.07)</td>
<td>0.03</td>
</tr>
<tr>
<td>Index: Partner</td>
<td>−0.04 (0.05)</td>
<td>0.01 (0.07)</td>
<td>0.01 (0.06)</td>
<td>−0.05 (0.09)</td>
<td>0.04 (0.07)</td>
<td>−0.06</td>
</tr>
<tr>
<td>Justification: Self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−0.11 (0.06)</td>
<td>0.03</td>
<td>−0.80 (0.27)</td>
<td>−1.60 (0.27)</td>
<td>−1.61 (0.27)</td>
<td>−1.54 (0.27)</td>
<td>1.07</td>
</tr>
<tr>
<td>Justification: Partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−0.01 (0.06)</td>
<td>0.01</td>
<td>0.05 (0.06)</td>
<td>0.04 (0.06)</td>
<td>0.02 (0.06)</td>
<td>0.02 (0.06)</td>
<td>0.06</td>
</tr>
<tr>
<td>Respect: Self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−0.05 (0.05)</td>
<td>0.00</td>
<td>−0.02 (0.06)</td>
<td>0.04 (0.06)</td>
<td>0.05 (0.06)</td>
<td>0.05 (0.06)</td>
<td>0.08</td>
</tr>
<tr>
<td>Respect: Partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−0.08 (0.05)</td>
<td>0.07</td>
<td>−0.06 (0.07)</td>
<td>0.07 (0.08)</td>
<td>0.08 (0.07)</td>
<td>0.05 (0.07)</td>
<td>0.08</td>
</tr>
<tr>
<td>Accommodation: Self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−0.10 (0.05)</td>
<td>−0.06</td>
<td>−0.10 (0.05)</td>
<td>−0.10 (0.05)</td>
<td>−0.10 (0.05)</td>
<td>−0.10 (0.05)</td>
<td>0.05</td>
</tr>
<tr>
<td>Accommodation: Partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−0.08 (0.05)</td>
<td>0.07</td>
<td>−0.06 (0.07)</td>
<td>0.07 (0.08)</td>
<td>0.08 (0.07)</td>
<td>0.05 (0.07)</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Table 7.10: The Relationship of Individual Deliberation and the Satisfaction Index by Role; Including Control Variables

<table>
<thead>
<tr>
<th></th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T0 * T1</th>
<th>T0 * T2</th>
<th>BA: Self</th>
<th>BA: Partner</th>
<th>Both BA</th>
<th>Economics: Self</th>
<th>Economics: Partner</th>
<th>Both Economics</th>
<th>Know Partner</th>
<th>(Intercept)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>0.61</td>
<td>0.62</td>
<td>0.68</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.53</td>
<td>0.46</td>
<td>0.40</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Justification</td>
<td>0.32</td>
<td>0.33</td>
<td>0.33</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
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<td>0.35</td>
<td>0.34</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>Respect</td>
<td></td>
<td>0.42</td>
<td>0.39</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.21</td>
<td>0.20</td>
<td>0.21</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>Accommodation</td>
<td></td>
<td>0.27</td>
<td>0.29</td>
<td>0.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td><em>All</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td><em>Chris</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td></td>
</tr>
</tbody>
</table>

Note: Results of hierarchical linear regression models using the lmer()-command from the R-package "lme4" (Bates et al. 2015) on the satisfaction index; standard errors in parentheses; data were produced at University of Konstanz between 2014 and 2016; bold coefficients are significant at the 0.95 level of confidence – coefficients in bold italics at the 0.90 level; absolute random slopes in italics are larger than 1.645 times the standard deviation of the variable; "std dev" reports the standard deviation of the random intercepts and random slopes; “Deviance” reports the relative conditional deviance; “DIC” reports the deviance information criterion; Models *All* – *Chris* and *All* – *Ricky* failed to converge due to a degenerate Hessian with a negative eigenvalue.
slightly larger negative coefficients that are here significant at the 0.95 level of confidence. The coefficient for ‘Respect: Self’ changes the sign but remains very close to zero. The partner variables in participation and respect remain approximately the same and ‘Accommodation: Partner’ has a smaller negative correlation which is no longer significant once the control variables are included. Neither random slope varies across the preference constellations in any of the Ricky models but ‘Accommodation: Partner’ in Model Accommodation – Ricky. Here, the random slope at CH can still be considered significant at the 0.9 level of confidence even though the general coefficient is no longer significant.

As mentioned above, the coefficients in the Chris models are subject to larger changes even though this does not affect whether or not they are significant – none of them are. ‘Justification: Partner’ has a smaller negative correlation when the control variables are included. In Model Respect – Chris, both respect variables correlate less with Chris’ satisfaction and become very close to zero. For accommodation, Chris own ratio of agreement vs. disagreement speech acts has a larger negative correlation while the negative correlation of Ricky’s accommodation with Chris’ satisfaction turns positive. The random slopes at the Chris models vary considerably. ‘Justification: Self’ and ‘Justification: Partner’ can be considered significant at the 0.95 level of confidence at the Rambo-Welfare game. The general patterns are in opposition: The welfare games see positive random slopes in ‘Justification: Self’ and negative random slopes in ‘Justification: Partner’. The fairness games see the signs of the random slopes in the opposite direction. This pattern repeats itself in Model Respect – Chris; just without any random.
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

slopes that can be considered significant. In Model Accommodation – Chris, there is no clear pattern. The random slope of ‘Accommodation: Self’ at CH can be considered significant at the 0.95 level of confidence and the random slope of ‘Accommodation: Partner’ can be considered significant with the same threshold at RF.

Models *All* both do not converge and the coefficients do not offer any surprises. In Model *All* – *Ricky* the coefficient for ‘Justification: Self’ remains significant but only on the 0.9 level of confidence, compared to Model Justification – Ricky in this table. The random slope at CH remains quasi-significant. In addition, the random slope at RW can also be considered significant at the 0.9 level of confidence here. For Chris’ justification value, the level of confidence at CH is now at 0.95. The significant random slope of ‘Respect: Self’ at CH can no longer be considered significant at the 0.95 level of confidence but on the 0.9 level. The general coefficient of ‘Accommodation: Self’ remains significant at the 0.95 level, which is in line with quasi significant random slopes at CH and RW. ‘Accommodation: Partner’ has a random slope at CH that can be considered significant at the 0.95 level of confidence – like in the respective model without control variables. In Model *All* – *Chris*, both justification coefficients become smaller. The respect coefficients of Chris (self) drops as well, while the coefficient for Ricky (partner) changes the sign. The accommodation coefficients become bigger. The one for Ricky (partner) also changes the sign. All quasi-significant random slopes remain significant: ‘Justification: Self’ and ‘Justification: Partner’ at RW as well as ‘Accommodation: Self’ at CH. In addition, the random slope of ‘Accommodation: Partner’ at RF can also be considered significant at the 0.95 level of confidence, when the control variables are included.

**Figures:** The visualisations in Figures 7.6 and 7.7 emphasise one of the most striking patterns of the above presented results. While Ricky’s satisfaction index might be affected by the deliberative quality, there is not much difference between the preference constellations and only small difference between Ricky’s own deliberation values and those of Chris. On the other hand the satisfaction index of Chris players shows very strong differences. The smallest effect can be seen in PD, while RW generally shows exactly the opposite pattern than both fairness games. RW is the game in which
Deliberation Index

Respect

Justification

Accommodation

Figure 7.6: Predicted Values of the Satisfaction Index for Ricky-Players; by Speaker
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

Figure 7.7: Predicted Values of the Satisfaction Index for Chris-Players; by Speaker
Chris players are generally more satisfied. And the more he or she behaves according to the deliberative ideal (in the index as well as in the individual dimensions), the more satisfied the Chris player is at the end of the experimental session. On the other hand, the higher the Ricky player scores on the justification dimension, the less satisfied is the Chris player. This effect is strong enough to turn the whole index negative even though there is a positive relationship between Ricky’s respect and accommodation values and Chris’ satisfaction. In addition, for the index as well as for respect and justification, CH and RF behave very similarly, and generally in the opposite direction as in RW. Only for accommodation, CH is the odd one out, where higher levels of both Ricky and Chris players makes the respective Chris less satisfied. For ‘Accommodation: Partner’ the positive relationship between Ricky’s ratio of agreement vs. disagreement speech acts and Chris’ satisfaction value is striking and breaks the above-mentioned pattern.

**Control Variables:** After this detailed discussion of the deliberation variables, I can now turn to the control variables. The same control variables as for Hypothesis H8 have been included in the models. However, there is one difference. Since there is not a single case in which a Chris player first decides to cooperate but sees no cooperative solution at the table and subsequently decides at the work station not to work, the three-way interaction of decisions is not identified in the Chris model. I therefore exclude the decision at T0, but include the two-way and three-way interactions.

In Table 7.11 I present the calculated interaction coefficients for the 8 possible decision patterns sorted by decreasing satisfaction values for each role. What can be

<table>
<thead>
<tr>
<th>Rank</th>
<th>Ricky</th>
<th>Chris</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T0</td>
<td>T1</td>
</tr>
<tr>
<td>1</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
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<tr>
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<td>-</td>
<td>+</td>
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<td>7</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: calculated interaction coefficients for all possible decision combinations for T0, T1, and T2; sorted by decreasing satisfaction, all else equal.
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

observed is that the rank order of Ricky is very similar to the overall rank order presented in Table 7.8. The only exception is that Ricky players are considerably less satisfied with the full cooperation at all decision points. This pattern is only on fifth rank, compared to the second rank above. Three of the four higher ranks for Ricky involve him or her not cooperating at T2. The highest satisfaction is in the observation in which Ricky realises at the table, after having cooperated at T0, that he or she gains more by not cooperating and in which he or she enforces this solution to the conflict already at the table before sticking to this decision not to work at T2. A Ricky is least satisfied in observations in which he or she decides to work at T2 after there was no cooperative solution at the table. Most likely, these observations are cases in which the Chris player was headstrong enough at the table to force Ricky to choose working alone rather than not at all. The middle ranks of Ricky’s satisfaction go to observations in which the participants decided on the cooperative solution at T1. What is interesting is that if Ricky decided to work at T0, he or she is slightly more satisfied when defecting at T2. In contrast, defection at T2 has a considerably lower satisfaction coefficient than cooperation at T2 when Ricky decided not to work at T0. Is this a sign of a bad conscience? Even though I cannot test it, this explanation is highly plausible. The levels of significance are the same as in the above models without the split datasets.

Turning to Chris, it is interesting that this very pattern (T0=0; T1=1; T2=0) is among those with the highest rank. Does the background story or the asymmetry guard against bad conscience? Why then is the fifth rank this much lower? Unfortunately, there is no further insight that allows answering these questions here. In general, one can perceive that a Chris is more satisfied when there is a cooperative solution at the table. And the all-cooperate-pattern is at the top of the rank order. With the already mentioned exception (T0=1; T1=1; T2=0), all other patterns that see cooperation at T1 are above zero and thus better than the baseline of no cooperation at any decision point. The lowest two ranks are the same as for Ricky. No cooperation at the table and cooperation at T2. One can safely assume that this pattern sees a non-cooperating partner that already made clear at the table that he or she will not take the shift. I have to maintain however, that in the Chris models, none of the decisions or their interactions reach significance at the 0.9 level of confidence.
The next variable I control for is studying at the BA-level. I interact whether the respondent him- or herself is studying at the BA-level and if the experiment partner does. The general picture does not differ from the one in Table 7.7. Participants that study at the BA-level are most satisfied among all Ricky players and second most satisfied among all Chris players. They are more satisfied when they participate with a non-BA student and less satisfied when they have to partner up with a BA student. Non-BA students who sit at the table with a BA student are least satisfied. The comparison group combining two non-BA students is second most satisfied in the Ricky dataset and most satisfied in the Chris dataset. Like in Table 7.7, only ‘BA:Partner’ is significant but this is only the case in the Chris models here. The variable is not significant in the Ricky models.

Studying economics, in contrast, is only significant in the Ricky models. The rank order of satisfaction among the Ricky players is the same as above. Most satisfied is a Ricky studying economics who faces a Chris studying economics. Least satisfied is a Ricky who does not study economics who has to partner up with an economics student. Being the only economics student at the table leaves the Ricky player almost as unsatisfied. Two non-economists are at the second satisfaction rank. In the Chris models, the last two switch ranks. Still none of the three variables is significant.

Knowing one’s partner, like in the table above makes participants less satisfied. This effect is much stronger for Ricky players. In the Ricky models, this variable is significant at the 0.95 level of confidence. In the Chris models, it does not pass a reasonable threshold for being significant.

### 7.2.3 Interpretation of the Satisfaction Results

The description of the results in the above subsections begins with an assessment of the individual satisfaction items. Although they are highly correlated – the reason why they are included in one satisfaction index later – the results are not consistent, with negative and positive coefficients for the different dependent variables and the different deliberation items. The one significant overall coefficient (regressing the sat-
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

Satisfaction with the individual result on the *participation* dimension) supports Hypothesis H8. Substantially, however, this positive relationship is too small to make a difference. The largest random slope in Table 7.6 is 0.19. This in effect means that the *participation* variable would have to increase by more than five standard deviations to increase the satisfaction of the participant in person by one point. Yet the range of the variable does not provide five standard deviations.

The further results on the satisfaction index show larger differences between the preference constellations than over the range of the deliberation variable. So, overall, I cannot claim that the data from this experiment supports Hypothesis H8. Many times the deliberation variable only has a noteworthy effect in only one of the preference constellations. The *Rambo-Welfare* game plays a special role as it sees the highest satisfaction values overall. Moreover, it is often the odd one out, showing a negative relationship between the deliberation variable and the satisfaction index when the fairness games see a positive relationship and vice versa. The special situation in which a Chris attains his or her maximum reimbursement in the cooperative solution might be the reason. This interpretation is supported by the negative coefficient of ‘Role: Ricky’ in Table 7.7 and even more so by the random intercepts at RW in the Chris models in Table 7.10. Especially, since the majority of observations end in the cooperative solution, this fact might be able to overcome the frustration of being in the disadvantaged position of an asymmetric game.

This same frustration might be the reason for the *Rambo-Fairness* game to be on the opposite extreme. Here, however, a high deliberative quality index sees higher satisfaction values. I can only assume that higher satisfaction is the result of successfully swaying the other player to cooperate – even against the odds of the preference constellation. To have worked for the cooperative solution might make Chris players even more satisfied than Chris players that did not have to work against asymmetry. However, from Figure 7.7 one can observe that it is Ricky’s deliberative quality that leads to higher satisfaction values, while Chris him- or herself producing a high deliberative quality is associated with lower satisfaction values. The clearest negative correlation of the self variable with a highly satisfied Chris is in the index variable. The clearest
positive correlation of the partner variable with a satisfied Chris is in the *accommodation* dimension.

Potentially, one can conclude from these patterns that either participant engages in higher levels of *justification* or *accommodation*, when they are dissatisfied with the status quo solution discussed at that moment. Depending on whether this engagement then leads to the preferred outcome, participants are more satisfied. Unfortunately such an interpretation can only be speculated about as the models do not allow to conclusively support or reject it.

Finally, I need to maintain that Hypothesis H10 can also not be supported. Ricky’s level of deliberation in all specifications is negatively associated with Ricky’s satisfaction. These negative correlations are even among the few significant relationships of deliberation variables with the outcome variables in the whole thesis. The satisfaction values of Chris are less affected by Ricky’s deliberation, and in Table 7.10 there is even a positive association between ‘*Accommodation: Partner*’ and the satisfaction index value from Chris, but this is not significant.

In Table 7.9, the *Chicken* game is outstanding in Model Ricky – All. Almost all random slopes of the individual dimensions for both self and partner can be considered significant. Only ‘*Respect: Partner*’ breaks this pattern. Among the self variables, *justification* and *accommodation* are negative, while *respect* is positive. Of the partner variables, *justification* is positive and *accommodation* is negative. So what makes the Chicken game so special, why is only Ricky affected, and why has *justification* different signs? Chicken is a symmetric game with two nash-equilibria and the threat of the worst outcome if none of the participants cooperate. I already mentioned the suspicion earlier that high levels of *justification* and *accommodation* appear when a participant is not satisfied with the situation at the table. In the strategic constellation, the player who is more headstrong can force the other player to work alone. So a Ricky who has high values in both *justification* and *accommodation* is probably forced to convince the other partner of the cooperative solution which might or might not be successful. In any case, the partner is not set on the cooperative solution from the beginning. This might lead to frustration. On the other hand, if the partner uses a lot of argumentation
7.2 Does the Level of Deliberative Quality Affect the Satisfaction Values of the Participants?

EDUs, Ricky is most likely the one who manages to put Chris in the defensive. Why then is accommodation negative? Maybe the reason lies in the discussion. When Chris uses many agreement speech acts in response to Ricky’s arguments but still does not change his or her position, a Ricky can also become very frustrated. The difference between Ricky and Chris in that regard can either be the result of very influential observations or can be explained by the background story. Maybe, students consider the final exam as a normatively superior reason and become less satisfied when the other player is not willing to give in to their arguments.

In the first results subsection, the role is used as a control variable, while I split the dataset according to the role in the second results subsection. I suspect that the higher overall satisfaction of Chris players is a result of the larger payments in the cooperative solution in the Rambo-Welfare game. The split analysis supports this suspicion as the random intercepts in the Chris models are considerably larger in this preference constellation.

When looking at the different decision patterns, I would suspect that being at a disadvantage in the asymmetric games makes people less satisfied. In a way this appears to be true, but apparently this is not the result of the preference constellation but generally being forced to cooperate – even in the symmetric games. I find a strangely differentiated pattern when looking at decisions that are motivated by self-interest. While Ricky players seem to be less satisfied when they deceive their experiment partners by choosing to defect at T2, Chris players show higher satisfaction values in the same decision pattern. One can suspect that the lower satisfaction is a sign of bad conscience which rises when a Ricky player exploits his or her strategic advantage that was created by the mere chance of being randomly assigned the role of Ricky. By a similar logic, the higher satisfaction values of Chris players could then be created by the pride of winning the game against the odds of a disadvantage.

The results of studying at the BA-level raise the question of why the negative coefficient of being teamed up with a BA student is only significant in the Chris models. I suspect that BA students playing Ricky might be the participants that can relate best to the situation described for their role – having to revise for the final exam. With such
an identification, especially BA students might find it difficult to accept that any other
but the cooperative solution is an acceptable solution to the conflict. This normative
stance towards the possible solutions to the conflict might then frustrate more expe-
rienced participants who focus more on the strategic characteristics of the conflict in
their interaction at the table.

Another peculiar pattern is the high satisfaction of economy students facing each
other. Why is this only significant in the Ricky models, once the dataset is split? My
interpretation of this result goes in line with what I just mentioned about BA students.
If both participants emphasise the strategic situation of the conflict without raising
one solution to a higher normative standard they are able to interact on a level playing
field. Whatever the result in the end, they accept that the other participant is acting
rational in the same way as they define rationality. When an economy student meets a
non-economy student two different mind-sets about the situation at hand might clash,
which potentially leads to frustration on both sides. For a Ricky it might be important
to know that the other participant is of the same mind-set, especially when deciding
to defect at T2. This knowledge might be able to help overcome the bad conscience
mentioned above.

The final control variable is the question of whether or not the participants know
their partner. Why is this variable significant only in the Ricky models but not in the
overall dataset? I mention above that it is surprising that this variable is negative.
Maybe the Ricky role provides an explanation. A Ricky who takes advantage of the
strategic situation he or she was randomly assigned to might be haunted be his or
her bad conscience even more when the experiment partner is a friend – irrespective
of the fact that it would be very easy for the two participants knowing each other to
externally compensate for the losses in the experiment.
7.3 Summary and Discussion

In this chapter, I test whether the deliberative quality of communication positively influences participants to decide in consensus. I do not define consensus as unanimity but as the result of a process of autonomous will-formation which is understood as a process that is free from strategic or power-related forces. Deciding by consensus means that participants are of the opinion that the solution they have agreed upon is the best solution available for all. They do not wish to change anything about that decision. If this is not the case, they should have brought their remaining grievances to the table and find a solution for them while still in the communicative process with the other person that depends on their decision. In the design and data chapter, I operationalise this concept of consensus in two different ways. First, I ask whether participants that decide to cooperate while discussing with each other stick to their commitment once they are asked to retake their decision. Second, I ask in a post-discussion questionnaire how satisfied they are with the result of the discussion and the process how it was reached.

In the second section of this chapter, I include the decision patterns as a control variable for predicting the satisfaction index. This approach gives an insight into the relationship between the two operationalisations. In Table 7.8 I observe that of the decision patterns in which the cooperative solution was found at the table (T1) the patterns in which the respondent remained true to his or her word at T2 saw higher satisfaction values. So at least when considering the rank order, the two operationalisations point in the same direction. This general picture becomes a bit blurred when looking at Table 7.11 because the rank orders of cooperation and defection at T2 alternate for both Ricky and Chris. Still, cooperating at T2 sees a higher satisfaction than defecting. I can therefore conclude that, even though the two measures cover different aspects of consensus the general interpretation is in line.

Now, how does deliberation affect consensus? Overall, I cannot find any evidence that either of the two operationalisations are positively affected by the deliberative quality in the negotiation. None of the four hypotheses concerning consensus gain
comprehensive support from the general analysis of the data in this experiment. However, this is only the overall assessment. The various dimensions of deliberative quality have a certain influence. The direction of this influence and whether it can be considered significant and substantial depends very much on both the role that was randomly assigned to the respondent and on the game-theoretic preference constellation providing the setting of the decision.

For example, Ricky sees a tiny rise and Chris sees a tiny fall of the predicted probabilities when the deliberation index increases; but the directions turn around, when looking at each players deliberative performance individually. The satisfaction values of Ricky also fall with a rising deliberative quality of either actor. Chris’ satisfaction values are inconsistent, depending on whether or not control variables are included. Without control variables, Chris is positively affected by his or her deliberative quality and negatively affected by the other participants deliberative quality. This effect however disappears when I add the control variables, because then I also control for the result at the table.

This pattern proposes an instrumental use of the deliberative quality – especially in the dimensions justification and accommodation. If either participant is successful in changing the solution at the table this or the other actor reports satisfaction values that reflect the respective decision at the table. If I control for this decision pattern, the deliberative quality looses importance.

Looking at the deliberative quality in the preference constellations, one can observe a small variance for Ricky in the decision to defect at T2 and no variation in the satisfaction. In RW, a Ricky is negatively affected in his will to continue cooperating by increasing levels of Chris’ deliberation index and respect dimension. He or she is also negatively affected by increasing levels of his or her own accommodation. Chris on the other hand sees much more variance when predicting the satisfaction variable over the four preference constellations, while the random slopes and intercepts of Chris’ decision at T2 are rather small, yet still discernibly different.
Chris players are particularly satisfied in the Rambo-Welfare games and much less so in Rambo-Fairness or Chicken. They also show generally higher predicted probabilities of remaining true to their word. This is no surprise since they already get their best possible outcome in RW, when both participants decide to cooperate.

Taking all these results together, and reconsidering the interpretations in both sections above, I must conclude that whenever I find an explanation for the results this explanation does not take into account those aspects of the dependent variables that make them potential indicators for consensus. Rather, the decision to stay true to one’s word is most of the time a question of compulsion due to the expected decision from the other player and the consequences in the respective preference constellations. The norm of fulfilling a contract might play a role as well. As does the general willingness to cooperate. But there is no clear evidence that the aspect I focus on when using decision stability as an indicator for consensus – being convinced that one has decided in the best possible way and not feeling the urge to change anything about the decision – is decisive for the decision to cooperate at T2. The same is true about the satisfaction index. Satisfaction is much more influenced by the result reached at the table and the decision taken after returning to the PC-equipped work station than it is by any variables that point in the direction of being convinced to have found the best possible solution.

This conclusion is also supported by the control variables. Studying economics makes people more satisfied, when they are partnered with another economy student. Yet studying economics also decreases the probability of a continued cooperation at T2 – especially for Chris players. The positive correlation of agreeableness with the decision at T2 is more a question of general willingness to cooperate. One could even suspect that participants who are set on cooperation already at the beginning get frustrated by those participants that want to engage in a debate claiming that another but the cooperative solution can be justified. Furthermore, the explanations for age difference and studying at the BA level also point more at interpersonal emotional attachment rather than at a result of a communicatively rational discourse.
7 Deliberative Quality as a Predictor for Consensus Decisions

So, I conclude this chapter with the ascertainment that the data provides a lot of insight into potential explanations for decision stability and for satisfaction with the results of a conflict and the process of dealing with it. Yet, the deliberative quality as such, like it is operationalised in this thesis, does not play a major role in either relationship. Other factors appear more important. My interpretations about the causal explanations for the various results could be the subject of further studies. For such a study, the specifications of the statistical models would then need to be streamlined to testing the plausibility of the respective speculations.
8 Conclusion and Recommendations

Deliberative democracy is among the most influential research fields in current political science. Scholars of deliberative democracy see a great potential for better political decision-making, when actors put a greater emphasis on the reasons that are provided for the respective decisions rather than focusing on private interests and voting of the decision-makers. New political institutions mushroom on various stages of political life that refer to the theory of deliberative democracy as the innovative theoretical foundation – some even explicitly. The field is very vibrant: Theoretical contributions provide new ways to boost the legitimacy of political decision-making. And empirical investigations challenge the theoretical preconceptions but also offer ways to adapt the theory in ways that are more consistent with the empirical results. This dissertation engages with a very dynamic field of research.

From this study, I can conclude that the question of how deliberative communication and interests interact is still far from being settled. Instead, I show that it is worthwhile to continue investigating this relationship. In the following paragraphs, I first provide a brief summary of what is covered in the previous chapters. I then put together the significant results of the analysis chapters and offer an overall assessment of these results. The summary is followed by a discussion on the limitations and shortcomings. Keeping the limitations in mind, there are a number of contributions to academia that provide further insights in the interpretation of the results from distinguished contributions. Some recommendations for further research are also made explicit here. I then formulate recommendations to policy makers and administrators that work with deliberative approaches in innovative institutions. These recommendations are based on the results presented in the above chapters.
Chapter 2: In a review of the literature, the absence of a strongly elaborated microfoundation for deliberative decision-making could be identified. In particular, studies of deliberation appear to blank out the role of private interests and their influence on deliberative communication. A satisfying explanation for how communication leads to various outcomes, especially when private interests are inherent in the subject of a decision-making process, could not be identified. Therefore I ask in this study: Does communication that comes close to the deliberative ideal positively affect decision-making and the outcomes of decision-making processes even if the subject-matter is pervaded by private interests?

Chapter 3: In search of a theory that provides potential explanations how the deliberative quality of communication might be able to affect decision-making outcomes, I revert to the works of Jürgen Habermas – particularly to the Theory of Communicative Action and the Discourse Ethics. There, the ideal of a rational discourse is spelled out and Habermas postulates that following the rules of rational discourse would ideally lead to better outcomes. A combination of these rules with specific literature from social psychology and behavioural economics provides potential causal explanations for the flow of information, for actual decisions, and for the participants’ assessment of these decisions to be a ‘rational consensus’. From these explanations ten hypotheses that are formulated for empirical examination could be derived. To what extent do these explanations find support in actual decision-making processes?

Chapter 4: The empirical strategy for testing the hypotheses derived from Habermas and the neighbouring research fields is based on a combination of experimental and observational methods under laboratory control. A purely experimental study might have been preferable but would have faced the problem that the variable of prime importance – the deliberative quality of communication – evades experimental control if one is not willing to substantially compromise on the complexity of the concept. This approach, in contrast, allows to actually scrutinise natural language deliberation in a decision-making process while holding the institutional context stable and exercising randomised control over the interests of the participants. Thus, I can present the use of an automated measure of deliberation and compare a large number
of negotiations that are based on an almost equal context. Only the randomly assigned preference constellations of the actors and the participants themselves are different. The data description provides first intuitions about the effects. Most strikingly, a large difference between decisions with and without communication in the four preference constellations can be observed. The decisions after communication correspond much stronger with the outcomes that I would expect from a deliberative process. Thus, this dependent variable is already skewed towards the positive result that I want to explain with the deliberative quality. This is not only the case for the decisions, but also for the indicators of the other dependent variables.

Chapters 5, 6, and 7: In the analysis, further investigations are made for establishing whether it is the deliberative quality of communication that leads to the desired results. Inferential statistics are used to elaborate on the explanatory power of the deliberative quality for the predictions of the sharing and processing of information, the actual decisions, and ‘rational consensus’. With hierarchical models, the explanatory power is assessed against the backdrop of interests – operationalised as four different preference constellations. In the following section, I give an overall assessment of the main results presented in the three analysis chapters.

8.1 Results

Throughout this dissertation the deliberative quality of communication is assessed in respect to the potential benefits it provides for the outcomes of decisions. I hypothesise that a higher deliberative quality leads to more sharing and processing of private information, to more cooperative outcomes, and to decisions that can be described as consensus decisions as they are the result of a process of autonomous will-formation. From Chapters 5 through 7, one outstanding conclusion can be drawn: none of the tested hypotheses gathered enough empirical support to be presented as a positive finding. Most of the results vary over the different preference constellations and over the indicators used to measure the deliberative quality. Furthermore, I cannot claim to have falsified any of the hypotheses either. Even though the number of cases is large
compared to other experimental studies, the statistical power is far from acceptable for a conclusion of that kind, as was shown in the causality section of the outcomes chapter.

A number of supportive results could be presented by looking at the participation indicator. It is in some specifications positively associated with the sharing of private information and with some participants’ expressed satisfaction. Some more positive associations could be found in the asymmetric games between the disadvantaged actors’ expressed satisfaction and their own justification and respect values as well as with their partners’ accommodation values. However, the effect size of the relationship between respect and satisfaction is too small for any meaningful impact.

Mainly negative correlations were found for information processing and higher values of deliberation. In fact, the only result in which the index is significant for the whole dataset is this negative association with the processing of information. This result is mainly drawn by the respect and accommodation indicators. In addition, high values of justification and accommodation were often detected in games in which the participants did not end in the cooperative solution – but only in two preference constellations (Prisoner’s Dilemma and Rambo-Fairness). Moreover, the Ricky players reported lower levels of satisfaction when they themselves produced higher values in these two indicators; both in the symmetric and in the asymmetric games – in which the Ricky players had a strategic advantage.

All the results just mentioned only appear in some specifications and under further conditions. Here is not the place to repeat all details – they are extensively covered in the analysis chapters. However, an overview is presented in Table 8.1 in which a number of specific conditions are marked. Is only one piece of private information significant? Are the results stable in the models with and without control variables? And does only the deliberative quality of one of the two participants make an impact?

In Chapter 6, I invest one section on the discussion of causality and find that the use of an Instrumental Variables approach puts in doubt any direct causal relationships between the deliberative quality and the decision of the participants. If one of
### 8.1 Results

#### Table 8.1: Overview of the Results

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<tr>
<th>Overall</th>
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<th>Justification</th>
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<th>Respect</th>
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**Note:** Overview of results from Chapters 5 through 7 as overall coefficients (above) and random slopes in the four preference constellations (H1 and H2 do not include random slopes in the respective models); °: no significant result was detected; +: a significant result confirming the hypothesis was detected; -: a significant result opposing the hypothesis was detected; symbols within brackets refer to results in models with control variables only; upper case letters refer to models and the dependent variables: D: model with the dishwasher information as dependent variable; S: model with the seminar topic information as dependent variable; SR: model with the satisfaction with the individual result as dependent variable; SP: model with the satisfaction as the participant as dependent variable; SI: model with the satisfaction index as dependent variable; C: model with Chris’ decision or satisfaction index value as dependent variable; R: model with Ricky’s decision or satisfaction index value as dependent variable; T1: model with the joint decision at the table as dependent variable; T2: model with the joint decision after returning to the PC-equipped workstation as dependent variable; lower case letters refer to explanatory variables: r: Ricky’s deliberation variable; c: Chris’ deliberation variable self of the respective speaker; p: the deliberation variable partner of the respective speaker; n.a.: the participation indicator was not included in the analysis.
the dependent variables is associated with the deliberative quality, this is most likely the effect of some unobserved confounding variable. The section only tests this in relation to Hypothesis H3 – the substantive outcomes hypothesis. The crucial result in this section is that the first stage does not exist. So there is some mismatch between the ideal of deliberative quality and the measurement that is supposed to capture this ideal on a continuous scale. Either the additional task description does not capture the ideal, the measure is not valid enough, or the level of deliberative quality cannot be manipulated as easily as was intended. Reasons for this inability to manipulate the deliberative quality could be that the ability of people to deliberate is fixed and part of their personality, that participants are unwilling or unable to follow their experimental instructions, or that an unobserved confounding variable affects the deliberative quality much stronger than the instrument. Apparently, I have to agree with Ugarriza and Nussio (2016) that “there is no pill for deliberation” – at least not yet.

Overall, at face value, the findings of this study are disillusioning, especially since the literature is full of examples how deliberation in deliberative polls and mini-publics produce very positive results. Unlike studies of Deliberation Day events, I am not looking at opinion change or knowledge gains but at the actual outcomes of a decision-making process in which the participants have to agree on a solution. Maybe under such prerequisites, deliberation is not as powerful as scholars in the field would like to assume. Another option might be that communication, and especially the language people use, is not the distinctive attribute of deliberation that leads to the expected (and observed) positive outcomes. If this is the case, this study stimulates a search for the identification of those attributes of deliberation that do lead to the expected benefits. The third option is that some flaws in this study prevented the discovery of an effect in the real world that should be found in an ideal research project. Such potential flaws are the topic of the limitation section.

Before, however, I present some further results that could be obtained in this study. In addition to the overall assessment that the effects of a deliberative quality of communication are diverse and in general not consistently in favour of the assumed positive outcomes, I want to highlight six interpretations of specific result patterns. In the fol-
8.1 Results

Following paragraphs, I intend to link those conclusions back to the results obtained from the experimental data – even if the data just stimulates a certain way of speculation.

1) A large number of participants arrive at the laboratory with a predisposed compromise orientation that might be the source of some spurious relationships between the deliberation and the outcome variables.

2) When participants are not sure that their partner is willing to compromise they try to avoid losing the game.

3) The level of disagreement is important for decision stability and for the processing of information.

4) Especially the dimensions of justification and accommodation are often instrumentally used as participants tend to adapt to the situation. This strategy often fails, however.

5) The interpretations of the results very often need to incorporate a growing level of frustration among some participants.

6) Participants are most satisfied when ‘winning the game’ at the table.

1) **Compromise Orientation:** When testing Hypotheses H3 and H6, I find that the cooperative solution at T0 is strongly associated with the joint decisions both at T1 and T2. I therefore suspect that participants think that they have to find a compromise because it is the right thing to do and they expect the other participant to behave in the same way. Thus, I suspect that they follow a social norm of cooperation. The highest probability to agree on the cooperative solution when both participants study on the BA level and the higher satisfaction of BA-students who are partnered with BA-students support this suspicion.

If such a norm really exists, this might also affect the other dependent variables and the deliberation indicators. Cooperation at T0 is significantly associated with Ricky’s decision to share the dishwasher information. In addition, the participation indicator has a larger (and significant) coefficient predicting the revealing of the dishwasher in-
formation when the control variables are included. In this model, the coefficient for the cooperation at T0 is also larger than in any of the other models. It is therefore safe to assume that some multicollinearity between those two variables exist. I suspect a form of compromise orientation to be the source of this spurious relationship.

The other side of the coin is provided by testing the information-processing hypothesis. A higher level of deliberative quality correlates with a lower probability of Chris processing the dishwasher information. If a compromise orientation is at work, the participant might not be willing to make the conflict more difficult and thus ignores the dishwasher information. The fact that the respect dimension is no longer significant when the cooperation at T0 is controlled for further substantiates this suspicion. Moreover, in the Rambo-Fairness game, I observe an interesting pattern concerning the decisions at T1 and T2 and the respect indicator. This pattern can be interpreted in such a way that not following such a cooperation norm also affects the decision as well as the deliberation indicator: Those Chris players who decided not to cooperate at T2 already made their intention clear at the table by using a large number of words with negative connotations. Whatever reason made them cooperate at T1 did not last until the decision point T2.

2) Risk Avoidance: There is a great difference between the Prisoner’s Dilemma and the Chicken game concerning the probability of cooperation before communication (T0). Even though there are further aspects in these constellations, I conclude that the average participant in this study follows a risk-avoidance logic: the strongest effect concerning the four preference constellations appears to be the avoidance of the worst outcome for at least some members of the subject pool. Even though this observation comes from testing Hypothesis H4, there are also signs towards that conclusion in the other decision hypotheses (H3, H6, H7 and H9). From the decision patterns, I suspect that those participants who reconsider their decision after returning to the PC only change their mind when they are reasonably sure that the negotiation partner behaves in a way that does not let them end with their worst outcome or when they fear defection of the partner that would lead them to their worst outcome if they continue cooperating. Considering the way how the decision patterns correlate with some of
the deliberation indicators, one can suspect that the participants update their beliefs of how the other participant might behave before taking their decision at T2.

3) **The Benefits of Disagreement:** In the above summary of the role of the deliberative quality, the *accommodation* indicator plays an important role. If accommodation is significant, the direction of the coefficient is almost always negative. When considering the theoretical implications of this dimension, these results are often hard to explain. It is however much easier to interpret the results when considering the actual indicator. *Accommodation* has lower values, when the number of disagreement speech acts goes up – in comparison to the number of agreement speech acts. Within the three analysis chapters, several results can be obtained that provide a positive effect of disagreement on the outcome variables: The sharing of information (of the Chris player) is positively affected by disagreement. So is the processing of both pieces of information. I argue that in a general atmosphere of disagreement the participants are more prone to scrutinise every new piece of information and utter their reflections. Moreover, the decision patterns are affected by disagreement; particularly the decision at the work station is affected. Especially the *Prisoner’s Dilemma* provides several such results. There, it is Ricky’s cooperation rate that is positively affected by more disagreement. And according to the results obtained from testing H9, I can specify even more that it is disagreement from Chris that leads to the higher probability of Ricky to stay true to the cooperative solution. In addition, each preference constellation contributes in one way or another to this conclusion.

4) **Instrumental Use of Justification and Accommodation:** When testing whether the level of the deliberation indicators depends on the role and thus on some strategic incentives (Hypothesis H5), I only find a significant interaction between the role and the gender of the participants. While women are not affected by the strategic (dis)advantage, male participants in the advantaged position show significantly higher levels of *justification*. On the other hand, disadvantaged male participants have the lowest levels of *justification*. The *justification* dimension is very particular in this respect. Although this result opposes the hypothesised direction, one can still conclude that at least men adapt their use of language to the strategic situation in this study.
There might indeed be a strategic incentive to use *justification* when assigned to the advantaged role. Further evidence for a strategic use is provided by patterns which include the decisions, the deliberative quality and the satisfaction values.

The decision at T1 in the *Prisoner’s Dilemma* only has one case in which a Chris player decides not to work already at the table. Here, the overall index as well as the *justification* and *accommodation* values of the Ricky player are among the highest values of all observations, leading to the quasi-significant random slopes. Undoubtedly, this observation provides a clear example of a participant who makes use of arguments and agreement speech acts unsuccessfully trying to sway a player to cooperate who refuses to do so at the negotiation table. Moreover, in the tests of Hypothesis H10, the *justification* and *accommodation* variables are sometimes associated with the satisfaction of the participants. The direction is generally negative. But these associations are no longer significant when the decision patterns are included in the models. The decision patterns then draw explanatory power from the deliberation variables, suggesting that a combination of those two affects the satisfaction. High values of *justification* and *accommodation* are often associated with low values of satisfaction, and a lower probability to agree on the cooperative solution. I argue that this indicates that participants try to react to the agenda and are less satisfied when they are unable to change their negotiation partner’s mind, even though they tried every argumentative solution they could think of.

5) **Frustration:** Throughout the analysis chapters, I use the participant’s frustration as an explanation for several results. When discussing the instrumental use of *justification* and *accommodation* I already point at the lower satisfaction values that are associated with higher levels of these deliberation indicators. Moreover, I also believe that further results can best be explained when frustration is considered. For example, the differences between the effects on the satisfaction levels of Ricky and Chris are suspected to be a result of the background stories, because the final exam is potentially considered to be a normatively superior reason by the Ricky players who are then dissatisfied when their reasons fail to make an impact. Chris players, in contrast, might not be as affected by this problem, because they might not relate as much to their rea-
son of having to plan the climbing holiday with the kids. This interpretation depends on counter-factual reasoning since all other explanations that are provided by the design of the study are not able to explain the difference between the values of Chris and Ricky.

I also suspect that those participants who come with a predisposed cooperation norm get frustrated from participants who try to use arguments and thus make the conflict apparent at the table. High levels of justification of one actor are able to frustrate the other actor. Such frustration can be the result of a mismatch between expectations and the interaction at the table. Some participants might follow a deliberative mindset according to which they are willing to let themselves be convinced by the better argument. But this search for the best argument might be interpreted as a means of furthering their own self-interests by the other participant. I suspect that many non-cooperative decisions at T2 are made due to such frustrations.

Further indications are provided by the satisfaction values and the control variables assessing the level and type of studies. Both BA students as well as economics students provide very distinctive patterns. I suspect that BA students are especially prone to expect a compromise solution and become frustrated if their experimental partner actually tries to solve the conflict by exchanging arguments – maybe also in order to gain their preferred outcome. Students of economics polarise as well. They are very satisfied when playing against each other but very often both partners are not satisfied when only one of them studies economics. These patterns can be explained if one assumes for the sake of the argument that economics students accept self-interest as a valid norm due to their acquaintance with game theory and strategic models. A participant with this mind-set might meet a person who is of the opinion that only cooperation is a valid solution, irrespective of the strategic situation they are assigned to. Such a mismatch of the participants’ expectations with the process at the negotiation table is probably reflected in the satisfaction values and the decision patterns.

6) Winning at the Table: Looking at the decision patterns, the most satisfied participants are those that cooperated without communication but managed to convince the other participant to work alone at the table so that they did not need to cooperate at T2
either. Participants who defect at T2 after cooperating at T1 are less satisfied overall but the least satisfied participants are those that are forced to cooperate at T2 because there is no joint cooperation at T1 due to the partner deciding not to work. The differences between the satisfaction values of the two roles has been discussed above.

There is a discrepancy among those participants that defect at T2 after having cooperated at T1. Participants in the advantaged position are less satisfied when defecting. I suspect that they have to deal with some bad conscience. In contrast, participants in the disadvantaged position are more satisfied when they do not continue cooperating at T2, which I interpret as being happy about winning the game against the odds of the strategic constellation.

Moreover, people who know each other tend to find the cooperative solution more often at T1. At T2, the effect is unstable. On the other hand, the satisfaction values of Ricky players are significantly lower when the two participants know each other. I assume that this is driven by a bad conscience of those few Ricky players who decide to defect at T2. Another interpretation could be, however, that the Ricky players consider themselves the losers of the game in the cooperative solution as they earn less than the Chris players. Since they know the other person they are not willing to play the Rambo role by forcing the other person to cooperate even though they decide not to.

Additional findings: In addition to the six main findings above, a number of further interesting observations about the control variables could be made. First of all, I look at the two roles. In many analyses, I split the models into replies by the Chris player and replies by the Ricky player. Hardly ever are the results the same for the two actors. In addition, when I suspect a difference to be the result of asymmetry, I often find in further investigations that the differences are driven from the symmetric games, in which there are no strategic reasons why the two roles should behave differently. Apparently the background stories differ to a large extent and unintentionally play a crucial role for the dependent variables.

The only gender effect that I can detect, apart from the interaction with the advantaged role, is provided by looking at the decision at T0: a male Ricky has a positive as-
8.1 Results

sociation with cooperation at T0 and this result is driven by the symmetric games. This also hints at an effect of the background story: due to the interaction of the two gender variables, this positive correlation only appears in games in which a male Ricky meets a female Chris. In such a constellation, male participants are apparently less likely to consider the provided reason – having to revise for a final exam – as justifiable enough for not taking the shift at the conference centre.

Considering the study subject, I find lower probabilities of politics students to find the cooperative solution, when testing Hypotheses H3 and H6. This is especially the case, when Ricky is a politics student. This correlation is stable at T1 and appears in most models at T2, even though at T2, the collinearity with accommodation renders the coefficient not significant. When testing Hypotheses H7 and H9, the most remarkable finding is that in the models in which only those cases are included that saw a cooperative solution at the table, politics students do no longer play a role. However, economics students do. They are negatively associated with the decision to continue cooperating when returning to the PC-equipped work station. I suspect that economics students continue considering the strategic constellation after the negotiation at the table and decide to defect, either to increase their personal gain or to avoid being played the sucker – depending on the preference constellation they are in and on how they suspect their experimental partner to behave. This pattern is only significant for Chris players, however. I suspect that the effect is the same for Ricky players but non-economy students tend to defect more often in the asymmetric games, so that the effect disappears. Politics students on the other hand tend to play out the strategic advantage already at the table and make use of their advantage already in the negotiation stage, which is why the decisions at T2 testing Hypotheses H3 and H6 are sometimes significantly correlated with politics students but the decisions at T2 testing Hypotheses H7 and H9 no longer are.

Finally, I have a look at the participants’ personality. Neuroticism played a role in Chapter 5: Ricky’s probability of sharing the dishwasher information decreases significantly the more emotionally stable this participant is. And higher levels of neuroticism among Chris players increased the probability that these participants processed the
8 Conclusion and Recommendations

dishwasher information. I suspect that emotional stability allows people to live with uncertainty so that they do not need to share all information in order to find out how the other participant might react to it. And it also allows to consider a piece of information without necessarily showing if one considers it relevant – which might be a strategic disadvantage.

Furthermore, when I look at the various hypotheses that use a decision at one of the decision points as dependent variable, I only find agreeableness to be relevant. The agreeableness value of the Chris player is positively associated with the joint decision to cooperate at T2. From Chapter 7 I find that it is mainly the agreeableness of the players themselves that makes them not to fall in the other participants back at T2 after having cooperated at T1. This finding does not differentiate between Ricky and Chris players. This finding is not really surprising but maybe noteworthy for those working with the NEO-FFI: people whose self-reported character is associated with altruism, goodwill and sympathy actually show higher cooperation rates in this experimental setting.

8.2 Limitations

This study does not provide evidence for the beneficial effects of a higher deliberative quality of communication that were predicted from theory. Rather, the findings allow the conclusion that deliberation in certain contexts can actually hinder collectively more valuable results from occurring. In this section, I discuss the impact of these findings on the theory of deliberation. What inferences can be drawn? What decisions and data peculiarities limit the reach of this study? And to what extent do I falsify the presuppositions about the impact of deliberation on information sharing, cooperation and consensus?

Design: There are a number of design decisions that I had to take and have justified in Chapter 4. However, these decisions might interfere with the scope of my findings. The very first point in question is the decision to use simulated conflicts in which par-
participants take a role that they are supposed to portray. I argue that in most political decision-making processes people also play a role and often do not act according to their own private interests. But how well are the participants in my study able to take up this role? And more important: if the ability to play a role varies over the participants, this ability might be one of the unobserved confounding variables that I discuss in Section 6.5. By using this research strategy, I can never really be sure how the financial incentives actually motivate or affect the participants. From experiments of the ultimatum game, it is common knowledge that the results are very similar no matter how high the stakes (Camerer 2003). But since there is no real comparison to similar studies in this case, I cannot be as confident.

Second, I mention in Chapter 2 that one important precondition for deliberation to occur is a certain level of initial ambiguity. Only when things are not clear is there a need for open coordination and a communicative process. Especially in the Prisoner’s Dilemma observations, many of the participants failed to identify this level of ambiguity, as can be judged from their comments in the post-experimental briefings with the facilitators of the experiments. Using Habermas’ term, cooperation in PD might be part of the common lifeworld of university students. If the financial incentives are not able to excavate the conflict from this “self-evident” cooperation norm, my intention of testing the effect of the deliberative quality of communication against the backdrop of private interests does not succeed.

A third point is the cooperative solution. I define the cooperative solution as the best solution, because it is either most fair or most efficient. However, according to the theory of communicative action, the best argument decides which solution one should take. I do provide some reasons for why the two participants have their preference orders. Maybe, two participants agree that for both the final exam carries such a strong normative weight that this is the best outcome and they therefore agree on a solution that is not the cooperative solution. In the analysis chapters of this dissertation, I cannot rule out that such cases exist. Yet, such cases would distort my interpretations of the results. To overcome this problem, a much more fine-grained analysis of a selected
number of observations could provide further insights. Such an analysis is however beyond the scope of this dissertation.

This leads to a final point of how the design might have problems to communicate with the theory. By inducing a preference order with financial incentives I act on the assumption that preferences are fixed. However, this assumption is problematic since most theorists in the field claim that the point of deliberation is the changing of preferences in the communicative process. In fact, Niemeyer (2011) finds that after a deliberative process, participants in his study change the preference order over a number of possible solutions to a political problem. This change comes from better aligning their preferences with their underlying interests or political convictions. For this reason combined with the above paragraph, the effect of deliberation might not be detectable in this study.

**Measurement:** When I look at the measurement of the deliberative quality of communication, I maintain that I examine the language that is being used by the participants. This limits the measurement of deliberation to the sender perspective. However, the receiver perspective – i.e. the preparedness to be convinced by better arguments – is not assessed. As can be derived from Naurin (2007), looking exclusively at the sender perspective runs into a great challenge of differentiating between deliberation and rhetoric action. And as McLaverty and Halpin (2008) argue, real deliberation is mainly defined by the intention of the communicating participants to find the best possible solution. The authors identify the level of trust within the group as the driving force of deliberation. Such approaches were not tested in this study. Thus it might be a good idea to take one step back from the deliberative ideal and look at the language measures in their own right. Assessing them against the ideal of deliberation might make it more difficult to find out what deliberative communication looks like empirically. So far, this question has been answered by a measurement theory. When trying to alleviate this problem, one has to be careful, however, not to fall into another trap of a circular argument in which deliberative communication gets defined as the type of communication that leads to the expected results. Once this dilemma is solved more
convincingly, it might be possible to better assess what a high deliberative quality of communication can achieve.

In this study, the measure of accommodation is particularly affected by this discussion. I find that a certain level of disagreement is needed for stable decisions. In Chapter 4, I discuss the agreement / disagreement indicator in that respect. There, I decide to consider a larger share of agreement speech acts to increase the level of deliberative accommodation. However, when considering the ideal of exchanging validity claims, a certain amount of disagreement is also important. Disagreement is important for finding more options while agreement or asking for agreement is important for finalising a joint decision. The indicator is maybe better placed somewhere between the theoretical dimensions of accommodation and justification. Naurin (2010) refers to a conference paper by Bora Kanra, where he argues that deliberation is split in two phases: ‘social-learning’ and ‘decision-making’. The accommodation indicator in this study would follow the deliberative ideal in opposing directions in these two phases. One could imagine measuring the deliberative quality over time, but this would mean that the two phases would have to be identified. This task is probably very challenging since one can expect the phases to alternate various times.

The measurement of deliberation in this study makes use of a toolbox provided by the VisArgue project. Because of the idea of creating an overall index that represents a continuum from a low to a high deliberative quality of communication only a small selection of the available measurement tools was selected. More tools are available, and all tools – including the ones I used in this study – only cover certain aspects of deliberation and can never provide a complete picture. Moreover, only a number of the available tools can span a theoretical dimension from a low to a high deliberative quality. If one breaks free from deliberation theory when measuring the communicative process, maybe some effects can be detected that remained invisible in the analysis of this dissertation. Such effects could then potentially be reintegrated into the theoretical framework.

Another challenge of using the VisArgue toolbox comes with the fact that so far, no other comparative studies have used these tools. Therefore, I cannot compare the
variances in my dataset. This leads to the problem that I do not know if the participants in this study had particularly high values or particularly low values. Especially since the variance does not have any reference point, I cannot be certain that I have a reasonable variation between deliberation values. If the variation were too small, it would be difficult to find large effects. Since I do find some effects, however, at least there is sufficient variation for the few conclusions that I could draw.

**Statistical Analysis:** Finally, I use inferential statistical methods in order to test my hypotheses. This is quite problematic, since the sample of participants is self-selected. However, significance tests, which do play an important role in assessing which patterns are important and noteworthy in this study, depend on random selection and aim at an answer to the question of whether one would expect the correlation in the data to be an effect that can be found in the population from which one draws the sample. Significance tests assess the probability of the finding being the product of mere chance in the sampling process. I therefore need to ask: to what population can I infer my results? University students would be the only group, but since I don’t have a random sample this is not accurate either. However, I argue throughout this thesis that my findings are meant to communicate with the theory in order to get closer to some causal relationship between the deliberative quality of communication and the various outcomes. I do need some standard for deciding which results actually present a finding and use significance tests to this end. In the next section, I will take on the discussion of what the results of this study mean for the theory of deliberation and what could be learned or should still be investigated in the future.

### 8.3 Contributions and Recommendations

In this study, the main finding is that the deliberative quality of communication has diverse effects, depending on the way deliberation is measured and in which context of preference constellations it is applied. This result makes clear, that many assumptions of the theory of deliberation are not as clearly justified as most researchers of deliberation would like to have it.
8.3 Contributions and Recommendations

In addition to this general finding, I can make a number of recommendations for future research and for the implementation of mini-publics and other fora that might benefit from more deliberation.

To Academia: In this study, I hold the institutional set-up constant. I observe only two participants who discuss a conflict. Facilitation is done by the recording system that allows only one person to speak at a time. The time for negotiation is fixed. Beyond this, the participants are left to themselves to choose any means in order to come up with a solution. These institutional settings do not vary. I do not find the positive effects that other deliberation research finds as was described in the literature chapter. Or rather, I do find higher cooperation levels after communication was allowed. I just cannot link these results to a higher level of a deliberative quality of communication – a task that few other authors intend to perform. Thus one counterfactual conclusion can be that institutions (or rather facilitation in form of mediation, assigning speaking time, and reminding people to stay polite and on the topic – like it is done in deliberative polls) might actually be a very important condition for deliberation to produce the positive outcomes that have been reported in the literature. Which institutional settings are the cause of what effects still deserves investigation.

Having said this, I still consider the lack of language measurement in deliberative polls and other mini-public studies problematic. As is apparent from Chapter 2, newer publications actually make an effort to observe the communication at such happenings, but the vigour of measuring and especially comparing the small-group discussions with each other is still lacking. It is therefore difficult to differentiate between the effects of deliberative behaviour and deliberative institutions. While McLaverty and Halpin (2008) claim that institutions do not matter once a deliberative drift occurs that is generated by increasing trust, I argue above that the institutional set-up might be the reason for the positive outcomes that could be detected before. No doubt, deliberation can happen by chance in any group, but as can be seen in my study, if a lot of justification meets a non-deliberative mind-set this rather leads to frustration and worse outcomes than could be obtained by two people who just assume that compromise is the only viable solution and therefore do not engage in a deliberative process.
Considering justification, one of my findings is that male participants who were randomly assigned the advantaged position tend to use a larger number of arguments at the negotiation table. This is an interesting finding as it coaligns with the conclusion by Naurin (2010) who claims that arguing is ‘most common when least important’. However, I interpret my finding differently: I claim that it is because they are in the more powerful situation that the advantaged actors perceive a need for justifying their position. They want the other side to understand and agree to their preferred solution rather than forcing them to accept it. This interpretation might also hold for Naurin’s study, where the delegates from bigger and older EU member states tend to use more arguing. They might perceive a need to put more effort into convincing the weaker states because in the long run, if the powerful states always get their preferred outcome, the weaker states might start questioning the union itself. Yet again, the higher level of justification could even in this context lead to more frustration since even if the better argument is decisive in a specific issue, if it was repeatedly brought forward by the more powerful states and supports their initial position, weaker states might feel side-lined or even caught in a normative entrapment. This in turn might encourage non-deliberative behaviour and a stronger focus on self-interests in order to break through a cycle of repeatedly relinquishing ones interests to the better argument.

In the theory chapter, I identify a bad conscience as one of the driving forces that binds the behaviour of deliberating people. In this study, I find that participants in the advantaged position that defect at T2 after having cooperated at T1 are less satisfied. I interpret this finding as a sign of bad conscience. I therefore conclude that a bad conscience does not always have enough power to bind people to the most reasonable solution if that means that they have to disregard their private gains. Maybe, this finding is the result of the artificiality of the experimental conflict setting.

In Chapter 4, I discuss the merits and potential pitfalls of automated measurement. In the analysis chapters, I realise that this quantitative assessment of the deliberative quality of communication does provide some significant results, but maybe the validity of the measures has to be put into question. I still consider the merits in form of reliable measures worthwhile to further engage in finding even better automated measures for
8.3 Contributions and Recommendations

other research contexts like deliberative polls and other mini-public studies as well. But one has to keep in mind that such quantitative measures might not be able to capture the qualitative validity of the best argument. Manual measures might do a better job, but it is very important to only accept very reliable measurements.

In this respect, I also want to repeat my claim that the use of an instrumental variables approach should be the way forward in order to assess causal effects of deliberative communication. Since I failed to find an instrument in which the first stage is valid, a need for finding a good instrument that correlates well with the measures of deliberation used in the respective studies becomes apparent. One has to keep in mind, however, that the use of instrumental variables requires a considerable number of cases, which might be problematic to achieve in smaller studies. But with the success of deliberative polls in actual policy-making and the rising frequency of Deliberation Day events, one might be able to implement this logic in the future.

**To Practitioners** When trying to derive some recommendations from the findings of this study to practitioners engaged in facilitating decision-making processes that might profit from deliberation, I first want to point out that a predisposed compromise orientation is not necessarily a common good orientation. I also claim that many participants in my study have most likely not been aware of this distinction. A common good orientation profits from deliberation, especially in terms of a lot of justification and most likely also from higher levels of disagreement. However, people who seek a compromise and consider this a social norm might get frustrated from the amount of conflict that is needed in deliberation. The hidden profile experiments clearly show how suboptimal solutions are most often selected, when everyone already agrees on a deficient outcome. And they show how difficult it is to overcome this tendency. Therefore, moderators or facilitators of discussion rounds, Deliberation Day events, or mini-publics with a decision-making component should facilitate conflict for its benefits of collectively better and more stable results. But they also play a vital role in putting this need for conflict in the context of a common-good seeking perspective. Otherwise, disagreement bears the potential to lead to frustration and might result in even worse outcomes than could be achieved by a simple compromise orientation.
I therefore recommend that facilitators – if they are present – or participants of a decision-making group use some time to frame conflict and disagreement as a positive means to achieve better results. Disagreement can of course be both a sign of a deliberative mind-set as well as a self-interested mind set. The biggest problem arises when a deliberative mind-set is perceived by other participants as instrumental and thus deprived of its potential to lead to a better solution. I consider this recommendation as particularly vital for civil-society organisations that already agree on the aims that they are striving for. They might be infected with a lot of compromise orientation already since they are fighting for a better world. Conflict might undermine their feel-good approach to decision-making. However, it might be necessary for workable solutions that actually are able to make an impact towards their predefined goals.

One more word to organisers of such Deliberation Day events that are actually used for policy-making or advice of political decision-makers such as in China or Mongolia (Fishkin et al. 2010; Fishkin 2018). Since there is no ‘decision-making’ phase in which accommodation moves to the forefront, one has to be very careful to avoid tendencies towards polarization that might multiply in the public. As most publications by deliberative poll researchers show, the moderated discussion groups do not tend to polarize. However, the hidden profile is particularly relevant for the ‘social-learning’ phase of deliberation that is singled out in Deliberation Day events. Moderators should facilitate information-sharing and especially information-processing. The most effective way to do so is to support statements that are only advocated by single participants (Stasser and Titus 2003). It is also important to make sure that disagreement arises. However, one has to be careful to put it into a common-good orientation perspective, as mentioned above, so that it does not lead to frustration or the unjustified suspicion of an interest-driven mind-set (when it actually is unjustified).

8.4 Future Research

This research endeavour failed to provide evidence that substantiates the claims that the deliberative quality of communication has a positive effect on a number of decision-
making outcomes. Thus, the hopes of those engaged with deliberation research suffer a potentially serious setback. The study can also not provide answers to many of the most important questions of the field. However, the data and analyses challenge many of the assumptions in the field, which have not been questioned so far. There is a need for theoretically providing a micro-foundation of the processes that are supposed to connect deliberation with the benefits that could be detected in previous research. And there is a need to find empirical support for such connections. If I did not manage to provide this evidence, I managed to show that the question of whether the assumptions of deliberation are justified is far from being settled. Future research needs to reconsider what role communication actually plays in deliberative processes, whether it engages with the normative promises, the systemic continuations of the theory, or just with empirical examinations of the effects of deliberation. The quest for the power of arguments is not completed here, it has just started to gather momentum.
Bibliography


Bibliography


Bibliography


Bibliography


Huang, Ronggui. 2018. RQDA: R-based Qualitative Data Analysis. R package version 0.3-1.


Bibliography


Bibliography


Bibliography


Bibliography


Pasek, Josh, with some assistance from Alex Tahk, some code modified from R-core; Additional contributions by Gene Culter, and Marcus Schwemmle. 2018. *weights: Weighting and Weighted Statistics*. R package version 0.90.


361
Bibliography


Appendix A: The Neutral Task Description

Aufgabenbeschreibung

Herzlich willkommen zu unserer Verhandlungsstudie. Ihre Teilnahme wird in etwa 90 Minuten in An- 
spruch nehmen. Sie werden im Laufe des Experiments mehrere Entscheidungen treffen. Ihre endgültige 
Bezahlung für die Teilnahme wird von einer der Entscheidungen abhängen, die Sie und Ihr Experimental-
partner / Ihre Experimentalpartnerin während des Experiments treffen.

Der Ablauf des Experiments sieht folgendermaßen aus:

- Ausfüllen eines Fragebogens (allgemein) am PC-Arbeitsplatz
- Durchlesen einer Konfliktgeschichte und Rollenbeschreibung ca. 30 Minuten
- Beantwortung einiger weiterer Fragen (bezogen auf den Konflikt) 30 Minuten
- Übernahme der beschriebenen Rolle und Position
- Verhandeln des Konflikts am Verhandlungstisch gemeinsame Einigung auf eine der vier möglichen Lösungen
- Rückkehr zum PC-Arbeitsplatz
- Ausfüllen eines Evaluationsfragebogens max. 30 Minuten
- Auszahlung (getrennt voneinander) im Beobachtungsraum

Um eine persönliche Interaktion mit Ihrem Experimentalpartner / Ihrer Experimentalpartnerin nach dem 
Experiment zu vermeiden, werden Sie in einem Abstand von mehreren Minuten aus dem Labor entlas-

den.

Die genaue Auszahlung hängt vom Ausgang des Experiments ab. Unabhängig davon, wie Sie sich ent-
scheiden, bekommen Sie eine Basiszahlung von 5,- € für Ihre Teilnahme. Dafür müssen Sie lediglich ein 
paar Regeln während des Experiments einhalten. Dazu gehören zwei entscheidende Dinge. Erstens sollen 
Sie und Ihr Experimentalpartner / Ihre Experimentalpartnerin ohne lange Schweigezeiten den Konflikt 
genau 30 Minuten lang besprechen. Außerdem müssen Sie darauf achten in Ihrer Rolle zu bleiben. Kom-
munikation über Themen die den Konflikt nicht betreffen, vor allem aber über die Auszahlungen, gelten 
as Bruch dieser Regel. Insbesondere gelten Referenzen auf die Spielanweisung als Aktionen außerhalb der 
Rolle.¹

Durch eine der Entscheidungen, die Sie und Ihr Experimentalpartner / Ihre Experimentalpartnerin treffen, 
können Sie noch maximal weitere 15,- € hinzu verdienen. Die genaue Höhe wird in der Konfliktbeschrei-
bung aufgeführt.

Ihnen stehen vier unterschiedliche Lösungen des Konflikts zur Verfügung. Diese ergeben sich daraus, 
dass sich beide Personen zwischen zwei Optionen entscheiden müssen, und das Ergebnis von beiden 
Entscheidungen abhängt. In der Verhandlung sollen Sie sich auf eine der vorgegebenen Lösungen einigen, 
und diese Lösung nach Ablauf der Verhandlungsdauer auf einem gemeinsamen Lösungsblatt festhalten. 
Erst wenn Sie dies getan haben, ist die Verhandlung beendet. Ihnen stehen für die Verhandlung genau 30 
Minuten zur Verfügung.²

Anschließend begeben Sie sich zurück zu Ihrem PC-Arbeitsplatz, um den Evaluationsfragebogen auszu-
füllen.

¹ Sollten Sie sich nicht an diese Regeln halten können, behalten wir uns vor die Basiszahlung zurückzubehalten.
² Sollten Sie sich in der vorgegebenen Zeit nicht auf eine Lösung einigen können, wird eine andere Entscheidung ausschlaggebend für 
Ihre Auszahlung sein.
Aufgabenbeschreibung

In der Rollenbeschreibung, die wir Ihnen nach dem ersten Fragebogen aushändigen, werden Ihnen einige Begründungen für und gegen Ihre vorgegebene Position gegeben, die Sie für die Diskussion nutzen können. Sie können aber auch darauf verzichten. Wir möchten Sie bitten, sich auf Ihren Rollenanweisungen Notizen zu machen, um während der Verhandlung alle Argumente auf einen Blick zur Verfügung zu haben. Dazu dürfen Sie die Rollenanweisung mit an den Verhandlungstisch nehmen. Nach dem Experiment dürfen Sie diese Notizen allerdings nicht behalten.

Beachten Sie bitte, dass Sie nicht stur an Ihre rollenspezifischen Vorgaben gebunden sind. Wenn Sie in einer Verhandlungssituation nicht wissen, wie Sie sich verhalten sollen, lassen Sie sich von Ihrer Einschätzung leiten. Wie würde die beschriebene Person in der entsprechenden Situation handeln? Wenn es Ihnen dazu nützlich erscheint, dürfen Sie glaubwürdige Tatsachen dazu erfinden. Bedenken Sie aber, dass sowohl Sie als auch Ihr Experimentalpartner / Ihre Experimentalpartnerin Informationen erhalten haben, die der/die Andere möglicherweise nicht hat. Sollte sich ein Widerspruch Ihrer Aussagen ergeben, lösen Sie diesen bitte innerhalb der Rolle, ohne auf die Spielanweisungen zurückzugreifen.

Es ist besonders wichtig, dass es keine Möglichkeit gibt, sich auf eine Lösung zu einigen, die nicht unter den vorgegebenen Lösungen zu finden ist. Dies betrifft vor allem eventuelle Zwischenlösungen, die sich im Gespräch anbieten könnten.
Appendix B: The Conflict Stories of PD and CH

Ricky - V1

Der Konflikt


Da die Organisatoren dieses Lehrgangs in Zukunft zweimal im Monat eine ähnliche Veranstaltung durchführen, gilt dieses Angebot für eine längerfristige Zusammenarbeit – allerdings nur unter der Voraussetzung, dass dieses Mal jemand fest für die kommende Sonntagsschicht zuständig ist. Ihr Chef würde das seinen Angestellten gerne ermöglichen. Sollte es zu einem langfristigen Angebot kommen, hat Ihr Chef Ihnen bereits zugesichert, dass Ihnen diese Schicht bevorzugt überlassen werden soll. Diese Möglichkeit, regelmäßig etwas dazu zu verdienen, wäre Ihnen sehr willkommen.

Sofern die Kooperation zustande kommt, wäre auch ein zweites Café in der Nähe des Gemeindesaals in dieses Angebot involviert, sodass dessen Angestellte die Hälfte der danach kommenden Schichten übernehmen würden. Der Chef dieses Cafés hat ebenfalls eine Person benannt, die gleichermaßen diese erste Schicht übernehmen könnte. Ihr/sein Name ist Chris* – Sie haben sich noch nie kennengelernt.

Sie sollen sich nun mit Chris kurz treffen, um zu besprechen, wer von Ihnen beiden Interesse hat, den Job im Gemeindesaal an diesem Sonntag zu übernehmen. Gerne dürfen Sie auch zu zweit arbeiten. Sollten Sie sich beide entschließen, am Sonntag den Kaffeeservice nicht anbieten zu wollen, werden die Organisatoren einen Catering Service beauftragen, der bereits ein Angebot für den gesamten Zeitraum der Veranstaltungsreihe gemacht hat.

Der Lehrgang dauert von 8.15 Uhr bis 13.00 Uhr, nach jeweils 1 Stunde sind 15 Minuten Kaffeepause eingeplant, deren Vor- und Nachbereitung ca. 15 Minuten benötigt. Dazwischen müssen keine Gäste betreut werden. Der Aufbau am Morgen wird ca. eine halbe Stunde in Anspruch nehmen. Zufällig hat Ihr Chef mitbekommen, dass dummerweise der Geschirrspüler vor Ort seit kurzem kaputt ist, weswegen zwischen den Kaffeepausen stets das benutzte Geschirr in einem der beiden Cafés gespült werden muss. Ihr Chef meint, dass das jeweils eine halbe Stunde dauern wird. Ob der Chef von Chris das mitbekommen hat, kann er Ihnen allerdings nicht sagen.

Ihre Position

Im nächsten Semester müssen Sie nur noch Ihre Bachelorarbeit erstellen und haben dadurch im Studium etwas mehr Zeit für Zusatzschichten. Da Sie nach der Bachelorarbeit vorhaben, ein paar Monate zu reisen, können Sie das zusätzliche Geld, das Sie mit dem Seminarcatering verdienen könnten, auch sehr gut brauchen.

Allerdings ist dieser Sonntag äußerst unpassend. Am Montag schreiben Sie Ihre letzte Klausur und am Sonntagvormittag ist die letzte Möglichkeit zur Vorbereitung, bevor Sie zur Nachmittagsschicht ins Café müssen. Möglicherweise lässt sich ein Teil davon auch erledigen, während das Seminar läuft.

Aber wenn Sie alleine arbeiten, und da der Geschirrspüler ja kaputt ist, wird dafür sicher keine Zeit übrig bleiben. Wenn Sie diese Klausur nicht bestehen, wird sich Ihr Studium verzögern, wodurch Sie im nächsten Semester keinen Vorteil von der zusätzlichen Verdienstmöglichkeit hätten. Sie verzichten deshalb lieber auf

*Alle Namen sind als Unisex Namen gewählt, damit Ihr Geschlecht als ExperimentalteilnehmerIn in der Anleitung nicht berücksichtigt werden muss.
die Möglichkeit, in den nächsten Monaten den Kaffeeservice zu betreiben, ehe Sie riskieren wegen einer nicht bestandenen Klausur noch ein Semester länger studieren zu müssen.

Wenn Sie zu zweit arbeiten, sollte jedoch genug Zeit sein, um wenigstens ein bisschen zu lernen, insbeson-
dere da das Geschirrholen dann nicht nur an Ihnen hängenbleibt. Somit sollte zumindest das Risiko, die Klausur nicht zu bestehen, abgewendet sein.

Bestimmt werden Sie sich aber dort nicht gut genug konzentrieren können, um eine wirklich gute No-te zu erreichen. Am besten wäre es daher, wenn Sie Chris dazu bringen könnten, die Schicht alleine zu übernehmen.

Ihr Chef hat bereits in Erfahrung gebracht, wie Chris über eine mögliche Regelung für Sonntag denkt. Chris möchte am wenigsten gern alleine arbeiten und würde generell auch auf die Möglichkeit verzichten, sich in den nächsten Monaten etwas dazu verdienen zu können. Zwar würde es für Chris in Frage kommen gemeinsam zu arbeiten, doch würde er/sie es bevorzugen, wenn Sie diese Schicht übernehmen.

Zusammenfassung

Zusammengefasst gibt es also vier Lösungen für den Konflikt:

A) Sie beide bestreiten den Kaffeeservice gemeinsam. Eine langfristige Zusammenarbeit mit den Veranstaltern kommt zustande.

B) Ricky macht den Kaffeeservice alleine. Eine langfristige Zusammenarbeit mit den Veranstaltern kommt zustande.


Ricky wäre Lösung C am liebsten, gefolgt von A, D und B. Chris wäre Lösung B am liebsten, gefolgt von A, D und C.

<table>
<thead>
<tr>
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Der Konflikt


Da die Organisatoren dieses Lehrgangs in Zukunft zweimal im Monat eine ähnliche Veranstaltung durchführen, gilt dieses Angebot für eine längerfristige Zusammenarbeit – allerdings nur unter der Voraussetzung, dass dieses Mal jemand fest für die kommende Sonntage gesagt zu haben. Ihr Chef würde das seinen Angestellten gerne ermöglichen. Sollte es zu einem langfristigen Angebot kommen, hat Ihr Chef Ihnen bereits zugesichert, dass Ihnen bevorzugt diese Schicht überlassen werden soll. Diese Möglichkeit, regelmäßig etwas dazu zu verdienen, wäre Ihnen sehr willkommen. Vor allem könnten Sie dadurch weiterhin Ihr Auto unterhalten und müssten es nicht, wie bisher befürchtet, aus Geldmangel verkaufen.

Sofern die Kooperation zustande kommt, wäre auch ein zweites Café in der Nähe des Gemeindesaals in dieses Angebot involviert, sodass dessen Angestellte die Hälfte der danach kommenden Schichten übernehmen würden. Der Chef dieses Cafés hat ebenfalls eine Person benannt, die gleichermaßen diese erste Schicht übernehmen könnte. Ihr/sein Name ist Ricky* – Sie haben sich noch nie kennengelernt.

Sie sollen sich nun mit Ricky kurz treffen, um zu besprechen, wer von Ihnen beiden Interesse hat, den Job im Gemeindesaal an diesem Sonntag zu übernehmen. Gerne dürfen Sie auch zu zwei arbeiten. Sollten Sie sich beide entschließen, am Sonntag den Kaféeservice nicht anbieten zu wollen, werden die Organisatoren einen Catering Service beauftragen, der bereits ein Angebot für den gesamten Zeitraum der Veranstaltungsreihe gemacht hat.

Der Lehrgang dauert von 8.15 Uhr bis 13.00 Uhr, nach jeweils 1 Stunde sind 15 Minuten Kaffeepause eingepflanzt, deren Vor- und Nachbereitung ca. 15 Minuten benötigt. Dazwischen müssen keine Gäste betreut werden. Der Aufbau am Morgen wird ca. eine halbe Stunde in Anspruch nehmen. Zufällig haben Sie im letzten DAV-Magazin von diesem Lehrgang gehört, und da er dieses Mal speziell für den Alpenverein ausgerichtet wird, könnte es für Sie interessant sein, den Vorträgen einfach so zuzuhören.

Ihre Position

Sie stehen am Ende Ihres Studiums und bekommen langsam zu spüren, dass das Geld nicht ganz ausreicht, um Ihr Auto zu finanzieren. Daher kommt Ihnen die Möglichkeit, sich in den nächsten Wochen ein weiteres Zubrot zu verdienen, sehr gelegen.


*Alle Namen sind als Unisex Namen gewählt, damit Ihr Geschlecht als ExperimentteilnehmerIn in der Anleitung nicht berücksichtigt werden muss.
Müssten Sie das Seminar alleine betreuen, hätten Sie sicherlich keine Zeit für die Routenplanung und müssten sie irgendwann in der Nacht mehr schlecht als recht machen. Gegenüber ihrer Klettergruppe wäre das unverantwortlich, daher kommt diese Option nicht in Frage. Da verzichten Sie lieber auf die Möglichkeit des Zuverdienst in den nächsten Monaten!

Sollte sich Ricky allerdings bereit erklären, mit Ihnen zusammen zu arbeiten, könnten Sie die Routenplanung wohl doch größtenteils zwischen den Seminarpausen erledigen. Damit hätten Sie zumindest vermieden, die ganze Nacht an der Planung der Routen sitzen zu müssen.

Dennoch würden Sie natürlich zu Hause und ohne die ständigen Unterbrechungen am saubersten planen können. Daher wäre es am besten, wenn Ricky sich bereit erklären würde, den Kaffeeservice im Gemeindesaal alleine zu übernehmen.

Ihr Chef konnte bereits in Erfahrung bringen, wie Ricky über eine mögliche Regelung für Sonntag denkt. Ricky würde es am liebsten, wenn Sie alleine arbeiten würden. Alternativ würde sie/er sich die Schicht auch mit Ihnen teilen. Doch ehe sie/er alleine arbeiten muss, würde sie/er lieber auf den zukünftigen Zuverdienst verzichten.

Zusammenfassung

Zusammengefasst gibt es also vier Lösungen für den Konflikt:

A) Sie beide bestreiten den Kaffeeservice gemeinsam. Eine langfristige Zusammenarbeit mit den Veranstaltern kommt zustande.

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Chris wäre Lösung B am liebsten, gefolgt von A, D und C. Ricky wäre Lösung C am liebsten, gefolgt von A, D und B.

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Sofern die Kooperation zustande kommt, wäre auch ein zweites Café in der Nähe des Gemeindesaals in dieses Angebot involviert, sodass dessen Angestellte die Hälfte der danach kommenden Schichten übernehmen würden. Der Chef dieses Cafés hat ebenfalls eine Person benannt, die gleichermaßen diese erste Schicht übernehmen könnte. Ihr/sein Name ist Chris∗ – Sie haben sich noch nie kennengelernt.

Sie sollen sich nun mit Chris kurz treffen, um zu besprechen, wer von Ihnen beiden Interesse hat, den Job im Gemeindesaal an diesem Sonntag zu übernehmen. Gerne dürfen Sie auch zu zweit arbeiten. Sollten Sie sich beide entschließen, am Sonntag den Kaffeeservice nicht anbieten zu wollen, werden die Organisatoren einen Catering Service beauftragen, der bereits ein Angebot für den gesamten Zeitraum der Veranstaltungsreihe gemacht hat.

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Ihre Position

Im nächsten Semester müssen Sie nur noch Ihre Bachelorarbeit erstellen und haben dadurch im Studium etwas mehr Zeit für Zusatzschichten. Da Sie nach der Bachelorarbeit vorhaben, ein paar Monate zu reisen, können Sie das zusätzliche Geld, das Sie mit dem Seminar Catering verdienen könnten, auch sehr gut brauchen.

Allerdings ist dieser Sonntag äußerst unpassend. Am Montag schreiben Sie Ihre letzte Klausur und am Sonntagvormittag ist die letzte Möglichkeit zur Vorbereitung, bevor Sie zur Nachmittagsschicht ins Café müssen. Möglicherweise lässt sich ein Teil davon auch erledigen, während das Seminar läuft.

Es ist keine Option, die Schicht komplett abzusagen. Den Zusatzverdienst könnten Sie hervorragend in die Reise investieren, die dadurch noch erheblich an Potential gewinnen würde. Deswegen wollten sie sich diese Möglichkeit nun auf keinen Fall mehr entgehen lassen.

∗Alle Namen sind als Unisex Namen gewählt, damit Ihr Geschlecht als ExperimentalteilnehmerIn in der Anleitung nicht berücksichtigt werden muss.
Da würden Sie noch eher alleine arbeiten. Die Klausurvorbereitung würde darunter zwar leiden, aber immerhin steht dann das zusätzliche Geld für den Urlaub in Aussicht.

Daher wäre es noch schlauer, die Schicht zusammen mit Chris zu bestreiten. Sie könnten Ihr Einkommen sichern und, da Sie und Chris sich beim Geschirrspülen abwechseln könnten, sollte zumindest genug Zeit sein, zwischen den Kaffeepausen noch halbwegs effektiv lernen zu können. Damit wäre das Risiko abgewendet, die Klausur nicht zu bestehen.

Am besten wäre es natürlich, wenn Sie Chris dazu bringen könnten, die Schicht alleine zu übernehmen. Sie könnten sich konzentriert auf die Klausur vorbereiten, und die Einkünfte aus den weiteren Lehrgängen wären sicher.

Ihr Chef hat bereits in Erfahrung gebracht, wie Chris über eine mögliche Regelung für Sonntag denkt. Chris möchte die Schicht möglichst nicht ausfallen lassen und würde daher notfalls auch alleine arbeiten. Etwas lieber würde er/sie mit Ihnen gemeinsam arbeiten, doch würde er/sie es bevorzugen, wenn Sie diese Schicht alleine übernehmen.

**Zusammenfassung**

Zusammengefasst gibt es also vier Lösungen für den Konflikt:

- **A)** Sie beide bestreiten den Kaffeeservice gemeinsam. Eine langfristige Zusammenarbeit mit den Veranstaltern kommt zustande.
- **C)** Chris macht den Kaffeeservice alleine. Eine langfristige Zusammenarbeit mit den Veranstaltern kommt zustande.

Ricky wäre Lösung C am liebsten, gefolgt von A, B und D.

Chris wäre Lösung B am liebsten, gefolgt von A, C und D.

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</table>
Der Konflikt

Ihr Name ist Chris*. Sie studieren Literaturwissenschaften im 6. Fachsemester, aber den größten Teil Ihrer Zeit arbeiten sie als Jugendleiter in der örtlichen Sektion des Alpenvereins. Seit ein paar Wochen helfen Sie nebenher noch im Altstadtcafé aus, um sich den Unterhalt für Ihr Auto zu verdienen, mit dem Sie regelmäßig in die Berge fahren. Nächsten Sonntag soll im angrenzenden Gemeindesaal am Vormittag ein Lehrgang stattfinden. Ihr Chef hat Ihnen heute mitgeteilt, dass die Organisatoren des Lehrgangs ihn gefragt haben, ob er möglicherweise Personal für den Kaffeeservice während der Veranstaltung zur Verfügung stellen könnte. Der Aufwand wäre für eine Person gut machbar, beim ersten Mal würden die Veranstalter jedoch auch zwei Personen bezahlen. Da Sie im Café die Nachmittagschicht haben und von Ihren Kollegen und Kolleginnen niemand an diesem Tag Zeit hat, hat Ihr Chef Sie gefragt, ob Sie bereit wären, diese Zusatzaufgabe zu übernehmen.

Da die Organisatoren dieses Lehrgangs in Zukunft zweimal im Monat eine ähnliche Veranstaltung durchführen, gilt dieses Angebot für eine längerfristige Zusammenarbeit – allerdings nur unter der Voraussetzung, dass dieses Mal jemand fest für die kommende Sonntagsschicht zusagt. Ihr Chef würde das seinen Angestellten gerne ermöglichen. Sollte es zu einem langfristigen Angebot kommen, hat Ihr Chef Ihnen bereits zugesichert, dass Ihnen bevorzugt diese Schicht überlassen werden soll. Diese Möglichkeit, regelmäßig etwas dazu zu verdienen, wäre Ihnen sehr willkommen. Vor allem könnten Sie dadurch weiterhin Ihr Auto unterhalten und müssten es nicht, wie bisher befürchtet, aus Geldmangel verkaufen.

Sofern die Kooperation zustande kommt, wäre auch ein zweites Café in der Nähe des Gemeindesaals in dieses Angebot involviert, sodass dessen Angestellte die Hälfte der danach kommenden Schichten übernehmen würden. Der Chef dieses Cafés hat ebenfalls eine Person benannt, die gleichermaßen diese erste Schicht übernehmen könnte. Ihr/sein Name ist Ricky* – Sie haben sich noch nie kennengelernt.

Sie sollen sich nun mit Ricky kurz treffen, um zu besprechen, wer von Ihnen beiden Interesse hat, den Job im Gemeindesaal an diesem Sonntag zu übernehmen. Gerne dürfen Sie auch zu zweit arbeiten. Sollten Sie sich beide entschließen, am Sonntag den Kaffeeservice nicht anbieten zu wollen, werden die Organisatoren einen Catering Service beauftragen, der bereits ein Angebot für den gesamten Zeitraum der Veranstaltungsreihe gemacht hat.

Der Lehrgang dauert von 8.15 Uhr bis 13.00 Uhr, nach jeweils 1 Stunde sind 15 Minuten Kaffeepause eingeplant, deren Vor- und Nachbereitung ca. 15 Minuten benötigt. Dazu müssen keine Gäste betreut werden. Der Aufbau am Morgen wird ca. eine halbe Stunde in Anspruch nehmen. Zufällig haben Sie im letzten DAV-Magazin von diesem Lehrgang gehört, und da er dieses Mal speziell für den Alpenverein ausgerichtet wird, könnte es für Sie interessant sein, den Vorträgen einfach so zuzuhören.

Ihre Position

Sie stehen am Ende Ihres Studiums und bekommen langsam zu spüren, dass das Geld nicht ganz ausreicht, um Ihr Auto zu finanzieren. Daher kommt Ihnen die Möglichkeit, sich in den nächsten Wochen ein weiteres Zubrot zu verdienen, sehr gelegen.


*Alle Namen sind als Unisex Namen gewählt, damit Ihr Geschlecht als ExperimentalteilnehmerIn in der Anleitung nicht berücksichtigt werden muss.
Es ist dennoch keine Option, die Schicht komplett abzusagen. Mit dem regelmäßigen Zusatzverdienst könnten sie zumindest den steigenden Benzinpreis abfedern, deswegen wollten Sie sich diese Möglichkeit nun auf keinen Fall mehr entgehen lassen.

Daher würden Sie die Schicht eher noch alleine bestreiten. Die Routenplanung müsste zwar dann in der Nacht erledigt werden, aber zumindest wäre der Unterhalt des Autos gesichert, da Sie in Zukunft mit dem Zusatzverdienst rechnen könnten.

Sollte sich Ricky allerdings bereit erklären, mit Ihnen zusammen zu arbeiten, könnten Sie die Routenplanung wohl doch größtenteils zwischen den Seminarpausen erledigen. Damit hätten Sie zumindest vermieden, die ganze Nacht an der Planung der Routen sitzen zu müssen.

Dennoch würden Sie natürlich zu Hause und ohne die ständigen Unterbrechungen am saubersten planen können. Daher wäre es am besten, wenn Ricky sich bereit erklären würde, den Kaffeeservice im Gemeindesaal alleine zu übernehmen.

Ihr Chef hat bereits in Erfahrung gebracht, wie Ricky über eine mögliche Regelung für Sonntag denkt. Ricky möchte ebenso die Schicht möglichst nicht ausfallen lassen und würde daher notfalls auch alleine arbeiten. Etwas lieber würde er/sie mit Ihnen gemeinsam arbeiten, doch würde er/sie es bevorzugen, wenn Sie diese Schicht alleine übernehmen.

Zusammenfassung

Zusammengefasst gibt es also vier Lösungen für den Konflikt:

A) Sie beide bestreiten den Kaffeeservice gemeinsam. Eine langfristige Zusammenarbeit mit den Veranstaltern kommt zustande.

B) Ricky macht den Kaffeeservice alleine. Eine langfristige Zusammenarbeit mit den Veranstaltern kommt zustande.


Chris wäre Lösung B am liebsten, gefolgt von A, C und D.
Ricky wäre Lösung C am liebsten, gefolgt von A, B und D.

<table>
<thead>
<tr>
<th>Lösung</th>
<th>Sie</th>
<th>Ihr Partner / Ihre Partnerin</th>
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<tbody>
<tr>
<td></td>
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