DISSERTATION

Titel der Dissertation

„A Matter of Trust: Keeping Promises in Negotiations"

Verfasser

MMag. Günther Kainz

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Danksagung

Eine Dissertation ist ein Projekt, dass mit einer wagen Idee beginnt, sich im Zeitverlauf konkretisiert und schließlich eine Form wie dieses Endprodukt annimmt. Zahlreiche Menschen haben mich auf diesem Weg begleitet und haben dabei direkt und indirekt zu diesem Ergebnis beigetragen. Für die Unterstützung in allen Lebenslagen möchte ich mich zu allererst bei meiner Familie bedanken, insbesondere bei meinen Eltern, Hermine und Josef Kainz, bei meinem Bruder, Herbert Kainz, und bei meinen Großeltern, Maria und Wilhelm Felsberger.

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Declaration

The work in this dissertation is based on research carried out at the Chair for Organization and Planning of the Department of Business Administration, Faculty of Business, Economics, and Statistics, at the University of Vienna (Austria). No part of this dissertation has been submitted elsewhere for any other degree or qualification and it is all my own work unless referenced to the contrary in the text.

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LIST OF ABBREVIATIONS

SVO	…..	Social Value Orientation Slider
SPM	…..	Social Preference Measurement
S(e)	…..	Sender
R(e)	…..	Receiver
i	…..	Investement
r	…..	Return
SoSe	…..	Social Sender
SoRe	…..	Social Receiver
EgSe	…..	Egoistic Sender
EgRe	…..	Egoistic Receiver
II	…..	Integrative Information
IA	…..	Integrative Action
DI	…..	Distributive Information
DA	…..	Distributive Action
PM	…..	Process Management
KW	…..	Kruskal-Wallis-H test
r_S	…..	Spearman Correlation

1 INTRODUCTION

A man is well holp[1] up that trusts to you.

—Shakespeare,

The Comedy of Errors

Cooperative behavior is usually examined by observing participants' decisions in a laboratory or in field experiments. Van den Assem, Van Dolder, and Thaler (2012) recently investigated cooperative behavior in a natural experiment by using data from the British TV show "Golden balls". In this show two contestants play for a jackpot in the final round in a variant of the well-known prisoner's dilemma. Each contestant receives two golden balls. One of the balls says "split" and the other says "steal" on the inside. The two contestants then simultaneously decide which ball they want to play. "If both choose split, they share the jackpot equally. If one chooses split and the other chooses steal, the contestant who steals takes the whole jackpot and the other gets nothing. If they both choose steal both go home empty-handed" (Van den Assen et al, 2012: p. 5). Unlike the traditional prisoner's dilemma where the participants take their decisions separately from each other, contestants meet face-to-face and are allowed to communicate for a brief period before they take their actual decisions. In this discussion period the contestants can make non-binding promises. This is an attempt to get assurances of cooperative behavior, which can be described as cheap talk. Moreover, they can evaluate the other party by asking about intentions and assess the credibility and reliability of their spoken words by interpreting body language and facial expressions. The major findings are that 53% of the contestants (*N*=574) opt for the cooperative option "split", when the stakes are relatively high compared to most experiments (Van den Assen et al, 2012).

A dilemma situation such as the one described above does not only occur in game shows; such situations can be observed daily in many social interactions and business transactions. People can be willing to change the outcome of a prior agreement for various reasons. For example, one can be caught by surprise during negotiations and subsequently be willing to improve the terms of an agreement in order to be better off in terms of individual outcome. While there is a doctrine of *pacta sunt servanda* in European contract law, entailing that contracts or agreements should be kept as settled before, in other cultures breach of agreements are common without moral scruples, if there is the opportunity to be personally better off (Weller, 2009). If people use any additional possibilities to alter an agreement in their own favor and thereby do not keep prior promises, trust between the

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[1] Shakespeare wrote these words between 1589 and 1594. The word '*holp*' is archaic for the modern '*help*' (Nowak and Highfield, 2011, p. 192).

interacting partners is destroyed. Trust is an essential component of every business transaction and it reduces transaction costs (Arrow, 1972). Trust is a key concept for close relationships but also for organizations and among business colleagues.[2] Trust also helps to suppress opportunistic behavior (Williamson, 1993). Communication obviously increases cooperation levels in respect to shown trust and trustworthiness (e.g. Sally, 1995; Ostrom, 2003; Balliet, 2010).

The described situation of the TV show has many analogies in business and hence the topic is relevant for management. Relying on other people and keeping promises are important trust principles for organizations. While people often cooperate in matter of common interests, sometimes they prefer to pursue individual interests. Therefore organizations need mechanism promoting cooperative behavior among its members. Trust is one of these mechanisms known for helping to promote efficiency in organizations; it makes all business parties better off. (Mishra, 1996). Already in hiring process an atmosphere of mutual trust and trustworthiness is essential for the final decision on offering and accepting a job. Also organizational members with more trust in the decision-making process are more satisfied (Driscoll, 1978). However, taking the decision to trust always involves risk. This means that risk-taking decisions and agreements are necessary in order to expect benefit in return. For example, bank or venture capital company loaning money or an individual buying company stocks take risk by trusting the counterpart in expectation that the results will be beneficial for both parties.

There are a various mechanisms which mitigate the risk in business and exchange interactions. In the context of face-to-face communication trustor who place trust (negotiator) can assess the trustworthiness of the other party by asking questions. Also the information regarding the past behavior of the trustee (negotiators who honor trust) can help to assess his/her trustworthiness. In contrast, trustee who honors trust can provide assurance of trustworthiness by handshake, looking in the other's eyes or offering promises (Ben-Ner et al, 2011). Experimental studies demonstrate that communication, despite the possible social pressure involved, also allows for promises to be made. For instance, Servatka et al (2011) demonstrated in their study that "words speak louder than money", entailing that promises to return higher amounts imply higher investments. Thus, it makes sense to observe promises in experiments through the whole bargaining process, since the communication content can also affect actual decisions (Mohlin and Johannesson, 2008).

Communication is also allowed in the final round of the TV show "Golden balls", just before contestants choose either the "split" or "steal" ball. Moreover, the producers of this TV show care about the contestants' characters during recruitment in order to present the viewers with an exciting mix of different people (Van den Assen et al, 2012). Individual differences matter and make the game show more interesting. Contestants are thus chosen

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[2] Trust often develops in the context of relationships between two independent individuals, and in social psychology it is sometimes considered as dispositional variable (Holmes and Rempel, 1989).

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according to individual differences established by asking personality related questions and by observing their behavior in screen tests. In general, individual differences could be based on socio-demographic factors, such as age, gender, and ethnicity or on personality-related factors, such as attitudes, orientations and motivations. Social motivation stands out as a basic difference between individuals and literature provides a multitude of questionnaires that purpose to ascertain differences in social motivation. These social motivations can be investigated either with a 'social preference' questionnaire, as found in economic literature (e.g. Daruvala, 2010) or with a 'social value orientation' questionnaire, as used in psychological literature (e.g. Murphy, et al 2011).

The main question we want to address is whether people with different social motivations show different trust behavior when they are given an option to communicate. In other words, we want to know if and how social-minded and egoistic people differ in the level of trust and trustworthiness displayed in the context of strategic interactions. In particular we are interested in trust behavior under conditions when communication is allowed and where an option of overriding the agreement is provided. In more detail the research question can be broken down into the following three sub-questions:

(1) How do individual differences in social motivations influence the trust behavior in the context of face-to-face negotiations?
(2) How does communication content (negotiation strategies used) affect the actual decisions?
(3) How do individual differences in social motivations and the face-to-face negotiations influence the trust behavior in the presence of an option to override the achieved agreement?

To answer the research questions we aim to combine the perspectives of various fields of research. Thus, we integrate ideas from economics, negotiation and decision-making sciences, sociology, and psychology. The issue of trust plays an important role in all these fields and the nature of this research can be characterized as explorative and descriptive. One promising method for exploring and explaining trust behavior is a laboratory experiment. As every new observation brings us closer to reality (Blackburn, 2005), we see our task as contributing to the understanding of trust behavior by performing an experiment. Our experiment has a mixed design from the methodological perspective. The strategy for data collection is complemented with content analysis. Other ways of shedding light on these questions would include investigating each of the methods by itself, analyzing case studies or conducting field experiments. The advantages of a laboratory experiment are that it allows us to test cooperative behavior, and that it allows for controlled manipulations and the 'money reward' or incentive structure. Triangulation (Fick, 2009), which is the combination of questionnaire and experiment method, is an advantage, by, for instance, allowing the analysis to integrate quantitative data from actual decisions and qualitative data from the bargaining process.

One of the "working horses" in the economic research of trust behavior is the 'trust game' (Berg et al, 1995). It is an important experimental tool for measuring trust and trustworthiness. The traditional 'trust game' works as follows: someone is given a little money and has the option of giving some of it to another person. Whatever the first-mover gives, the invisible hand of the experimenter will multiply it by a factor of three. Afterwards the other person (the second-mover) decides how much to return to the first-mover. This arrangement is known as a 'trust game', or sometimes also called 'investment game'. The purpose of this economic game is to model human exchanges that are trust-based and not forced by contracts (Krueger et al, 2008). The traditional 'trust games' are performed in laboratories with anonymous partner who take decisions on computers.

While in economic research 'trust games' are usually conducted in anonymous settings, in other fields of research communication is seen as a vital tool for promoting trust behavior (Sally, 1995; Balliet, 2010). In negotiation science, for instance, communication (negotiations) is considered important in order to coordinate and solve dilemma situations and conflicts (Pruitt and Rubin, 1986; Lewicki et al, 1999). Since individual differences and communication matter (e.g. Ho, 2012), we extend the premises of the 'trust game' and enrich it with a real world setting. However, it needs to be assured that participants do not know each other in advance. After the face-to-face negotiations participants finally provide some information how they experienced their interaction partner by assessing the satisfaction level.
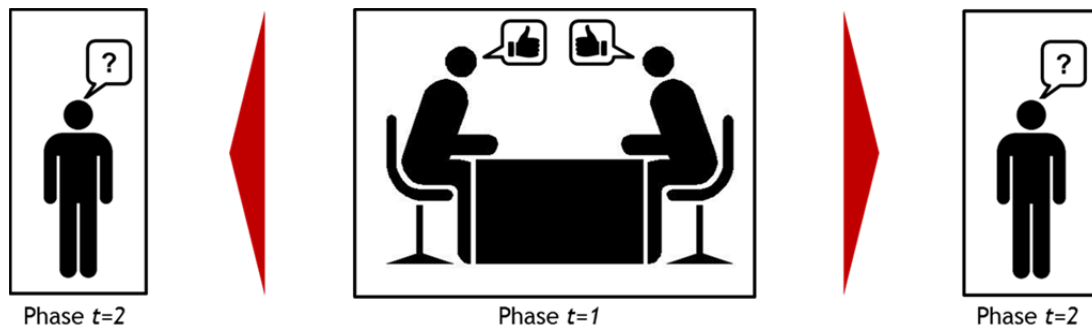
Figure 1: Illustration of the trust game negotiation phases

In our experimental research we emphasize the impact of participants' individual differences in social motivations on the trust-cooperation connection and the role of communication in sustaining trust. The question is whether cooperation remains stable or breaks down, when there is an option to change the outcome. This is our main objective and theoretical contribution. As illustrated in Figure 1, there are two phases to consider. The first phase in the experiment is characterized by face-to-face communication and agreements are reached bilaterally. The second phase presents the overriding option, which allows changing the settled agreement unilaterally. Use of this overriding option is communicated after a time lag via email. Concerning individual differences people are basically different

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in terms of their social motivation. But attitudes towards the interaction partner are also strongly influenced by context. Due to the contextual factor of our experiment, participants are also able to "size up" the character (type) of the other party. When the type of person one interacts matters, then it may influence trust and trustworthiness and may also have an impact on whether participants adhere or deviate from settled agreements.

In order to highlight the effect of individual differences, we screen the participants based on pre-questionnaires and pair them according to individual differences in social motivations. We allow participants to meet in a face-to-face negotiation and bargain about their personal decisions (for a period for up to 15 minutes). Finally, we offer participants an option to override the decisions they have taken and change the agreement unilaterally. These methodological contributions enable insight into the combination and correspondence of pre-questionnaire and experiment. We contribute to both lines of research by means of enriching the traditional economic 'trust game' with the mechanism of communication in the negotiation context. Negotiations require at least two parties who have conflicting interests and where communication is possible. Parties make offers and counteroffers and these offers determine outcomes when they are accepted by both parties (Thompson, 1990). Therefore we describe our experimental design as *trust game negotiations*.[3]

The remainder of this dissertation is structured as follows. In section [2] we present a literature review discussing aspects facilitating cooperation; (a) in economics, when people go beyond self-interest in their social preferences, in psychology we look at social value orientation, and in negotiation sciences we consider the dual concern model, (b) when people care about trust, and (c) when people communicate in a strategic interaction situation. In Section [3] we deepen the research questions by investigating the research gap, the contributions, predictions, and our hypotheses in detail. Section [4] outlines the design of the experiment and questionnaires, the procedures of how the research was conducted and describes the process for content analysis. Results are presented in section [5] and discussed in section [6]. These chapters are subdivided into sections for (a) the effect of face-to-face communication, (b) the impact of the communication content, and (c) the link between attitude and behavior. Finally we present some limitations, implications, further research ideas, and give a short conclusion of the trust game negotiations.

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[3] The term *trust game negotiations* is self-invented by integrating 'trust game' (Berg et al, 1995) and 'negotiation'.

2 LITERATURE

How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render his happiness necessary to him, though he derives nothing from it except the pleasure of seeing it.

—Adam Smith,

The Theory of Moral Sentiments (1759/1976: p.9)

The phenomenon of cooperation is strongly connected with considerations about fairness and reciprocity and is mediated by factors such as trust, individual differences in social motivations, and communication. While the status quo is that trust promotes social cohesion, we should not forget that trust can have both positive and negative consequences. On the one hand, trust can be considered the lubricant of society, making interactions run more smoothly and/or reducing transaction costs (Yamagishi, 1995). On the other hand, mistrust and breach of trust are also ubiquitous in daily life. Unlike Skinner (1953), who reduces trust to simple stimulus and response, we consider trust as a behavior (Coleman, 1990) and take into account that human decisions, such as showing trust or honoring trust, are affected by different motivations. Besides motivations there are obviously many other factors that influence decisions, such as values, needs, situational constraints, attitudes, intentions, or emotions. Usually, rational choice theory explains economic choices and behavior. Like Becker (1981)[4], who was not satisfied with this narrow concept of economic choices which people make, we try to incorporate the sentiments people attach to such choices, or, in particular, the social motivations that drive them. Becker (1981) argued that a person who might be purely selfish in business could still be exceedingly altruistic among people he/she knew – although, importantly, Becker (1981) predicted that altruism even within family and friends would have a strategic element.

We attempt to get access to the information processor (black box) by distinguishing between different decision-makers' motivations and thus integrating psychological aspects into the experiment. Therefore, the motivations behind maximizing gain or payoff for oneself, the other or both can be seen as antecedents of trust decisions and behavior. Concerning social motivations (hereafter used as a generic term), we combine the concept of 'social preferences' (e.g. Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000) as found in economic literature, and 'social value orientation' (e.g. Liebrand, 1984; Murphy et al, 2011) as discussed in psychological literature. In this context – and for all sorts of social decisions – understanding others is crucial, but it is particularly important for trust decisions and behavior. A good opportunity for learning about or assessing the character of

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[4] Gary Becker was awarded the 'Nobel Memorial Prize in Economic Sciences' in 1992.

another is through communication. According to Bowles and Ginits (2011) all forms of communication can considerably increase the contributions in decision-making experiments, compared to anonymous settings. Communication can help in evaluating both the intentions of the interaction partner as well as one's own. This synchronization might not only help us to understand others, but can also increase social cohesion.

According to Nobel Prize laureate for Economics Ostrom (2003)[5] trust is the key link in the communication-cooperation connection. Trust may be mediated by social preferences and social value orientation, while social motivation may promote trust further. Trust as a social capital may be signaled intentionally or unintentionally through the communication process, allowing shared interests to develop. Our objective is to explain the impact of individual differences in social motivations on the negotiation process and the outcome. Our literature review thus requires us to consider several fields, like trust, social preferences, social value orientations, negotiation, and communication. The relevance of this interplay between several fields has also been demonstrated by Nobel Prize laureates for Economics Kahneman (who is a psychologist) and Tversky (1979)[6]. Psychology and sociology have come to play an important role in experimental and behavioral economic analysis. Experimental and behavioral economics have contributed substantially, applying the method of laboratory experiments, which have the benefit of controlled conditions. As our research is attempting to bridge the gap between different fields it can be described as interdisciplinary. We use the 'trust game' from the experimental games offered in Berg et al (1995) to shed light on trust behavior and its potential abuse.

This literature review demonstrates the importance of the phenomenon of trust, of individual differences in social motivations, and of the coordination role of communication. First we raise the question of why we should care about trust. Here we define the concepts of trust, distrust (mistrust), and reciprocity. Furthermore, we stress that the main benefit of trust behavior is its capacity to promote cooperation. We then focus extensively on the question of why people go beyond self-interest. Here we provide answers from three different perspectives. From the economic perspective, we point at the development of social preferences. Although different social preference models exist, we stress in particular the model of Fehr and Schmidt (1999). From the psychological perspective, we describe the path "from helping to social value orientations", and from the perspective of negotiation sciences, we emphasize the dual concern model (Pruitt and Rubin, 1986) for solving dilemma situations. Finally, we concentrate on the question of why communication promotes cooperation.

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[5] Elinor Ostrom was awarded the 'Nobel Memorial Prize in Economic Sciences' in 2009.

[6] Daniel Kahneman and Amos Tversky were awarded the 'Nobel Memorial Prize in Economic Sciences' in 2002.

2.1 THE PHENOMENON OF TRUST

Research on trust, trustworthiness, and reciprocity reveals much about human nature. Accordingly, this phenomenon has been studied extensively in the last decades (e.g. meta-analysis by Ebert, 2009). Contributions have been collected from various fields such as sociology, psychology and economics. We follow Coleman's (1990) definition; trust is not just a belief or attitude but a behavior[7], where trust is driven by expectations of trustworthiness. While trust is the expectation that individuals have about the behavior of others, trustworthiness is a reliable trait signaling that the trust placed in others is honored and not abused (Kreps, 1990). The norm of reciprocity is the answer to trust, which is established when individuals learn from socialization and experience (Nowak and Sigmund, 1998, 2005). From literature and practice we know that people tend to trust others (e.g. entrusting financial assets to investors who are not personally known). But people do not necessarily reciprocate trust with trustworthiness (e.g. sometimes promises and commitments are not kept due, for instance, to new options that arise and make keeping the promise less attractive). Thus, while dealing with the positive expectations afforded to the behavior of others, we also consider the inherent vulnerability in trust; the risk of being exploited. When trust is exploited in an economic exchange, the lack of trust leads to lower wealth creation, according to empirical data analysis (La Porta et al, 1997). Therefore, because it makes interactions run more smoothly, trust is considered an important social component in every relationship (Yamagishi, 1995). People sometimes face difficult decisions when assessing whether to trust another person or not, in particular when placing trust in strangers and in online environments (Fetchenhauer and Dunning, 2009).

2.1.1 THE IMPORTANCE OF TRUST

Trust towards other people and reciprocity in form of trustworthiness are important aspects of daily life. For instance, in large cities such as Vienna, lost wallets are sometimes returned with the cash still inside, and the vast majority of contracts are fulfilled, even though they are not fully specified. Therefore, trust and reciprocity are also seen as important elements of economic life. According to existing research results (e.g. Lewicki et al, 1998) higher levels of trust in economic interactions (negotiations) leads to better problem solving, increases efficiency in organizations, and leads to better results (Mishra, 1996). Thus, trust, trustworthiness, and reciprocity are important phenomena, since they facilitate economic transactions by eliminating costly expenditures for checks and monitoring performances. In addition, compliance with a business agreement does not have to

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[7] The focus is on behavioral trust because we observe participants' behavior in the trust game negotiations research.

be enforced by courts on every occasion. Knack and Keefer (1997) showed, for instance, a correlation between higher trust and high GDP per capita using data from several states. Consequently, trust, trustworthiness, and reciprocity can be seen as a social capital which is beneficial both on the micro-level to individuals, or two- or three-actor systems, and on the macro-level to the society at large involving large numbers of individuals (Coleman, 1990).

The relevance and importance of trust is highlighted in several studies. Guiso et al (2004) found out that in countries or in specific areas exhibiting high trust, households are more likely to invest less in cash and more in stocks and they have better access to institutional credit, and make less use of informal credit. Other studies concentrate on the influence of trust on economic performance (e.g. La Porta et al, 1997; Knack and Keefer, 1997). The point here is that a larger share of trusting people in a certain population leads to higher GDP growth rates (Knack and Keefer, 1997) and lowers the inflation rate across countries (La Porta et al, 1997). Zak and Knack (2001) demonstrate in their study that countries with a higher proportion of trustworthy people are more prosperous. Wealth is created because more economic transactions occur but in their empirical analysis, there is also less poverty. Thus, it seems comprehensible that the more trust there is in an economic exchange, the more wealth is created.

Arrow (1972) points out that an element of trust can be found in every business transaction. Thus, trust plays a role in organizations and markets besides friendship and families and "in most societies trust is supported by institutions and social arrangements that monitors the actions of others …" (Wilson and Eckel, 2006: p. 189). In contrast to private relationships, where people know and acknowledge each other, people in business transactions or economic exchanges are usually strangers. For instance, the absence of trust among trading partners would lead to severe constraints in market transactions. Therefore, also economists have a reason to care about trust because by "greasing the wheels of commerce" trust has the potential to reduce transaction costs. The reduction of costs is a critical element that facilitates economic interactions. In any case, traditional economic models do not take trust into account. In these models the breach of trust (abuse of trust) is classified as a moral hazard or opportunistic behavior and adverse selection due to asymmetric information distribution (like between seller and buyer) (Williamson, 1993).

According to traditional economics, people should not trust others. Moreover, people should never expect their trust to be reciprocated (Fetchenhauer and Dunning, 2009). This argument refers to a long philosophical tradition dating back to Socrates and Plato, which can also be found in Machiavelli's "The Prince" and Hobbes' "Leviathan". The core argument states that people should trust only when it is also in the self-interest of the other person being trusted to respond in a mutually rewarding manner, such as when trustworthiness is forced or when the failure of such a response is possibly subject to punishment (Williamson, 1993). However, the everyday experience is different because people trust others quite often. People trust even when there is no guarantee or certainty for a beneficial response. Therefore, micro-level trust implies that trust is a risky choice.

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Risk and interdependence are necessary conditions for trust in bilateral (or multilateral) relationships. While one trusts, the other one is trusted. In such a situation the trustor could suffer loss, if the trustee abuses or exploits the trust. This risk of trust is equal to vulnerability[8]. It is mentioned that risk as the perceived probability of loss is considered essential in psychological and economic conceptualization of trust, but risk also creates the opportunity for trust (Rotter, 1967; Coleman, 1990; Williamson, 1993). Thus, interdependence is required for trust to emerge, since the interests of one party cannot be achieved without reliance upon another (Coleman, 1990; Rousseau et al, 1998). Indeed, trust is based on the psychological nature among parties (dispositional variable) and is important in organizational life (Holmes and Rempel, 1989).

2.1.2 *THE DEFINITIONS OF TRUST AND RELATED CONCEPTS*

Trust is a concept that is used as a multidisciplinary research issue in different contexts with different meanings (Ebert, 2009). Thus, it is quite understandable that scopus.com lists more than 19,000 articles with the term 'trust' in the title.[9] Researchers define trust as the level of comfort in depending on other people that guides actions in respect to a particular situation (McKnight et al, 1998; Rotter, 1971; Yamagishi, 1986). Trust involves a decision that makes one vulnerable to the actions of another, since the other's behavior cannot be controlled in that specific situation (Deutsch, 1962; Wilson and Eckel, 2006). In trust relations, the simplest foundation consists of a minimum of two parties: the trustor and the trustee. These parties are involved and have the objective of satisfying their interests, whatever those might be. Trustor and trustee can deliberately choose their actions (Coleman, 1991). While the trustor takes the decision whether to place trust or not, the trustee decides whether to honor trust or not. These decisions and their risk mean for both parties to balance a potential loss against a potential gain in their actions. Often, the amount gained is less well known than the amount to be lost (Coleman, 1990). Regarding consequences, Luhmann (1979) describes trust as mechanism for reducing complexity, since individuals can often benefit from relying on others. Morgan and Hunt (1994) suggest trust as key factor for understanding interpersonal relationships which can be compared to glue that sticks things together.

2.1.2.1 Trust

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[8] Potential vulnerability as outcome can be more serious than potential gain for the trustor, if the trustee does not abuse that vulnerability.

[9] Retrieved January 24, 2013, from http://www.scopus.com

The act of trusting involves the voluntary placement of resources at the disposal of another party (the trustee), without any real commitment from that other party, and the expectation that it will pay off in terms of the trustor's goals (Coleman, 1990). If the trustee is trustworthy, the trustor is better off for placing trust in the trustee, whereas if the trustee is not trustworthy, the trustor is worse off, if trust had been placed. Trustor and trustee may also have 'social preferences'. According to Coleman's foundations of social theory (1990), there are different levels of trust, such as trust in honesty, benevolence and/or competence. The trustor needs to make assumptions about the trustee (e.g. based on 'mind-reading'), hence trust always involves predictions. It is important to assess whether the trustee is trustworthy or not. The most accurate way of assessment would be to gain information about the past. Therefore it appears that individuals use the information that is available to them and draw inferences about their counterpart (Wilson and Eckel, 2006). Trustors are in general likely to overestimate trustworthiness in situations in which potential gain is especially high relative to the potential loss and to underestimate trustworthiness in situations in which the potential gain is especially low relative to the potential loss (Fetchenhauer and Dunning, 2009). Thus, the placement of trust depends heavily on the people involved and on the context.

Although the character of trust is multifaceted, there are also attempts for a definition which exhibits a common core despite different perspectives. According to Rousseau et al (1998: p. 395), "trust is a psychological state compromising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another". The common trust definition is based on two core elements: (1) *positive expectation* and (2) *vulnerability*. Thus, this definition integrates both the positive expectations of the other's behavior and the potential risk of being exploited. This two core elements indicate that trust is relevant when the trustor is confronted with uncertainty. Only in situations with uncertainty the trustor may face positive expectations and vulnerability, since in situations with complete information trust is not necessary. The optimistic expectation of the behavior of another person is based on either the trustee's past performance or potential long-term interaction in the future (Lewicki et al, 1998). Thus, we adopt hereafter the above given common definition, since we determine trust as a behavior, not just a belief or an attitude of a trustor towards a trustee (Coleman, 1990). In particular the trustee helps the trustor to achieve his/her objectives in a situation which is dominated by uncertainty.

Trust seems to be vital in every relationship. After giving a trust definition, the question is on what exactly a decision to trust depends? Mayer et al (1995) ascertain that the decision to trust is based on the individual characteristics of the trustor (the fundamental willingness to trust others) and the respective assessment of the trustee, which can also be named determinants of perceived trustworthiness. These determinants include the following three properties:
(1) *ability* (the capability to be helpful in achieving objectives),
(2) *benevolence* (the willingness to consider and appreciate the interests of the trustor), and

(3) *integrity* (the willingness to focus on principles and norms which are acceptable for the trustor).

Trustworthiness can be motivated conditionally (reciprocity) as well as unconditionally (altruism and kindness) (Ashraf et al, 2006; Johnson and Milsin, 2011). In any case, the consequence of a decision to trust is to take risks (Mayer et al, 1995).

Keeping promises is a principle of trust, but promises in return of a favor are unfortunately not fungible and incomplete. However, a trustee's internalized moral constraints might keep him/her from breaking the trust placed in him/her. Trustees may have something to gain from being trusted in the future either by the same trustor (direct reciprocity) or by another to whom his/her actions or reputation are communicated (indirect reciprocity – see section 2.1.2.4) (Nowak and Sigmund, 1998, 2005). In that sense, Coleman (1990) claims that the more extensive the communication between trustor and trustee, the better the trustor's assessment how trustworthy the trustee will be. This confidence in the spoken word is emphasized by the argument where a word is as good as a contract and a lot of business is done with very little paperwork. Therefore, the individual level of trust offers the chance to increase one's utility (Coleman, 1990) and on an aggregated level it has strong implications for the whole social system.

The phenomenon of trust can be seen as either static or dynamic. Trust is characterized as static, for instance, in the field of economics with the focus on equilibrium seeking, such as in the highly structured economic games. However, the idea in psychology is that trust changes over time. With this in mind, researchers also stress different phases of trust, such as trust building, stability, or decline of trust (Rousseau et al, 1998). Moreover, theorists and empirical researchers apply trust as a variable differently: the scope ranges from independent, dependent to moderator or mediator variable. This seems to be necessary, since different forms of trust exist.

While *calculus-based trust* emerges in economic exchanges when the trustor perceives that the trustee intends to perform an action that is beneficial for the trustee, *relational trust* derives from repeated interactions over time between trustor and trustee when information from within the relationship is available. Parties trust but verify under conditions where willingness to trust is limited to specific exchanges, which are financial and not personal (Rousseau et al, 1998). Williams (1993) summarizes this fact with where calculative trust ends, people trust begins. In the *calculus-based trust* approach the decision to trust is based on rational choice – the assumption that potential losses are higher than potential gains. Coleman (1991) defines this relation as follows: $p * G > (1 - p) * L$, where p is the probability and G stands for gains and L for losses. While the influence of the trustor on the trustee is ignored, the (sequential) interdependent decisions are considered in social dilemma situations (Deutsch, 1958; Kreps, 1990). Thereby it is recognized that trust suppresses opportunistic behavior (Williamson, 1993). The *relational trust* approach follows the idea that a decision to trust is based on personality structure and learning. On the one hand, Erikson (1968) stated that the basic sense of trust is established during the first 1.5 years in childhood. Moreover, trust emerges only then when the basic needs for food

and loving care are reliably satisfied. On the other hand, Rotter (1967) conceptualized the willingness to trust as a generalized expectation which is based on a social learning process. For this purpose, the questionnaire of 'interpersonal trust scale' was established. In any case, trust is, like language, a complex set of ideas and structures built upon simple foundations (Sheppard and Sherman, 1998).

2.1.2.2 A trust model

Indeed the concept of trust can be modeled. However, Bhattacharya et al (1998) realized that models of trust tend to be either overly psychological (i.e. emphasizing the importance of stable personality traits with the exclusion of situational factors) or overly economic (focusing on such exogenous factors as incentives with the exclusion of personality differences). This sample trust model is presented in order to be prepared for the interaction in trust game negotiations, where we also consider the respective actions (investments/returns), outcomes (individual payoff), and consequences (satisfaction levels).

Bhattacharya et al (1998) tried to integrate the two approaches (see Figure 2) by defining a model for two individuals who can engage in *actions* (a_i) and jointly determine *outcomes* (denoted by x_i). Moreover, these outcomes have *consequences* in terms of utility, profits, or general satisfaction. Embodied in their definition of trust are specific environmental circumstances, which define the sets of possible actions, A_i, and outcomes, X_i. Furthermore, the specific individuals (persons *1* and *2*) have an understanding about the mechanisms for the formation of conjectures about actions (c_i) and evaluate their outcomes and the interpersonal interaction (μ_i) which also have a feedback connection to the respective actions. The likelihood of any outcome from person *1*'s point of view is the perceived probability of the action and the conjectures about person *2*'s action, considered over all possible actions by person *2*, which can be represented mathematically according to Bhattacharya et al (1998) by the following:

$$\Pr(\alpha_1 = x_1 | a_1, c_1(\cdot)) = \sum_{a_2 \in A_2} F_1(x_1;\ a_1, a_2)\, c_1(a_2). \tag{1}$$

Given these circumstances, the expected utility to person 1 (individuals could maximize the likelihood of positive outcomes or the joint utility of all people in the relationship) will be

$$E\mu_1(a_1, c_1(\cdot)) = \sum_{x_1} \mu_1(x_1)\Pr(\alpha_1 = x_1 | a_1, c_1(\cdot)) =$$
$$\sum_{x_1} \sum_{a_2 \in A_2} \mu_1(x_1) F_1(x_1; a_1, a_2) c_1(a_2). \tag{2}$$
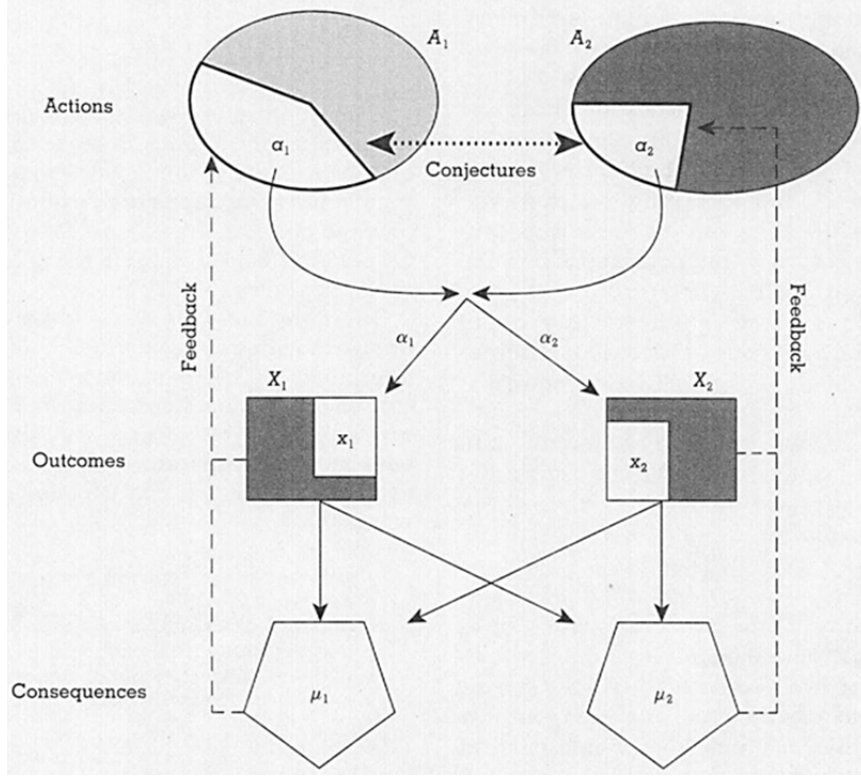
Figure 2: Schematic structure of the Bhattacharya et al (1998) trust model

If person 1 chooses action a_1^*, the probability of obtaining outcome x_1 will be

$$\Pr\big(\alpha_1 = x_1 | a_1^*, c_1(a_2)\big) = \sum_{a_2 \in A_2} F_1(x_1;\ a_1^*, a_2)\, c_1(a_2). \tag{3}$$

If person 1 maximizes the expected utility and the conjectures about person *2*, the probability of obtaining a favorable outcome for person *1* is found by summing equation (3) over the set of outcomes γ_1, which is nothing more than the outcomes person *1* recognizes as positive for oneself. That is,

$$T_{1,2} \mid a_1^* = \Pr\big(\mu_1 > 0 | a_1^* = \sum_{x_1 \in \gamma_1} \Pr(\alpha_1 = x_1 | a_1^*) = \sum_{x_1 \in \gamma_1}\ \sum_{a_2 \in A_2} F_1(x_1;\ a_1^*, a_2)\, c_1(a_2). \tag{4}$$

Indeed, equation (4) defines, according to Bhattacharya et al (1998), the extent to which individual *1* "trusts" individual *2*. Thus, they understand trust as an outcome, which is dependent on the formation of conjectures $c_1(\cdot)$, its interactions $F_1(x_1; a_1, a_2)$ with $c_1(a_2)$ and on the relationship between actions and outcomes $F_1(x_1; a_1^*, a_2)$.

In trust models, like the above, different assumptions should always be considered, e.g. whether it is a symmetric or an asymmetric relationship, whether the actions are taken simultaneously or sequentially, and whether trust and trustworthiness are reinforced by social norms or having sanctions attached. However, in the case of trust placement by the

trustor there is a power of mutual dependence because the trustee decides and answers whether to honor or break the trust in this unstable process. Therefore, critical consequences for the future should be kept in mind, since honoring trust tends to bring further expansions of trust but breaking trust or breach of trust would lead to mistrust or distrust (Coleman, 1990).

2.1.2.3 Mistrust and distrust

The terms 'mistrust' or 'distrust' are often used interchangeably because they have more or less the same meaning. According to the Online Etymology Dictionary (etymonline.com) both mean 'lack of trust' or 'to regard without trust'. Mistrust can be associated with being unsure or doubts about someone else's honesty. "Distrust has been defined as a lack of confidence in the other, a concern that the other may act so as to harm one, that he does not care about one's welfare or intends to act harmfully, or is hostile" (Kramer, 1999: p. 587). Deutsch (1960) viewed 'suspicion' as one of the central cognitive components of distrust. He characterized it as confidence about undesirable behavior of a relationship partner that stems from knowledge of the individual's capabilities and intentions (Lewicki et al, 1998). In our definition of trust we already stressed the potential abuse or exploitation of trust (vulnerability) which is seen as undesirable behavior. Mayer et al (1995) state that the trustor is not able to monitor and control the trustee in performing a particular action. Thus, in reciprocal terms, it can be expected not only that others will not act in one's best interests, but also that the behavior of specific individuals is potentially harmful (Govier, 1994). Therefore, when trust is violated, the positive expectations regarding the other party decrease or become negative (Kim et al, 2013).

The opposite of trust is not distrust: trust and distrust are separate but linked dimensions (Lewicki et al, 1998). If someone places trust, the other party can either honor trust or disappoint trust. People associate in general with trust terms like hope, faith, confidence, assurance and initiative, and distrust is connected with fear, skepticism, cynicism, wariness, and vigilance. Lewicki et al (1998) are entirely convinced that the presence of high trust and low distrust results in parties continuing their relationship. The explanation is that trust focuses on the positive expectations, whereas distrust emphasizes the negative expectations. This view that distrust is not the opposite of trust has been previously suggested by Luhmann (1979). While trust reduces complexity and hence contributes to solve problems in the social systems, the contribution of distrust may be doubtful, if it intends to harm another party. In contrast to distrust, mistrust can sometimes be justified, when someone doubts the other party's honesty. The choice for mistrust may also be rational because it can be assumed that for certain reasons, mistrust is better suited for someone reflected, according to philosophical considerations.

When we talk about breach of trust, then trust is definitely damaged, which could occur both intentionally or unintentionally. The abuse or breach of trust can be answered either with mistrust or with a higher level of control to avoid further exploitation of trust (Hartmann, 2011). However, people in general do not have a preference for abuse or exploitation of trust, which can also be linked with "betrayal aversion" in the economic literature. For instance, Bohnet and Zeckhauser (2004) found some evidence of betrayal aversion, entailing that people are generally less willing to take a risk when the source of the risk is another person rather than nature. It seems that breach of trust also depends on persons and contexts. In terms of nature and trust abuse or exploitation, there are also cultural differences, for instance, by comparing different contract laws. In some individualistic cultures exists the doctrine that a contract can be broken without moral concerns if there would be a financial advantage from such breach. In contrast to this, the European contract law follows the doctrine of "*pacta sunt servanda*", which deals with the idea that contracts or agreements should be kept (Weller, 2009).

As trust, so is also mistrust, distrust, or breach of trust ubiquitous in human societies. However, from the biological perspective, the hormone oxytocin can suppress breach of trust, according to Kosfeld et al (2005) who proved the increased trust effect of oxytocin. This hormone is associated with playing an important role in mother-child bonding and possibly allows overcoming the natural avoidance of humans to be close to other humans. Kosfeld et al (2005) demonstrate in their study that intranasal oxytocin increases investments in the 'trust game', which leads them to the argument that oxytocin also influences betrayal aversion. Baumgartner et al (2008) follow up on this idea in order to understand the mechanisms underlying trust and breach of trust. They found out that subjects in the oxytocin group do not show any change in their trust behavior after they learn that their trust has been breached several times. However subjects who received placebos decrease their trust (Kosfeld et al, 2005).

Of course, it is easier to destroy than to create trust. By comparing trust-destroying with trust-building events, asymmetries are noticeable. The negative events are more visible and perceived more credible than the positive ones, so that trust-destroying events carry more weight in judgment than trust-building events of a comparable magnitude (Kramer, 1999). Moreover, it is significantly more difficult to repair and build up trust after trust was exploited. Since the creating and sustaining of trust appears to be difficult and takes time, the rebuilding of trust seems to be more difficult and more time-consuming. Extensive communication may be helpful in repairing trust in order to regain the beneficial cooperation level. Trust repair entails repairing damaged expectations and effective tactics hence could be apologies, promises or denials (Kim et al, 2013). However, people still remain capable of trusting others despite the fact that most humans have experienced instances of breach of trust (Baumgartner et al, 2008).

2.1.2.4 Reciprocity

The norm of reciprocity is highly associated, on the one hand, with pro-social behavior and, on the other hand, with trust. Reciprocity can be seen as the answer to trust. Similar to the norm of fairness, the norm of reciprocity affects decision-making. However, we have to keep in mind that both norms are easier to adhere to with a closer social distance (e.g. Leider et al, 2010; Leider et al, 2009). Equal payoff splits resulting from the norm of fairness are more likely with friends, colleagues and neighbors. Reciprocity is the norm that we should do to others as they do to us. From a psychological perspective, this concept calls for positive responses (kindness) to favorable treatments but negative responses (punishment) to unfavorable treatments. Pro-social or positive reciprocity occurs when people help in return for having been helped (Bierhoff, 2001).

Like fairness, reciprocity also contributes to cooperation. Therefore, reciprocity can be expected from cooperative persons in order to contribute to higher cooperation levels (De Dreu and Van Lange, 1995). However, the question is whether those cooperators behave consistently regardless of their opponents' behavior. When the norm of reciprocity is missing, Weingart et al (2007) found, for instance, that cooperative persons also shift their behavior in the non-cooperative direction when interacting with non-cooperative persons. In any case, cooperative objectives are more difficult to adhere to in the face of a counterpart with non-cooperative objectives. Therefore, cooperation can succeed, if reciprocity is in place (Kelley and Stahelsky, 1970).

Reciprocity can also be associated with altruism. Altruism is the idea that the own well-being depends on the welfare of others (Becker, 1981). The theory of reciprocal altruism was developed by Trivers (1971), which gives answers to the question why people help one another. In particular it explains pro-social behavior on the basis of reciprocity among non-relatives. The basic tenet of the theory is that pro-social behavior follows the principle of reciprocity, and it is favored if the cost for the helper is lower than the benefits for the help-recipient (Bierhoff, 2001). Nowak and Sigmund (1998, 2005) studied various ways in which evolution leads to cooperation in a highly competitive world by calculating mathematical simulations. The basic issue can be couched in terms of cost and benefit. A cooperator pays a cost for another individual to receive a benefit. If the cost is larger than the benefit, than cooperation is not productive, and it is not a cooperative dilemma. In this case, two cooperators would be worse off than two defectors. But if the benefit is larger than the cost, then we end up with a familiar game, like the prisoner's dilemma.

Positive reciprocity responds to an action that is perceived as kind with kind manner, whereas negative reciprocity is connected with a hostile manner in response to a hostile action. Positive reciprocity is advantageous, following the above mentioned cost-to-benefit ratio, if the costs to the helper are low and the benefits to the help-recipient are high. Therefore, high levels of trust between helper and help-recipient resulting from familiarity and attitude similarity can avoid the exploitation of trust. In general, trust and

reciprocity are conditions that increase the likelihood of mutual support and decrease the danger that pro-social responses will be exploited (Bierhoff, 2001).

Direct reciprocity and indirect reciprocity are further differences to consider (Nowak and Sigmund, 1998, 2005). Starting with the direct form, it would mean that *A* helps *B* and *B* helps *A* ("I'll scratch your back and you scratch mine"). This *direct reciprocity* is of respective importance in repeated interactions. Nowak and Sigmund (1998, 2005) ascertained that this would lead to the evolution of cooperation only if the probability of another encounter between two individuals exceeds the cost-to-benefit ratio of the altruistic act. The case of *indirect reciprocity* is more complicated because it would mean that *A* helps *B* but *C* helps *A* ("I'll scratch your back and someone will scratch mine"). This would imply reputation effects that can be fostered with the help of communication. Thus, indirect reciprocity can only promote cooperation if the probability of knowing someone's reputation exceeds the cost-to-benefit ratio of the altruistic act (Nowak and Sigmund, 1998, 2005).

Furthermore, indirect reciprocity comes in two flavors, as (1) up-streaming reciprocity and (2) down-streaming reciprocity (Nowak and Sigmund, 1998, 2005). Up-streaming reciprocity is based on positive experiences, which can be also observed in experiments. A person who has received a donation may feel motivated to donate in turn. For instance, individual *B*, who has just received help from *A*, goes on to help *C*. Down-streaming reciprocity, by contrast, is built on reputation. For instance, individual *A* has helped *B* and therefore receives help from *C*.

It is interesting to note that trust promotes cooperation and in turn, a cooperative or social motivation fosters again trust. This mutual dependence is mainly alive in long-term relationships. The cooperation promoting mechanism is certainly different for short-term relationships. In an impressive study, Rand et al (2012) studied whether intuition – automatic processing or reflection – foster cooperation. Previous research has shown that intuitive responses are relatively fast, whereas reflective responses require additional time for deliberation. Therefore, the hypothesis was that intuition preferentially supports pro-social behavior, whereas reflection leads to increased selfishness, predicts that faster decisions will be more cooperative. The findings from 'public good games'[10], prisoner's dilemmas, and other experiments was that faster decisions are more cooperative, meaning faster decisions result in substantially higher contributions compared with slower decisions (Rand et al, 2012).

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[10] The payoff function is given by $P_i = e - g_i + \beta \sum g_j$, where e represents the initial endowment; g_i is the level of tokens that subject i places in the group account; β is the marginal payoff of the public good; and $\sum g_j$ is the sum of the n individual contributions to the public good. By making $0 < \beta < 1 < n\beta$, the dilemma follows (Levitt and List, 2007).

2.1.3 THE BENEFITS OF TRUST

If someone raises the question, why should people care about trust, then the answer we can already give is that trust promotes cooperation and the benefit is that people rely on each other. We got to know the two approaches of calculus-based trust and relational trust (see section 2.1.2.1).

While from the economic perspective, trust behavior is assessed according to whether the cost-to-benefit ratio is beneficial or not (calculus-based trust), relational trust from the psychological literature stream stresses personality perspectives and behavior of repeated interactions. Trust is definitely seen as a prerequisite for building relationships (Morgan and Hunt, 1994). Trust structures social relationships and satisfies the needs for security and control. According to brain research, so-called mirror neurons are responsible for the development of trust in our brains, which are activated when there are emotional ties (Kosfeld et al, 2005). We are already familiarized with the important trust hormone oxytocin and its effects in experimental settings (Baumgartner et al, 2008). Trust has definitely a value and plays a key role in almost all human cooperation forms, like friendship, love, family, organizations or markets.

Social psychologists have first started investigating the conditions that facilitate cooperation more than a century ago (Cook and Cooper, 2003). This research has been followed before they dealt with the phenomenon of trust. Deutsch (1960) conducted one of the earliest experimental investigations of trust and cooperation. He was influenced by game theory and did some prisoner's dilemma experiments. Deutsch (1960) claims that individuals must develop mutual trust if they are to cooperate with one another. Found factors that affect the development of mutual trust are one's own social orientation (personality structure) and the orientation of partners as situational conditions. For instance, subjects with cooperative orientation did not need the opportunity to communicate to choose the cooperative option, whereas subjects with competitive orientation exhibited motives that made it difficult for them to engage in trustworthy communication (Cook and Cooper, 2003). If cooperative orientation leads to cooperative behavior, why do we need the concept of trust? According to Deutsch (1960), when subjects do cooperate, they are making a trusting choice, treating cooperation as the indicator of trust. Thus, trust seems to be both a feature of relationship and a feature of a particular behavior. The main problem with this work was that it confounded trust behavior and cooperation but the causation was unclear (Cook and Cooper, 2003). Therefore, there was also the possibility introduced to measure trust using items on a survey that represent a strictly attitudinal measure of trust.

Rotter (1967) was a pioneer in the survey work on trust and presented the earliest attitudinal measure of trust. Rotter defines trust as a "generalized expectancy held by an individual that the word, promise, oral or written statement of another individual or group can be relied on" (Rotter, 1967: p. 653.) Rotter's definition addresses the confidence aspect of trust in the presence of uncertainty. His primary purpose was to investigate the extent to

which trust is a general personality factor, since prisoner's dilemma or other games produce specific reactions to competitive situations. While experiments allow for investigation of relational aspects of trust, survey work, like the General Social Survey (*GSS*) in the U.S. does not, because the respondents are rarely in relationships with one another. The 'trust game' (Berg et al, 1995) was presented as a modified prisoner's dilemma. For the sender to place trust means taking a risk, since the receiver can decide whether to honor or exploit that trust in return (no risk for the receiver). Here we have trust and social exchange, entailing one person to start the process of giving without the assurance of an immediate return or without knowing whether the person will reciprocate (Cook and Cooper, 2003). Berg et al (1995: p. 122) have shown that "reciprocity exist as a basic element of human behavior and that this is accounted for in the trust extended to an anonymous counterpart" (for further explanations of the 'trust game' – see 2.1.1.4).

Trust promotes cooperation because it is driven by social motivations, such as cooperative or competitive motivation (for further details see section 2.2.) and social context, such as the size of the group or whether communication is allowed or not (for further details see section 2.3). Rousseau et al (1998) supports what was said before that in the variations of trust across relationships may be a tension between acting out of self-interest and acting out of the interests of a broader collective community. Furthermore, context is critical to understand trust. Sometimes, trust can be used when referring to cooperation within a two-person relationship, but sometimes also when referring to larger groups in organizations (Rousseau et al, 1998).

2.1.3.1 Cooperation and understanding others

Trust is the basis for cooperation. In order to achieve a high cooperation level, the trust literature refers to several dimensions, such as (1) openness, (2) concern, (3) reliability, and (4) competence (Mishra, 1996; Spreitzer and Mishra, 1999; Tzafrir and Dolan, 2004). Openness means that the other party is honest and frank during the communication process (Spreitzer and Mishra, 1999). Concern describes one's self-interest balanced against the other's interests (Mishra, 1996). Reliability means that the other party keeps its promises and that its words and deeds correspond (Tzafrir and Dolan, 2004). This dimension of trust addresses the expectation of consistency and congruency between words and behavior. Competence refers to the other party. It is expected that the other party has the skills, knowledge, and the capacity to operate effectively (Spreitzer and Mishra, 1999). Tzafrir et al (2011) ascertain that the concern for others is the most important element because it affects also integrative agreements in the context of negotiation. Thus, the concern for others can also be associated with social motivation, which we already have identified as drivers for trust.

Understanding others is a crucial process in all sorts of social decisions but in particular for trust behavior. There are crucial aspects in understanding others (Hewstone and Stroebe, 2001): (1) Theory of mind that is based on the idea that we know that others have intentions, beliefs, attitudes, knowledge, desires, thoughts, etc. that might or might not be different from our own; (2) Empathy which is the ability to feel what someone else is feeling, and being aware of it; and (3) Perspective-taking, which is the intentional or non-intentional attempt to "see the world through the other's eyes".

According to the theory of mind, trust involves deliberate and non-deliberate attempts to understand the intentions of others. Understanding the intentions of others requires face-to-face communication. The 'chameleon effect' would be an interesting phenomenon in the context of understanding others (Chartrand and Bargh, 1999). People tend to non-intentionally and unconsciously imitate mannerisms of their interaction partners, such as rubbing one's face or shaking one's foot. This effect is highly shown by people who score high in perspective taking. We tend to synchronize with others by means of imitation or mimicry – sometimes we are aware of it and do so deliberately, sometimes unconsciously. The main benefit of this synchronization is that it might help us to understand others. It also helps to increase social cohesion or connectedness (Shakun, 2009).

In contrast, empathy would be an element of pro-social personality and also a reason why people understand each other and/or why people help one another (Bierhoff, 2001). The affective state of empathy is triggered when an individual witnesses the emotional state of another person. This state of feeling results from adopting the perspective of the other and understanding his/her emotions (Singer and Lamm, 2009). Thus, emotions can be seen as gate openers in understanding others as a prerequisite for trust. Batson (1987) introduced the empathy-based altruism hypothesis and he tried more or less to bridge the gap between understanding and helping. The research by Batson (1987) concentrates on the question of whether pro-social behavior is motivated by altruistic or egoistic motives. He and his colleagues (Batson et al, 1988) assume that high similarity in terms of empathy between individuals would heighten altruistic motivation, whereas low similarity would foster an egoistic motivation.

Furthermore, trust can foster pro-social behavior but this requires mutual understanding of the parties. The model of egoism-altruism by Miller (1977) consists of two stages: First, people may consider what their own fair share is. Second, if people additionally experience empathic feelings, they act altruistically if the misfortune of others seems to be unjustified (Bierhoff, 2001). This approach could also be related to trust considerations, since in building up trust relationships, mutual understanding and helping is required. The psychological theory of mind, empathy, and perspective taking play a role in understanding others. Regarding the decision to trust, one has to assess the trustworthiness of the other party. However, one also needs to offer assurance of trustworthiness (Wilson and Eckel, 2006). Mutual understanding appears to be necessary but, when it is present, it consequently leads to cooperation.

2.1.3.2 Problem solving in negotiations

According to Lewicki et al (1998), trust is foundational for collaboration, coordination and to maximize joint outcomes. In particular, a certain level of trust is required for conducting negotiations. Thus, trust guides actions which depend on other people (Rotter, 1971; Yamagishi, 1986; McKnight et al, 1998). Two kinds of trust have been associated with the way in which negotiators are motivated to behave and think in negotiations, namely dispositional and situational trust. Dispositional trust is viewed as a stable individual characteristic to trust or depend on other people (Rotter, 1971; Yamagashi, 1986; McKnight et al, 1998). Conversely, situational trust is viewed as a temporary state of mind that guides action with respect to a particular situation whereby trust in the other follows from the other's predictable pattern of behavior (Loomis, 1959).

Trust has long been found to be an important predictor of successful negotiations, business exchanges, and conflict management efforts (Deutsch, 1958). In the negotiation context, goodwill, predictability, and problem-solving orientation are key components of trust (Friedman, 1993). All these elements are positive orientated and hence they can be associated with the positive expectation of trust itself. In addition, a further element of trust in negotiations could be face-to-face communication. In the case of face-to-face negotiations, Moore et al (1999) found that negotiators who got to know each other by mutually disclosing personal information about themselves, were more likely to reach agreements than those who did not have any personal exchange. However, this empirical result is not an evidence for trust itself. In any case, organizational members who take part in negotiations and decision-making and are endowed with high trust also show higher satisfaction levels (Driscoll, 1978).

Besides trust as predictor of negotiations outcomes, the initial trust stance is very important for the negotiation process when entering a negotiation situation. From the psychological literature stream, it is expected that the Higgins's (1998) regulatory focus theory is an antecedent that will influence the initial trusting stance. The idea is how negotiators perceive the decision-making process. According to this theory, people have two ways in attaining goals; either they use a promotion focused or a prevention focused orientation as a personal motivation in attaining goals. While for the promotion focus orientation, the objective is to maximize gains, the prevention focus orientation has instead the objective to minimize potential shortfalls. However, it is predicted that the initial trust stance will influence the use of *distributive* – competitive bargaining strategies, *integrative* – cooperative bargaining strategies; *information* strategies – used for gathering information to craft agreements and *action* strategies – how information gathered is used in the negotiation process. We concentrate on these strategies in the following by studying the negotiation process with the support of the content analysis method (see section 4.3).

2.1.4 THE TRUST GAME

Negotiations and bargaining situations are highly influenced by game theory (Nash, 1950). The following experimental game, called 'trust game', can be constructed as a one-sided version of the well-known 'prisoner's dilemma' when people face the decisions whether to trust another person or not. Like in the prisoner's dilemma, a cooperative player, the trustor, accepts the risk of being exploited. Unlike in the prisoner's dilemma, the trustee can knowingly exploit or reciprocate. The 'trust game' is a promising method of testing trust behavior besides the method of questionnaires (for further explanations see method section 4.1). The 'trust game' has many analogies in business whether it is a bank loaning money or an individual buying company stocks. The purpose of this game is to model human exchanges that are not forced by contracts, since trust-based exchanges have a longer evolutionary history than contract-based ones (Krueger et al, 2008).[11]

2.1.4.1 The idea and concept

The 'trust game' or 'investment game' was introduced by Berg, Dickhaut, and McCabe (1995) with their paper in the journal 'Games and Economic Behavior'. However, influences of some precursors such as Camerer and Weigelt (1988) or Kreps (1990) cannot be ignored. The basic idea is that someone has acquired a certain amount of money, and has the option of giving some of it to another person. Whatever the person gives, the invisible hand of the market - or in most cases of the experimenter - will multiply it, say, by a factor of three. The other person then decides how much to return to the sender. In this arrangement we have two roles: (1) the sender (S) and (2) the receiver (R). The sender is endowed, for instance, like in most cases, with 10 monetary units. First, the sender chooses in his/her decision how much to invest (i); $i \in (0, 1, \ldots, 10)$. Second, the receiver gets the tripled investment by the experimenter; ($3 \cdot i$). Third, the receiver chooses in his/her decision how much to return (r) to the sender; $0 \leq r \leq 3 \cdot i$. Thus, the receiver is a kind of dictator. Finally, the outcomes (π) for both roles can be calculated; $(\pi_S, \pi_R) = (10 - i + r, 3 \cdot i - r)$. Starting from the endowment, the sender obviously gets something depending on what was invested and was returned. The receiver's outcome is based on the tripled investment and the return.

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[11] We study hence the behavioral consequences of interpersonal trust, trustworthiness, and reciprocity during a 'trust game' experiment and shed light on the question if people adhere to or deviate from promises or commitments made during face-to-face communication, when they are allowed to override a settled agreement unilaterally (see section 3).

On the one hand, the sender has the option to transfer or the option not to transfer a certain amount to a receiver. On the other hand, the receiver faces the choice to cooperate or to exploit the sender. The theoretical predictions are hence that sender and receiver are rational, only concerned about their own payoffs, and have no social preferences or no adherence to reciprocity or fairness norms. In any case the same is assumed about their partner. The game-theoretic solution (Berg et al, 1995) is that the dominating strategy for a self-interested receiver is to keep all money, and for a rational sender, who knows this, to invest nothing. However, when the 'trust game' is traditionally played anonymously, subjects typically sacrifice their own endowment and contribute significant amounts. The typical findings (Camerer, 2003; Johnson and Mislin, 2011) are that the sender's average investment is roughly 50% of endowment and the receiver's average return rate is nearly 50% of the tripled investment. In Figure 3 we see the original results by Berg et al (1995), where 32 pairs or 64 subjects participated in the first 'trust game'. In this anonymous setting we realize that on average, 5.16 from 10 Dollars are invested and on average 4.66 from a maximum 30 are returned.
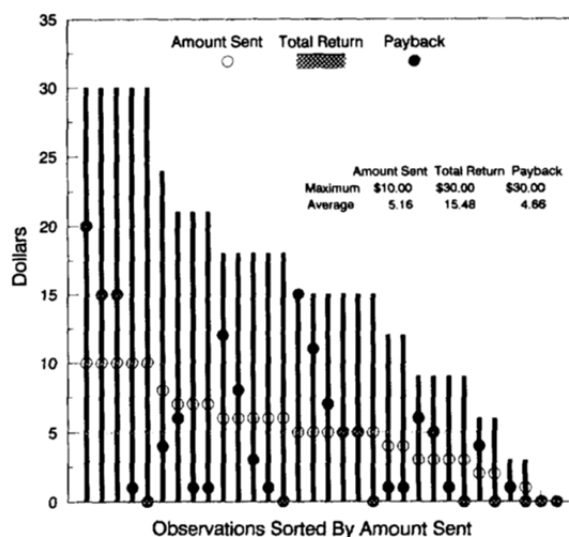
Figure 3: Trust game result by Berg et al (1995)

Exchanging communication, like chat-conversation before the game, makes a difference in the 'trust game' (e.g. Ben-Ner et al, 2011). Increased investments and returns can be observed. In particular when face-to-face interaction is in place, contribution is a dominant strategy, since otherwise it would entail a loss of reputation, and hence a loss of profitable future exchanges (Bowles and Ginits, 2011). Whether with or without communication, trust should make both sender and receiver better off with regard to individual and joint outcomes. Croson and Konow (2009) argue that self-interest can be masked as social preference in a strategic interaction, since the impact of self-interest distorts the expression of social preferences. In any case, they consider equal splits of outcomes as a measure of 'true' social preferences (for further explanations – see section 2.2.1).

2.1.4.2 The trust game motives

The 'trust game' has the benefit that the motivations of investing and returning can be analyzed. In experimental economics there is a consensus view that the behavior measure from the sender to the receiver (investment *i*) can be seen as a trust indicator. The return (*r*) from the receiver to the sender is often interpreted as a trustworthiness indicator (Bicchieri et al, 2010; Ben-Ner et al, 2011). Thus, the sender is motivated by self-interest and trust in reciprocity, risk seeking behavior, and altruism. The receiver's motivation is driven by positive reciprocity, inequality aversion, and again altruism. Wilson (2010) argues that the 'trust game' interaction itself prescribes a rule of reciprocity that culminates in a Pareto improvement. Diekmann (2004) points out that cooperation by the receiver contains positive reciprocity and altruism because he/she reciprocates the sender, thereby gaining lower material payoffs and not behaving opportunistically. Other important motives would be attaining an efficient payoff and receiving a maximum collective payoff (Diekmann, 2004). Finally, actions in the 'trust game' can be motivated conditionally (trust and reciprocity), based on the actions and intentions of the other party, as well as unconditionally (social preferences) (Cox, 2004).
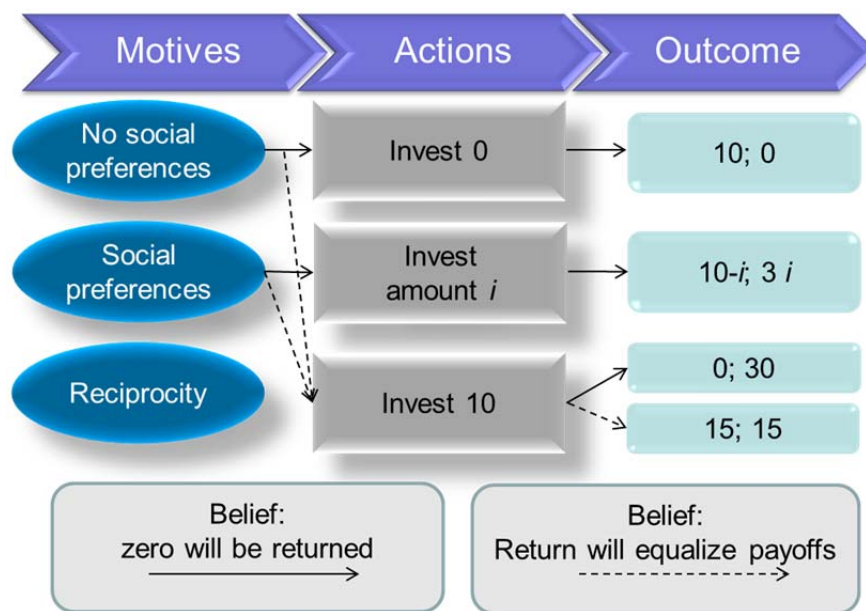
Figure 4: Theoretical considerations for the sender

Concerning the motives, when the sender invests, *i*, something more than zero monetary units, then it is an indicator for behavioral trust operationalized as action. In this case the sender is either self-interested (no social preferences), is motivated by social preferences (i.e. altruism, inequality aversion, and social welfare maximization) or reciprocity. Social preferences are the idea to care about the payoffs of another party, which are elaborated in

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detail in section 2.2.1. In Figure 4 we present the potential motives, actions and outcomes on the sender side. Additionally, potential paths are marked which are based on the belief whether zero will be returned or the return will equalize outcomes (i.e. fairness norm) (Jacobsen and Abdolkarim, 1996). When the receiver returns a positive amount, r, it is an indicator for trustworthiness operationalized as action. The receiver's motives are also self-interest (no social preferences), social preferences, or reciprocity. In Figure 5, the social preference motive would lead to a positive amount of returning, whereas the reciprocity motive would lead to equalized outcomes. Again, the marked paths have different underlying beliefs, such as fair or unfair investments (Jacobsen and Abdolkarim, 1996).
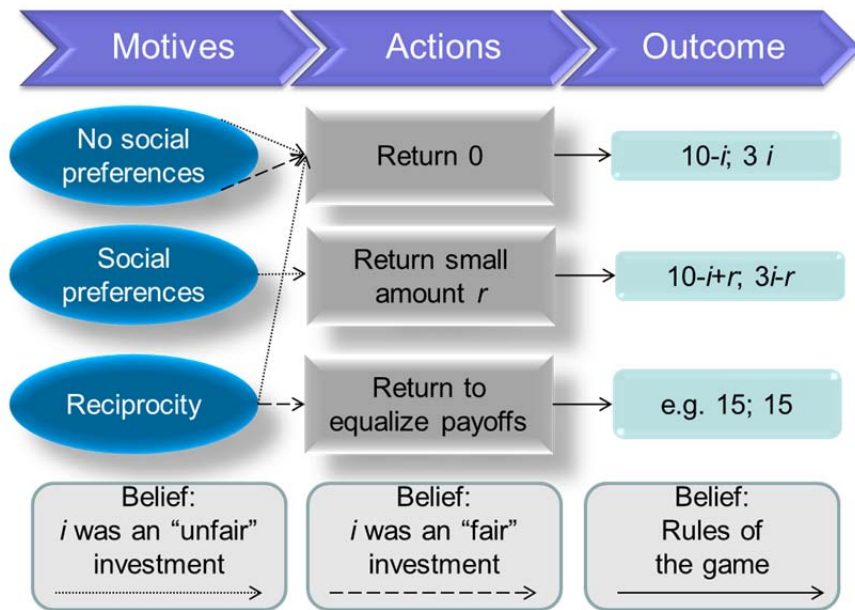
Figure 5: Theoretical considerations for the receiver

Another approach or a different theoretical consideration of how the 'trust game' can be solved is presented by Holm and Nystedt (2008), who suggest two different cognitive levels. On the first level, the sender decides if there is an alternative that has a direct attractiveness or makes the choice at random. At the second level, the player recognizes the strategic decision, forms expectations about the other player and chooses the alternative that maximizes his/her utility function (which may not be entirely selfish). Those senders reaching the second level may choose trust or not, since they may be influenced by motivations and expectations about motivations, such as inequality aversion, kindness, altruism, reciprocity or efficiency (e.g. fair division splits with investment of the whole endowment). On the receiver side, the decisions do not involve strategic elements and therefore require less cognitive effort. As a consequence, most players will make the decision on the first level (independent treatment) as a more or less direct response to emotions of reciprocity, altruism, fairness, guilt aversion or selfishness. However, a more cognitive effort is attributed to the sender (Holm and Nystedt, 2008).

2.1.4.3   The trust game related literature

In experiments it is commonly observed that people sacrifice their own payoff in order to cooperate with others (Bowles and Ginitis, 2011). The most common type of behavior in experiments, like the 'trust game', is the *conditional cooperator*. These people respond positively to high contributions of others (Fehr and Gaechter, 2000; Bowles and Gintis, 2011). In addition to conditional or mutual cooperation, subjects have a desire to be solidly united in order to maintain a good reputation in the eyes of others and are concerned about the way they are perceived by others (Bénabou and Tirole, 2002; Ellingson and Johannesson, 2004). People have a preference for keeping their word (Gnezzy, 2005; Charness and Dufwenberg, 2006) but studies also claim that people cheat in 20% to 31% of their social interactions (DePaulo et al, 1996). In experiments and natural settings, people often behave differently towards others and tend to identify with others who are similar to themselves (e.g. Leider et al, 2010; Leider et al, 2009). Experiments found higher levels of cooperation when subjects are members of the same group because the expectation from in-group members is higher than from out-group members. In general institutions may influence behavior but behaviors are also conditioned on group memberships (Bowles and Gintis, 2011).

Several researchers have noted that altruism, fairness, and reciprocity are strong motives for generous behavior or contributions (Fehr and Gaechter, 2000; Lazear et al, 2009). Cox (2004) separated motives by comparing senders in a 'trust game' with those in a 'dictator game'. The benefit is that dictators have no ulterior motive of generating an obligation. Thus, their behavior can be used to estimate altruism of senders. The receivers also had no obligation to the senders and their returns hence serve as a measure of the receivers' altruism. Cox (2004) found that 60% of an average sender's investment and 42% of the average receiver's return are motivated by altruism.

When altruism in the 'trust game' is mentioned, the consistent evidence of altruism in experiments in general needs to be added (Roth, 1995; Cooper and Kagel, 2009). Altruism is basically the principle of seeking the welfare of others (Sawyer, 1966). Furthermore, the question where altruistic preferences come from cannot be ignored. One notion is that altruistic considerations come from culture. Evidence of this is suggested by differences in behavior in experiments in different countries (Roth, 1995; Henrich et al, 2001). Another notion is that altruism is acquired as part of psychological development and socialization, as seen in economic experiments using children as subjects (Sutter and Kocher, 2007; Sutter et al, 2011). A third possibility for altruism is that we are innately wired to care.

Recently the question whether promises influence sending and returning in a 'trust game' became very popular among researchers (Charness and Dufwenberg, 2006; Bicchieri et al, 2010; Servatka et al, 2011; Ben-Ner et al, 2011). This is tested with pre-play communication which is a brief period of discussion before subjects take their individual decisions. When subjects are engaged in a pre-play communication situation, like a chat-room or

face-to-face communication, these settings are often called "cheap talk" by game theorists, because any promises made cannot be enforced. However, both forms of communication increase the contributions considerably compared to anonymous settings (Bowles and Ginits, 2011). In some cases chat-room communication is almost as effective as face-to-face communication. Charness and Dufwenberg (2006) found that investments and returns increase significantly when either senders or receivers are allowed to send a single message in a binary 'trust game'. Servatka et al (2011) introduce free form written massages obtaining similar results. Bicchieri et al (2010) compare no pre-play communication, chat-pre-play communication and face-to-face-pre-play communication. Again, the finding was that the possibility of exchanging words increases both sending and returning. Putterman (2009) supports also that subjects achieve fairer and efficient outcomes in the presence of communication. It seems that communications enhance the sender's trust towards the receiver, since the expectation is higher that the receiver will not exploit trust (Ben-Ner et al, 2011).

A further interesting issue is to compare shown trust in the 'trust game' with actual trust in real world settings. Glaeser et al (2000) found that subjects who trusted others in the 'trust game' also behaved in a trusting manner in the real world, like lending personal belongings to friends. Thus, they conclude that experimental behavior is a good predictor for behavior in natural settings, while questionnaire items about the trust attitude provide no information. While some researchers report correlations between experimental results and real world behavior, others demonstrate some discrepancies, for instance when subjects never contribute to charities but allocate 60% of their endowments to others (Benz and Meier, 2008). Also Gaechter et al (2004) could not confirm significant relationships between trust attitudes and decisions in the 'trust game'.

The 'trust game' related literature highlights different aspects. First, trust and trustworthiness are often displayed in real-life interactions and 'trust games' (Camerer, 2003; Johnson and Mislin, 2011). Second, reciprocity is often observed in that way that people tend to return shown kindness with kindness of their own (Fehr and Gaechter, 2000; Gintis et al, 2005). Third, pre-play communication is helpful to foster cooperation (Sally, 1995; Balliet, 2010). Promises influence the sending and returning in a 'trust game' for assessing the character of the other party (Charness and Dufwenberg, 2006; Bicchieri et al, 2010; Servatka et al, 2011; Ben-Ner et al, 2011). Forth, if communication is in place, reputation seems to matter. Many people care about self-image (Bénabou and Tirole, 2002; Ellingson and Johannesson, 2004) and have a preference for keeping their word (Gnezzy, 2005; Charness and Dufwenberg 2006).

To sum up, trust is vital for economic growth and could be seen as an important currency in economy, business and management. We showed that all different trust definitions have two things in common – on the one hand, the positive expectation in other people's behavior and, on the other hand, the risk of vulnerability (Rosseau et al, 1998). The concept of

reciprocity is often mentioned in the context of trust and trustworthiness. Diekmann (2004) defines reciprocity as conditional fairness. The group of trust, trustworthiness, and reciprocity can be defined as social capital which shapes social interactions. The advantage of such social capital is that it reduces transaction costs and it facilitates social exchange and market activities. Consequently, social capital can enhance cooperation and the effects are expected to be positively associated with economic growth (Diekmann, 2004). However, we also mentioned the negative side in this section, like the abuse or breach of trust.

2.2 INDIVIDUAL DIFFERENCES IN SOCIAL MOTIVATIONS

In general, fairness is considered a motivating factor and is taken into account in many different disciplines. For instance, in organization science there has been an increasing interest in the topics of perceived fairness or social motivation, because these aspects are seen to foster pro-social behavior (Osterlohn and Frey, 2002). According to Andreoni et al (2002), fairness is a function of more than just the allocations of individuals as it depends on the actions that were not chosen as well as those that were. Speaking about fairness means to consider both parts, distributive as well as procedural fairness. Distributive fairness is outcome-related and, as highlighted by Adams' equity theory (1965), compares the input with the outcome. Procedural fairness also plays a role and is process-orientated. An example of this is a study by Kim and Mauborgne (1998), where, by asking people what procedures they perceived as fair, a majority of participants argued that it involves being included in the decision-making process.

The trust game negotiations research is mainly interested in behavior and hence emphasizes both the actual decisions taken, and the process, which is the observed bargaining behavior. The objective of this section is to demonstrate, in a tense interdisciplinary discourse, how economics, psychology, and negotiation literature deal with the dilemma of self-interest and collective interest. In game theory we find so-called mixed motive situations (Schelling, 1960), such as the well-known prisoner's dilemma, characterized by the conflict between personal and collective goals. It seems beneficial to present one specific model from each discipline, each providing a specific solution for tackling this dilemma by giving explanations and reasons for the fact that people often act beyond their self-interest. The models presented are taken into account in the trust game negotiations, which are a one-sided prisoner's dilemma where subjects are tasked with successfully managing the conflict between self-interest and collective interest, like many people (partners in relationships, organizations, governments etc.) are in everyday life. Thus, we present the social preference models in economics, the concept of social value orientation in psychology, and, last but not least, the dual concern model in negotiations literature.

Social preferences and social value orientations matter, since they affect economic decisions and interaction (Fehr and Fischbacher, 2002; Bowles and Gintis, 2011). While social preferences are mainly tested in so-called 'economic games', social value orientations are measured on psychological scales with the help of questionnaires. Both examine unselfish attitudes towards other people and the trade-off between personal outcome and that of the negotiation partner. Social value orientations are defined as *altruistic* (maximize payoff to others), *pro-social* (maximize joint payoff or minimize difference between payoffs), *individualistic* (maximize payoff to self) and *competitive* (maximize the positive difference between payoff to self and others) (Murphy et al, 2011). A similar model is the 'dual-concern' model (Pruitt and Rubin, 1986), developed in an attempt to understand the values or concerns that might underlie negotiations. The model specifies two basic concerns (1)

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concern about own outcome, and (2) concern about other people's outcomes. Each of these concerns runs from weak to strong. In this model, the negotiation strategy of problem-solving depends on the characteristics of (low or high) self-concern and (low or high) other-concern. Thus, this interplay of economics, psychology, and negotiation literature turns out to be more complementary than contrary.

 "The key difference between psychologists and economists is that psychologists are interested in individual behavior while economists are explaining the results of groups of people interacting" (Levine, 2012, p. 125). Therefore, psychology is indispensable in order to understand economic behavior, since it helps describing and explaining the behavior of the individual. Psychological concepts supply richer descriptions and add flavor to questions such as why people trust strangers or what outcomes people consider to be fair. Antonides (1991) suggests that psychology is a qualitative addition to an essentially quantitative economic story. Besides costs and benefits, moral and affective dimensions are included. Furthermore, negotiation literature helps in describing and explaining the behavior of individuals and groups by focusing on both process and outcome. Last but not least, negotiations provide the contextual framework.

Neoclassical economics is the world of utility maximization, and individuals are seen as rational and egoistic, with constant preferences and perfect information. If we take this approach to extremes, we encounter individual decision makers without fairness considerations, reciprocity, altruism or commitment. These decision makers will free-ride in order to maximize their own profits and minimize their costs. Psychology and negotiation literature contributes by introducing additional and alternative factors to explain process and outcome. According to Katona (1975, p. 9). "…the basic need for psychology in economic research resides in the need to discover and analyze the forces behind economic processes, the forces responsible for economic actions, decisions and choices […] 'Economics without psychology' has not succeeded in explaining important economic processes and 'psychology without economics' has no chance of explaining some of the most common aspects of human behavior." Bargaining, for instance, is a process almost by definition, by which a series of information exchanges in the bargaining process leads to an outcome. On the one hand, the underlying process describes how economic agents proceed in collecting information, comparing alternatives, and selecting an alternative. On the other hand, the knowledge of why economic agents reach an outcome increases the explanatory power of the model (Antonides, 1991).

While standard economic theory is based on the assumption of rationality and predicts free-riding or selfish behavior, both real life and experiments present a different picture. Economic theory is based on several axioms regarding preferences, like ordering, continuity, and independence, which are frequently violated in practice[12]. In real life we make the

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[12] These axioms cannot be violated for 'other regarding' or social preferences.

observation that people donate blood, give information to strangers, or help old people. In experiments, it has been found that a majority of people contribute to the provision of a public good. Fehr and Gaechter (2000), for instance, showed that 50% of their participants are conditional cooperators and just 30% behave in an egoistic way. Moreover, in economics, preferences are revealed by actual choices and changes of behavior are explained as the result of changes in the structure of constraints. A substantial part of daily life consists of economic activities, and economic decisions are characterized as those that deal with scarce resources such as money, time, or effort. By including psychological variables and the negotiation process, several economic assumptions are adapted. According to Antonides (1991, p. 15) "This provides for a more realistic explanation of behavior and a wider range of behavior to be explained."

Answers to the question of why people go beyond self-interest can be given in more detail after the following separate presentations of the economic, psychological and negotiation approach. What stands beyond doubt is that people differ in their social motivations.

2.2.1 ECONOMIC APPROACH OF INDIVIDUAL DIFFERENCES IN SOCIAL MOTIVATIONS

People usually hate when resources are not split equally and have a propensity to achieve cooperative outcomes through personal, social interactions, and impersonal market transactions (Wilson, 2010). The situation, in which an individual receives more than the other party, is called "advantageous" inequality. The situation, in which the other party receives more than oneself can be labeled "disadvantageous" inequality. Whether people like or dislike these inequalities depends also on the situation and with whom they are interacting. Thus, two important properties of 'other regarding' or social preferences are already addressed: (1) the interpersonal comparison and (2) the willingness to take care of others (also at own cost by decreasing own outcome). Besides the important factor of *inequality*, people usually care about the departure from the fairness norm (Löwenstein, 2007).

The social norm of fairness (egalitarian outcomes) from the economic point of view is closely connected with social preferences. These preferences came up since certain types of behavior, such as charitableness, or the underlying motives were difficult to explain with standard economic theory. With the emergence of experimental and behavioral economics, the situation changed. Fehr and Fischbacher (2002: C2) give the following social preference definition: "A person exhibits social preferences if the person not only cares about material resources allocated to her but also cares about the material resources allocated to relevant reference agents."

It seems that people exploit their bargaining power in competitive markets, but not in bilateral bargaining situations. In markets, social preferences might be observed less frequently because people can avoid situations where they must make costly contributions in order to signal generosity (List, 2009). Theoretical models and empirical studies suggest that people exhibit fair decisions[13], reciprocal behavior (Falk and Fischbacher, 2006), and also loss aversion (Kahneman and Tversky, 1979) in interpersonal comparisons of payoffs across individuals. However, we deepen the characteristics and properties of social preference models and introduce, in particular, the Fehr and Schmidt (1999) model and an extension regarding the 'trust game' (Krueger et al, 2008). But first we look back on the development from expected utility theory to social preference theory.

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[13] According to Falk and Fischbacher (2006) outcomes tend to be fair in bilateral bargaining situations.

2.2.1.1 Some history on social preferences

People tend to make decisions that reflect their subjective interests, but in his/her choices each individual is also influenced by preferences that are formed by the influence of other people. In standard economics it is assumed "that people come to the world with well-defined preferences then seek to satisfy those preferences maximally given the objective constraints that they face" (Löwenstein, 2007: p. 38). The concept of preferences in the sense of "that which one prefers" entered the English lexicon in 1864 according to the Online Etymology Dictionary (Wilson, 2010). Moreover, it is conventionally assumed that the preferences for each individual are stable and coherent, and consequently those preferences are rationally maximized. Given a set of options, an individual is assumed to maximize preferences or the expected value of a utility function, *U(x)* (Rabin, 1998).

Several theories, like the expected utility theory by Von Neumann and Morgenstern (1947), were developed to explain observed behavior and in particular decision-making under uncertainty. Several empirical studies have shown that decision makers do not always obey the underlying rationality axioms, namely ordering, continuity, and independence or that people do not maximize their utilities (Weber and Camerer, 1987)[14]. In general, preferences from the economics perspective refer to the set of some alternatives, which are ordered, and results in an optimal choice (Rabin, 1998). However, in reality people do not always know what they want and/or prefer due to lack of information or decisions under uncertainty and risk. Therefore, the economic concept of utility was enriched by psychological insights.

Social psychologists recognized the importance of interpersonal comparison. Equity theorists, such as Adams (1965), have argued that people attempt to maintain proportionality between inputs and outputs to themselves and others. Since people mostly act in social contexts rather than in isolations, interpersonal comparisons influence behaviors. Therefore, decision makers make choices depending on what is observed in reference agents, which can be, for instance, friends or workmates. Another early analysis by Kelley and Stahelski (1970) proposed that concern for payoff to others could be decomposed into motives, like cooperation and competition. Moreover, they identified that the concern for the other party depends on the ratio of, rather than the difference between, the parties' incomes.

The most prominent theory of decision-making under uncertainty incorporates relative concern. The utility concept by Von Neumann and Morgenstern (1947) was refined by Kahneman and Tversky (1979) with their well-known prospect theory or theory of loss aversion. A central idea of prospect theory is that people evaluate the utility of alternative

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[14] For instance, subjects violate the ordering principle of transitive preferences that requires, if an individual prefers *A* over *B,* that the individual should also prefer *B* over *C* and *A* over *C.*

courses of action relative to a reference point. Outcomes below the reference point are viewed as losses; outcomes above the reference point are perceived as gains. The reference point represents a state to which individuals have adapted and is usually assumed to correspond to the status quo. However, in an interpersonal context the outcomes of another person may emerge as an alternative. The prospect theory value function is concave in the regions of gains, indicating risk aversion, and convex in the region of losses, indication risk seeking. Kahneman and Tversky (1979) showed for behavior under uncertainty that people tend to weigh losses more heavily than gains for equal absolute value. Prospect theory is usually used to make accurate predictions of decision behavior in the individual decision context (Löwenstein, 2007).

Furthermore, psychological research informed economic research about making the utility function *U(x)* more realistic (Rabin, 1998). Therefore, the modification of human choice contained the incorporation of motives to the utility function involving other people, such as social or intrapersonal comparisons, fairness consideration or other norms like reciprocity (Löwenstein, 2007). However, for a long time, fairness has been considered to be a purely philosophical or ethical concept without relevance for economic analysis (Frey and Bohnet, 1995). Laboratory experiments dealing with fairness were first used in psychology but gained recognition in experimental or behavioral economics in the last thirty years. Economists started to study bilateral bargaining games, interactions in small groups and in controlled laboratory settings (Fehr and Schmidt, 2001). Of course, the influence of game theory cannot be ignored. This new branch in experimental game theory or behavioral economics tries to provide some explanation in order to bridge the gap between theory and empirical observations (Diekmann, 2004).

Bohm (1972) invented, for instance, a generalization of the prisoner's dilemma game in which *n* group members decide simultaneously how much to invest in a public good. Typical findings of the so-called 'public good game' are that players contribute roughly 50% of the endowment in a one-shot game, but many players' contributions unravel to approach 0% in latter rounds of multi-period games. Moreover Güth, Schmittberger and Schwarze (1982) developed the 'ultimatum game'[15], in which one player proposes a distribution of a fixed amount of money and the other player has the option of either accepting or rejecting it. Fairness considerations are shown when players in this two-person game frequently reject a positive but inequitable offer, even though this alternative would mean no gain for both players (Güth, et al, 1982).

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[15] In this two-stage game are two people, a proposer and a responder, who bargain over a fixed amount of money. First stage: proposer offers a split of money. Second stage: responder decides to accept or reject the offer. If accepted, each player receives money according to their offer; if rejected, each player receives nothing (Levitt and List, 2007).

In addition to the 'public good' and the 'ultimatum game' also the 'dictator game'[16] (Kahneman, Knetsch and Thaler, 1986), the 'gift exchange game'[17] (Fehr, Kirchsteiger and Riedl, 1993), and the 'trust game' (Berg et al, 1995) play an important role in understanding why people go beyond self-interest. Empirical studies have namely shown that people contributed, for instance, to a public good but people also rejected positive offers in the ultimatum game (Fehr and Gaechter, 2002; Fehr and Schmidt, 2001; Fehr and Gaechter, 2000). Thus, economists were inspired to work on new models which consider norms of fairness and reciprocity following the invention of game theory. In the 1980s and 1990s it became popular for economists to examine the paradox of preferences with the above mentioned experimental games (Wilson, 2010). The paradox was that people in controlled laboratory experiments regularly make choices which would result in lower payoffs for themselves. Therefore, economists concluded that there must be two meanings of preferences: (1) preferences for the self and (2) preferences for the social (Wilson, 2010). For more than three decades, social preferences have been measured with economic games. The recent models of social preferences were developed in the late 1990s or early years of the last decade. The basic idea of social preferences is that "people are self-interested, but they are also concerned about the payoffs of others" (Charness and Rabin, 2002: p. 817). People hence care about others and prefer more or less equitable outcomes (Fehr and Fischbacher, 2002).

In addition to becoming an important idea in economics, social preferences are also important to understand the limitations of the standard rational model of selfish behavior. In general, most of the standard economic models are based on the self-interest hypothesis, assuming that all people are exclusively motivated by their own material interest (Fehr and Schmidt, 1999). The main advantage of the self-interest hypothesis is that it works successful in some economic domains, like competitive markets with standardized goods, to provide accurate predictions. However, the predictions are misleading in markets with a small number of people involved, or in organizations with incompletely specified contracts (Fehr and Schmidt, 2001). "Reality provides many examples indicating that people are more cooperative than is assumed in the standard self-interest model. Well-known examples are that many people vote, pay their taxes honestly, participate in unions and protest movements, or work hard in teams even when the pecuniary incentives go in the opposite direction" (Fehr and Schmidt, 1993: p. 818).

Deviating from the self-interest hypothesis, a growing number of researchers suggested that the concern for fairness and reciprocity cannot be ignored in particular in social inter-

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[16] A simple variant of the ultimatum game: strategic concerns are absent as the proposer simply states what the split will be and the proposer has no veto power, rendering the proposed split effective.

[17] Similar to a principal-agent situation: the first mover requests a desired effort, or equality, level in return for the offer. The second mover then chooses an effort or quality level that is costly to provide, but increases the first mover's payoff (Levitt and List, 2007).

actions. Since a fraction of people cares about equitable outcomes, the social preference theory tries to implement the psychological evidence of interpersonal comparison and the idea of loss aversion (Kahneman and Tversky, 1979). However, social preferences are certainly context-dependent, since a minority of fair-minded players can force a big majority of selfish players to cooperate in the best case. Thus, the existence of social preferences is a matter of prevailing conditions (Fehr and Schmidt, 1999). In any case, social preferences are an approach and an extension of utility functions that encode interpersonal preferences. These functions specify the level of satisfaction as a function of outcome to self and others and make specific behavioral predictions in a wide range of situations (Löwenstein, 2007).

There is a growing body of research for laboratory and field experiments which classify social preferences as economically relevant. According to Croson and Know (2009: p. 209) "they are implicated in involuntary unemployment, strikes and lockouts, product pricing, contract negotiations, and other bargaining behavior". Gantner and Kerschbaumer (2011) also point out the potentially important direct and indirect effects on economic consequences, arguing that small effects might result in a large change via so-called "social multiplier".

2.2.1.2 Some social preference models

Different social preference models take different aspects into account. There are models based on a taste for reciprocity, the desire for equitable outcomes (Fehr and Schmidt, 1999), a distaste for unequal income shares (Bolton and Ockenfels, 2000), or a concern for helping the least well off and the total payoff of the group (Charness and Rabin, 2002). In general, social preferences models can be classified. We have *difference* or *inequality aversion models* (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000) which have no efficiency focus and *social welfare maximization models* which are based on efficiency (Charness and Rabin, 2002; Engelmann and Strobel, 2004). The common goal of these different models is to "incorporate material payoffs and the loss of unfair appropriation of money or goods as arguments in the utility function" (Diekmann, 2004: p. 492).

Thus, social preferences can be modeled by the weight people give to self-interest, inequality aversion, and social welfare. In more detail, the following models are mentioned:

First, in the 'theory of fairness, competition and cooperation' by Fehr and Schmidt (1999) the utility is diminished by the weighted sum of distances to richer reference agents and the weighted sum of distances to poorer reference agents. This theory considers both disadvantageous inequality which is often labeled *envy* and advantageous inequality which is often labeled *altruism*. In other words, according to Fehr and Schmidt (1999) a decision maker is *altruistic* towards other reference agents, if the outcomes are below an equitable

benchmark, but he/she feels *envious*, if the outcomes of the other reference agents exceed this level.

Second, in the 'theory of equity, reciprocity, and competition' by Bolten and Ockenfels (2000) payoffs and inequality aversion to the reference agents are balanced. In this theory, the assumption is in place that individuals are heterogeneous and it is assumed that the decision maker is not concerned about each individual reference agent but he/she is very satisfied when all group members receive exactly the same share or equal distribution.

Third, in the model of Charness and Rabin (2002) decision makers can make sacrifices to increase the payoff of all reference agents, but especially for the lowest payoff recipient. Thus, besides the Rawlsian principle of considering the payoff to the reference agent who is worst off, there is also the concern for efficiency, entailing to achieve Pareto-optimal outcomes. The idea to combine the concern for helping the least well off (maxmin-preferences) with the preference for efficiency is also widely used in other studies, like Engelmann and Strobel (2004).

Based on this literature and according to Vetschera and Kainz (2012), six social prefer-ences factors can be considered that might influence the subject's behavior for the distri-bution and allocation of resources, as indicated in Figure 6. The most common factor is *own payoff* which satisfies the self-interest hypothesis and is the starting point for interper-sonal comparison of payoffs across individuals. The *efficiency* factor takes into considera-tion the total payoff to all group members or reference agents and aims at the highest pos-sible outcome. The *altruism* factor comes into play with social interaction, meaning if an individual is altruistic, he/she acts to benefit others at a cost to him/herself (Gsottbauer and van den Bergh, 2012). Thus, someone is altruistic if his/her utility increases with the well-being of other people (Fehr and Schmidt, 1999). The *envy* factor also considers the rela-tive standing compared to others, like in the altruism factor. This is a negative type of so-cial preferences where individuals suffer when they get less than the reference agents. If someone is envious, he/she has the desire to decrease the welfare of others or is willing to reduce the material payoff of a reference agent at his/her own personal cost (Fehr and Schmidt, 1999). The *equality* factor can be seen as a preference for fairness, which means that equal distributions of material resources are preferred. The *maxmin* factor is charac-terized to care for the worst off reference agent within a group of people (Charness and Rabin, 2002).

Factor	Source		
	Fehr/Schmidt	Bolton/Ockenfels	Charness/Rabin
Own Payoff	x	x	x
Efficiency			x
Altruism	x		
Envy	x		
Equality		x	
MaxMin			x

Figure 6: Factors of social preferences by Vetschera and Kainz (2012)

Furthermore, existing social preferences depend on the perceived intentions (Ben-Ner et al, 2011). Therefore, besides social preference models where the decision maker distributes or allocates resources; there are also intention-based reciprocity models where the reference agents' intentions and/or the combination of distributions and intentions are taken into account (Fehr and Schmidt, 2001). Croson and Konow (2009) also identified two types of social preferences, (1) *distributive,* i.e. preferences over outcomes and end-states, and (2) *reciprocal,* i.e. preferences over intentions or player types. The latter approach deals with the assessment of the reference agents' intentions and assumes that someone does have "real" social preferences but only cares about the intentions of the reference agents. Rabin (1993) observed that behavior is often a reaction to the (expected) intentions of other people. He predicts that people are generous only if they have been treated kindly. If, for instance, the sender has signaled a fair intention, two-thirds of the receivers will make nice choices too. If a person feels treated kindly/badly, he/she wants to return the favor/hurt. Thus, in this approach it is crucial how a decision maker perceives and interprets the behavior of the other reference agents, which requires even more fundamental psychological understanding (Fehr and Schmidt, 2001).

Although social preferences matter, shape decisions, and affect social interactions (Fehr and Fischbacher, 2002; Bowles and Gintis, 2011), they are not free of caveats either. Binmore and Shaked (2010) argue that it is uncontroversial that most people care about others to some extent. They show little understanding for the argument that concern for oneself automatically implies maximization of money and self-interest. Even Fehr and Schmidt (2001) argue that each of the different social preference models has difficulties in explaining the full diversity of the different experimental observations. Daruvala (2010) points out that the social preference models do not completely capture preferences. Croson and Konow (2009) mention moral biases or distortions which are created by self-interest and can obscure social preference measures. Moreover, the heterogeneity of subjects with respect to self-interest and social preferences cannot be denied. Thus people differ with regard to their inclination to behave in a selfish or reciprocal manner (Fehr and Fischbacher, 2002).

2.2.1.3 The Fehr and Schmidt model

Perhaps the most widely used and tested model of social preferences is the model by Fehr and Schmidt (1999), which is also applied in our social preference measurement instrument for screening and matching our subjects. By checking Google scholar we detect that this social preference model is highly influential, with more than 5,300 citations of the Quarterly Journal of Economics article.[18] The paper's main idea is that, as already mentioned, in addition to purely self-interested people a fraction of people is also motivated by fairness considerations. In Fehr and Schmidt's inequality aversion model, decision makers dislike outcomes that are perceived as inequitable and they are willing to give up some material payoff to move it into the direction of more equitable outcomes. However, inequality aversion can also be self-centered "if people do not care per se about inequality that exists among other people but are only interested in the fairness of their own material payoff relative to the payoff of others" (Fehr and Schmidt, 1999: p. 819).

Presenting the respective model, we denote a vector of payoffs by **x**, and we refer to the group member whose preferences we are modeling as member i by x_i. In the Fehr-Schmidt model, the utility which member i assigns to an outcome distribution is specified as

$$U_i(x_i, x_{-i}) = x_i - \alpha_i \frac{1}{n-1} \sum_{j \neq 1} max\{x_j - x_i; 0\} - \beta_i \frac{1}{n-1} \sum_{j \neq 1} max\{x_i - x_j; 0\} \qquad (1)$$

$(with\ \beta_i \leq \alpha_i\ and\ 0 \leq \beta_i \leq 1)$, where parameter α_i represents the "disadvantageous" inequality and measures player i's *envy* at being poorer than others, and parameter β_i represents the "advantageous" inequality and measures player i's level of *altruism* or discomfort at being richer. Players who are altruistic towards reference agents imply that they want to increase others' payoff, if the payoff of others is below an equitable benchmark. In turn, players who feel envy want to decrease others' payoff, if the payoff of others exceeds the equitable benchmark (Fehr and Fischbacher, 2002). The assumption $\beta_i \leq \alpha_i$ captures the idea that a player suffers more from inequality that is to his/her disadvantage. Player i is also willing to reduce his/her advantage relative to j ($0 \leq \beta_i < 1$). Thus, this model considers three properties of the outcome distribution to be relevant for an actor: The actor's own payoff, envy, and altruism (Fehr and Schmidt, 1999; Vetschera and Kainz, 2012).

The social preference model can be illustrated in Figure 7, where the utility of player i is represented as a function of x_j for a given payoff x_i. "Given his own monetary payoff x_i,

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[18] Retrieved January 24, 2013, from http://scholar.google.com

player i's utility function obtains a maximum at $x_j = x_i$. The utility loss from disadvantageous inequality ($x_j > x_i$) is larger than the utility loss if player i is better off than player j ($x_j < x_i$)" (Fehr and Schmidt, 1999: p. 822). The utility function is linear in inequality aversion as well as in x_i. This implies that the marginal rate of substitution between monetary payoff and inequality is constant.

According to Diekmann (2004), the predictions of the Fehr and Schmidt model, tested in dictator games, "Never offer more than received", entailing a balance between a material loss and gain. Thus, social preferences are a trade-off between material payoff (self-interest) and fairness payoff (inequality aversion).
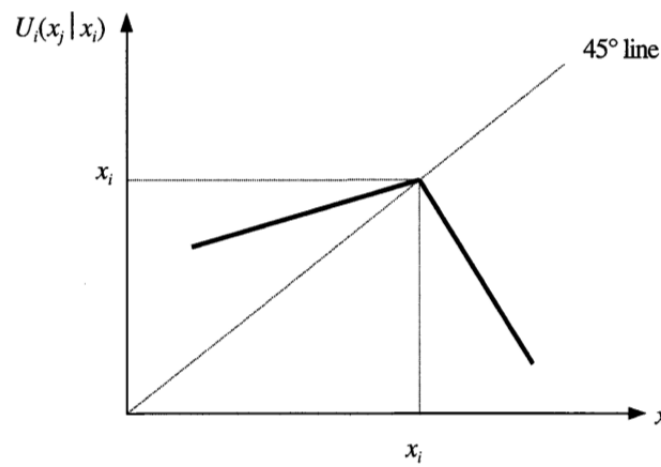
Figure 7: Illustration of the Fehr and Schmidt social preference model

Concerning the Fehr and Schmidt model there is also some critique. For instance, Binmore and Shaked (2010) attest their work to be too one-dimensional because human behavior is explained only on the basis of payoff differences. Thus, individuals would behave "as if" motivated by inequality aversion. Moreover, Binmore and Shaked (2010) are also skeptical regarding the application, since results of laboratory experiments do not predict how people really behave, such as donating in a 'public good game' compared to donations to strangers in the streets. However, Bowles and Gintis (2011) argue that cooperation is common because people are motivated by social preferences. These social preferences play a role, since people care about the well-being of others and value fairness and reciprocity norms. Since a majority of people think that cooperation is the right thing to do and enjoy doing it, they dislike unfair treatment and enjoy punishing group members who violate norms, like in the 'public good game' (Fehr and Gaechter, 2000 and 2002). Thus, social preferences are ubiquitous and the proximate cause of altruistic cooperation (Bowles and Gintis, 2011).

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2.2.1.4 Social preferences in the trust game

Kugler et al (2007) tried to use the Fehr and Schmidt (1999) social preference model (1) to predict differences in behavior of individuals in the 'trust game' (Berg et al, 1995).[19] The receiver's utility (U_R) would be therefore

$$U_R = 3i - r - \propto_R max\{(10 - i + r) - (3i - r), 0\}$$
$$- \beta_R max\{(3i - r) - (10 - i + r), 0\} \qquad (2)$$

At first they consider the case where the sender has more outcome than the receiver after the first decision: $10 - i > 3i$. Since the forth term of the utility function is 0 for any r, and both the second and the third terms decrease in r, the receiver therefore will choose $r = 0$.

Then, Kugler et al (2007) consider the following case: $10 - i \leq 3i$. They assume that the receiver will never choose an r that will leave him/her with a lower outcome than the sender. When the condition $10 - i + r \leq 3i - r$ is satisfied, then the receiver will choose an r that will maximize his or her utility:

$$U_R = 3i - r - \beta_R\{(3i - r) - (10 - i + r)\} = 3i - 4\beta_R i + 10\beta_R - r + 2\beta_R r. \qquad (3)$$

This results in $r = 0$ for $\beta_R < 0.5$ and in the maximum value of r if $\beta_R \geq 0.5$[20]. Therefore, Kugler et al (2007) make the following conclusion: If a sender is matched with a receiver who satisfies $\beta_R \geq 0.5$, then his/her own interest is to choose the largest possible investment (irrespective of their own social preference parameters α_S and β_S).

Similarly to the above described predictions, Krueger et al (2008) found in a different model that receivers must know their own social preferences because they should return nothing or establish payoff equality. Self-interested senders who know this should invest all or nothing, depending on their assumptions about the receivers' social preferences. However, senders' own social preferences may justify partial investments. The sender's (S) outcome following a different approach by Krueger et al (2008) is in general terms:

$$\pi_S = E - pE + qmpE,$$

where E is the endowment given to the sender, p: the fraction invested by the sender ($0 \leq p \leq 1$), q: the fraction returned by the receiver ($0 \leq q \leq 1$), and m: multiplies the invested endowment $p \times E$, and determines how much the receiver gets.

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[19] Holm and Nystedt (2008) tried this in a similar but not identical approach.

[20] This is derived from the upper bound mentioned above, $10 - i + r = 3i - r$ and it yields $r = 2i - 5$.

The receiver's (R) outcome is:

$$\pi_R = mpE - qmpE.$$

Krueger et al (2008) also start the analysis with the receiver because his/her decision is what the sender needs to anticipate before deciding how much to invest. In contrast to Fehr and Schmidt (1999), their receiver's utility function (U_R) is defined as his/her own outcome plus the sender's weighed outcome minus the weighed absolute difference between the two outcomes. Thus, the receiver seeks to maximize

$$U_R = \pi_R + w_1[\pi_S] - w_2|\pi_R - \pi_S|, \tag{4}$$

where w_1 is benevolence, i.e. the weight given to the sender's payoff ($0 \leq w_1 \leq 1$) and w_2 is inequality aversion, i.e. the weight given to the difference between the receiver's and the sender's payoff ($0 \leq w_2 \leq 1$).

Krueger et al (2008) assume for simplicity that $E = 10, m = 3$, and $w_1 = w_2 = w$, then the receiver keeps the tripled money in the case of $w = 0$. In contrast, in the case of $w = 1$ and when the sender invests everything, the receiver returns $\frac{m}{2}$. Furthermore, $w = 0.5$ would be an empirically plausible level of altruism and inequality aversion, and for $w = 1/3$ the receivers would be indifferent if the sum of the two weighed reductions are equal to the increase in one's own outcome. Krueger et al (2008) conclude that there exists a critical level of social preference parameters below which the receiver will not reciprocate. Above the critical point, the receiver will reciprocate the amount needed to eliminate inequality. However, social preference models are incomplete regarding reciprocating behavior, since they cannot describe various actual behaviors in empirical results.

The receiver

The receiver faces the question of which proportional transfer q maximizes utility. The inequality term w_2 can be considered in two cases: First, when the third term in (4) is positive, which would imply *altruism* (or guilt) and, second, when the term in (4) is negative, which implies *envy*. Equality is the boundary between these two regions. In the expression of the third term in (4) $m - E + pE = 2q^*m, q^*$, it is the receiver's return that yields equality.

First, we consider the case in which the term in the absolute value is positive. For the range of $0 < q < q^*$, the derivative of the receiver's utility can be written as $\frac{\partial U_R}{\partial q} = m(w_1 + 2w_2 - 1)$. If $w_1 + 2w_2 = 1$, the derivative is zero, and the receiver is indifferent about the size of return. If the derivative is negative, when $w_1 + 2w_2 < 1$, then this means that utility is maximized at $q = 0$. If the derivative is positive, when $w_1 + 2w_2 > 1$, then this means that utility is maximized at $q = q^*$.

Second, we consider the case in which the term in the absolute value is negative. For the range of $q^* < q \leq 1$, the derivative of the receiver's utility can be written as $\frac{\partial F}{\partial q} = m(w_1 - 2w_2 - 1)$. This derivative cannot be positive because $w_1 + 2w_2$ cannot be > 1, since choosing $q > q^*$ decreases utility. Thus, Krueger et al (2008: p. 35) assert that "depending on the total strength of their social preferences, receivers can maximize their utilities by returning nothing or by stabling equality".

The sender

A self-interested sender who knows the constraints on the returns imposed by the receiver's social preferences either invests nothing or the full amount.[21] According to Kruger et al (2008), the challenge for the sender is to predict correctly whether the receiver's preferences are strong enough to seek equality or not. Therefore, senders seek in their utility function (U_S) to maximize their own payoffs plus the weighed receiver's payoff minus the weighed absolute difference between the two outcomes or

$$U_S = \pi_S + w_1[\pi_R] - w_2|\pi_S - \pi_R|. \tag{5}$$

The sender's task is hence complicated due to the fact that strength of reciprocity q is unknown. Beginning to derive the value of $\tilde{p}$[22] that eliminates the outcome difference means that the sender anticipates outcome equality. Again we consider two cases.

First, we consider the case in which the term in the absolute value is positive, which implies *envy* from the sender's perspective. For the range of $\tilde{p} < p \leq 1$, the derivative of the sender's utility can be written $\frac{\partial U_S}{\partial p} = E(mq - 1 + mw_1 - mqw_1 - mw_2 + 2qmw_2 - w_2)$. If the derivative is negative, the smallest value $\tilde{p}$ maximizes utility, while if the derivative is positive, then $p = 1$ maximizes utility. The sign of the derivative depends on, amongst others, the strength of the sender's social preferences. Stronger social preferences and stronger expectations of reciprocity increase the likelihood of utility maximizing investment. Investments of size $\tilde{p}$ can be the best option only if social preferences are very weak and if expectations of reciprocity are very low (Krueger et al, 2008).

Second, we consider the case in which the term in the absolute value is negative, which implies *altruism* (or guilt) from the sender's perspective. For the range of $0 < p < \tilde{p}$, the derivative of the receiver's utility can be written $\frac{\partial G}{\partial p} = E(mq + w_1m - w_1qm + w_2m - 2w_2qm + w_2 - 1)$. Again, the sign of the derivative maters: if the derivative is negative,

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[21] The lower limit where the sender ensures equality depends on the perceived type of receiver, i.e. egoistically orientated or social-minded.

[22] The value of $\tilde{p}$ is also influenced by q.

the utility is maximized for $p = 0$, while if the derivative is positive, the case $\tilde{p}$ maximizes the utility. Thus, Krueger et al (2008) assert that senders' partial investments are in line with social preference models. In any case, the senders need to know their social preferences but must also generate expectations regarding the receiver's intention to reciprocate. If the senders assume that receivers are rational, then they would assume that the reciprocity will be *0* or q^*. If rationality is not assumed, the senders also need to consider the possibility of reciprocity between *0* and q^* (Krueger et al, 2008).

To sum up, the receiver faces the question of which proportional investment maximizes utility by considering equality as a boundary between altruism and envy. Depending on the total strength of the social preferences, receivers can maximize their utilities by returning nothing or establishing equality. More generally, we can summarize that models of social preferences are also theories of fairness and reciprocity. A preference for the fairness norm is also known as inequality aversion; i.e. the decision maker prefers equal distribution of material resources. A preference for the reciprocity norms means, for instance, to answer shown kindness with kindness (or punish unkindness). People have the preference, for instance, to achieve equitable outcomes, and if it is necessary even at one's own cost for helping the other party (i.e. decrease of own outcome) but the higher the cost the less frequent a pro-social behavior is (Croson and Konow, 2009; Bowles and Gintis, 2011).

2.2.2 *Psychological approach of individual differences in social motivations*

How do people deal with conflicts between self-interest and collective interest from the psychological perspective? In particular, what makes people willing to forego immediate self-interest and behave in a cooperative manner? Social-psychological theory[23] stresses the importance of broader considerations that extend the pursuit of direct self-interest. Such broader considerations include, for instance, the desire to enhance collective outcomes or equality in outcomes. Four variables or major sources of transformation are identified by Van Lange and De Dreu (2001): (1) beliefs regarding the behavior of others; (2) relationship-specific features, such as commitment and trust; (3) social norms, such as fairness and reciprocity, and of course (4) interpersonal dispositions, such as preexisting individual differences in social value orientations (Liebrand, 1984; Murphy et al, 2011).

Fairness from a psychological point of view is closely connected with helping, pro-social behavior and altruism, and helps to describe and explain phenomena of cooperation in contrast to competition. Psychological fairness also focuses on interpersonal dispositions or individual differences in social value orientations. The concept of social value orientation (Kelley and Stahelsky, 1970; McClintock, 1972; MacCrimmson and Messick, 1976; Liebrand, 1984) distinguishes between distinct preferences for particular patterns of outcomes for oneself and others, including *cooperation*, entailing positive outcomes for oneself and others, *individualism* which maximizes one's own outcome with little or no regard to others, and *competition*, meaning to emphasize relative advantage over others.

People have a strong desire to see themselves as especially fair and pro-social individuals among their reference groups (Roberts, 1998; Allison et al, 1989). The reason is mainly that many people care about self-images (Bénabou and Tirole, 2002; Ellingson and Johannesson, 2004). Therefore, in the following we take a closer look from the psychological perspective on helping, social motivation, measures for social value orientations, and on the link between attitude and behavior.

2.2.2.1 Social behavior and its explanations

In psychology, we distinguish between the terms "helping behavior", "pro-social behavior" and "altruism", which are frequently used interchangeably. "Helping" is the broadest term, including all forms of interpersonal support. The meaning of "pro-social behavior" is narrower, in that the action is intended to improve the situation of the help-recipient.

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[23] An example would be the interdependence theory by Kelley and Thibaut (1978).

The actor is not motivated by the fulfillment of personal obligations, and the recipient is a person rather than an organization. Moreover, pro-social behavior may result either from the ultimate goal to benefit oneself (egoistically motivated behavior) or from the ultimate goal to benefit another person (altruistically motivated behavior) (Bierhoff, 2001). In any case, pro-social behavior is any act performed with the goal of benefiting another person, regardless of motive, altruism being its strongest form. The term "altruism" (which we already mentioned in previous sections) refers to pro-social behavior that has an additional property, namely that the helper's motivation is characterized by perspective-taking and empathy (Bierhoff, 2001). Altruism in the New Webster Encyclopedic Dictionary stands for unselfish interest in or the care for the welfare of others. This definition is based on Sawyer (1996) who stated that altruism is a principle or practice of seeking the welfare of others. However, the term is differently interpreted in various disciplines. In biology, a person acts altruistically if his/her actions incur material (fitness) costs for him/her, while bringing another person a material (fitness) advantage. In psychology, a person acts altruistically if his/her action is costly for him/her in economic terms while bringing another person an economic advantage and if the action is not motivated by psychological advantages such as, e.g. feeling good about oneself.

The interesting phenomenon in this context is why people help one another, in particular when they are strangers. The theory of reciprocal altruism was developed by Trivers (1971) and is rooted in biology. This theory explains pro-social behavior on the basis of reciprocity among non-relatives. The basic tenet of the theory is that pro-social behavior follows the principle of reciprocity, and it is favored if the costs for the helper are lower than the benefits for the help-recipient (Trivers, 1971). If the costs to the helper are low and the benefits for the help-recipient are high, reciprocal altruism may be advantageous. The problem with this type of altruism is that others may exploit it. Therefore, reciprocal altruism may be limited to certain circumstances, for instance, a high level of trust between helper and help-recipient. Trust is often the result of familiarity and attitude similarity. In general, these are conditions which increase the likelihood of mutual support and decrease the danger that pro-social responses will be exploited (Bierhoff, 2001).

The social dilemmas between self-interest and collective interest are also explained by social psychologists, who emphasize that it depends on the context whether behavior is guided by self-interest or collective interest (Van Lange and De Dreu, 2001). The notion that people go beyond self-interest is formulated in interdependence theory (Kelley and Thibaut, 1978). This theory deals with an interdependence structure where we have the situation in which personal outcomes are partially or completely determined by the actions of one or more other(s) (Kelley and Thibaut, 1978). However, the concept of social dilemma refers to situations in which self-interest and collective interest are at odds. In contrast, a stronger conflict of interest would be a zero-sum situation in which an individual's own interest completely conflicts with a partner's interest. The gain of one person implies an equal loss to the other person, and vice versa. In any case, the main objective of social psychologists is to move away from preferences of direct self-interest and attach im-

portance to long-term outcomes of another person or reference groups (Van Lange and De Dreu, 2001).

Several explanations of why people go beyond self-interest inspired by social psychology can be given:

First, we mention the *beliefs* regarding other people's behavior. For instance, trust is a general belief in the honesty and cooperative intentions of others. These beliefs about other people's behavior, like reciprocity, can be best assessed through (face-to-face) communication. Research in different disciplines (e.g. Ostrom, 2003) has revealed that the opportunity for communication prior to decision-making in social dilemmas promotes cooperative behavior. The study of Dawes et al (1977), for instance, revealed that communication can be quite effective in promoting cooperation, in particular if it results in promises to cooperate. Moreover, it is plausible that communication enhances building trust in one another's cooperative behavior, which in turn promotes cooperation (we expand the communication topic in section 2.3).

Second, we take *features of relationship*, such as satisfaction and trust, into account. These elements may make sense, since outcome evaluations are also guided by features of the relationship. The degree of satisfaction one derives from being involved in a relationship is important because a greater degree of satisfaction stimulates also pro-social behavior (Van Lange and De Dreu, 2001). Furthermore partners in a relationship also communicate trust to one another through the exchange of cooperative behaviors. As already mentioned (see section 2.1), trust is presumably associated with long-term orientation, where people believe that their partners will reciprocate favors and sacrifices (Van Lange and De Dreu, 2001).

Third, we cannot ignore the concept of *social norms*. Social norms are broadly shared guidelines for appropriate behavior in social contexts and define rules for dealing with specific interdependence problems and opportunities. Fairness and reciprocity norms (as already discussed) can be mentioned in this context. For instance, the equality (fairness) norm considers shares that are proportional to taken investments or contributions (Adams, 1965). Thus, outcome transformations are also rooted in social norms. The functions of such norms are often, on the one hand, to enhance the functioning of groups and societies, and, on the other hand, to protect the 'weak' from being exploited by the powerful and provide help to individuals who are in strong need of such help. Social norms deal with the distribution and allocation of outcomes, or they deal with procedural issues (Von Lange and De Dreu, 2001).

Forth, social psychologists refer to interpersonal dispositions or namely *social value orientations*. Someone who is *cooperative* shows a behavior that maximizes the outcomes (or well-being) of a collective, while someone who is *competitive* maximizes relative advantage over others. Kelley and Stahelski (1970), for instance, first assessed participants' goals with a questionnaire, and classified participants as either cooperative or competitive.

On the basis of these classifications, three types of participants were created: cooperative pairs, cooperators paired with competitors and competitive pairs. These pairs played a repeated two-person prisoner's dilemma, and participants were asked about the goals and intentions of the other person. Kelley and Stahelski (1970) found that the inferences made by cooperators were more accurate overall than those made by competitors. Indeed, competitors interpreted the competitive behavior that they themselves triggered in cooperators in terms of competitive goals. In contrast, cooperators triggered cooperation in cooperators and competition in competitors, and made parallel inferences (Van Lange and De Dreu, 2001).

2.2.2.2 Social motivation, social motives and interpersonal dispositions

The French philosopher August Comte (1798-1857) claimed that pro-social motivation is *egoistic*, when the ultimate goal is to increase one's own welfare, but it is *altruistic* when the ultimate goal is to increase another's welfare. Thus, the old psychological theories of motivation have assumed that all human actions, including pro-social behavior, are directed toward the ultimate goal of increasing the actor's own welfare (Batson, 1987; Batson et al, 1988). Consequently, avoiding the feeling of guilt cannot be seen as altruistic. Therefore, Batson (1987) proposed the empathy-altruism hypothesis, meaning that empathic emotion evokes altruistic motivation, or empathy induces altruism. According to Hoffman (1981), empathy is defined as motivation towards another person or an affective response appropriate to someone else's situation rather than one's own. He also stresses innate disposition and emotional contagion. In addition to the empathy-altruism hypothesis, Skinner (1953) asserted a long time ago that all human thoughts and behaviors are just reactions to stimuli. He explains behavior as a simple stimulus and (conditioned) response relationship (stimulus-response model) and claims that everything is part of seeking a reward or avoiding punishment. Furthermore, Skinner (1953) stresses that the environment determines behavior, thoughts, emotions, beliefs and so on.

De Dreu et al (2000) state that negotiation is an ongoing process of information exchange which is driven and biased by social motives. Social motives are acquired or learned in social groups. There is evidence that social motives are responsible whether negotiation group members emphasize their own or group interests (Beersma and De Dreu, 1999). Several researchers agreed and followed the idea to measure social motives with preferences for distribution of outcomes between oneself and interdependent others (Kelley and Stahelsky, 1970; McClintock, 1972; MacCrimmson and Messick, 1976; Liebrand, 1984). Individuals have an *egoistic* motive when they seek to maximize their own outcomes and ignore the outcomes of other group members. Individuals have a *pro-social* motive when they seek to maximize outcomes for themselves as well as for other group members. These social motives are rooted in individual differences which are labeled *social value orientations* referring to stable personality factors (Beersma and De Dreu, 1999). Howev-

er, it is presumed that these social value orientations are learned over time, "as people interact with others and are exposed to the benefits and dangers of cooperative and competitive behavior" (De Dreu et al, 2000: p. 890). Social value orientations are based on the already mentioned interdependence theory (Kelley and Thibaut, 1978) which analyzes the exchange and coordination of outcomes between interdependent partners. It is obvious that some people are more inclined than others to approach people in a pro-social manner (De Dreu and Van Lange, 1995). Therefore, even when social value orientations are defined as stable personality factors, they certainly depend on the situation and persons. However, mixed-motive situations are definitely influenced by group members' social motives.

McClintock's (1972) influential work outlined four principal social value orientations: *individualism or egoism* (individual gain maximization), *competition* (relative gain maximization), *cooperation* (joint gain maximization), and *altruism* (others' gain maximization). This work on various 'social value orientations' posits the existence of different social motivations (Kelley and Stahelsky, 1970; MacCrimmson and Messick, 1976; Liebrand, 1984). According to Yamagishi (1995: p. 322), social value orientation is defined as "an attitude taken toward self and an interdependent other". The distinct social value orientations, like egoist or altruist, can be taken to classify actors (Cook and Cooper, 2003). These can be viewed as more or less enduring individual differences or as motivations that vary across individuals and situations. Yamagishi (1995) concludes that even egoists are willing to cooperate if they understand the long-term consequences of non-cooperative behavior, and at the same time trust others. Thus, the social value orientations distinguish between actors in terms of motivations and define these motivations as enduring attitudes. Yamagishi (1995) argued that these motivations can also be seen as expectations of the other's behavior.

2.2.2.3 Some psychological questionnaires for social value orientations

In this section we present some exemplary psychological questionnaire scales for measuring social value orientations. We start with some old measurement instruments and conclude with the newest one, the 'social value orientation slider' (Murphy et al, 2011).[24]

In general, altruism is associated with biological instincts, empathy and social norms such as equality (fairness) and reciprocity. It can be enhanced by learning (reward and punishment) or imitation. Even in economic terms, altruism is related to helping behavior or behavior which is related to social dilemmas and negotiations. Moreover, altruism is formally accounted for by including the outcome of others in the utility function of an individual

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[24] This instrument is also employed for screening and matching individuals of trust game negotiations.

(Antonides, 1991). This implies that some weight is given to the other's outcome. Sawyer (1966), who established an 'altruism scale' by measuring cooperative, individualistic, and competitive interpersonal orientation, first had the simple idea to distinguish between one's own outcome and the outcome of another person. Cooperative would be someone who takes the other party into account; individualistic is someone who just cares about himself; and competitive is someone who wants to defeat the other party (Deutsch, 1962).

The altruistic (or rightly social preference) motivation is captured by the weight assigned to the outcome of the other person. In detail, Sawyer (1966) measured the degree of altruism by asking individuals for their preferences toward the distribution of money between themselves and others. The attractiveness of a joint outcome is conceptualized as the linear combination $P + (w \cdot O)$, where P is the payoff for the self, O is the payoff for another person, and w represents the coefficient of how much weight a decision maker gives to the outcome for another person in relation to his/her own outcome (Murphy and Ackermann, 2010). Thus, subjects preferring the same money for themselves and for others were classified as cooperative (w would be greater than zero), whereas a preference for difference was classified as competitive (w would be less than zero). A major finding was that individuals were more altruistic towards friends than strangers (Sawyer, 1966). However, some limitations of the altruism scale are mentioned, like that it cannot differentiate between pro-social motivation and inequality aversion, or that validity and reliability is moderate ($r = 0.32$) (Murphy and Ackermann, 2010). Therefore, there are also other altruism scales, like the one by Rushton, Chrisjohn, and Fekken (1981), which was designed with the purpose to assess altruism via self-report. This altruism scale includes in contrast 20 questions with five response options (never, once, more than once, often, very often). Sample questions would be *"I have given directions to a stranger"* or *"I have donated blood"*.

MacCrimmon and Messick (1976) followed up on the idea of the altruism scale by Sawyer (1966) and stated for any complex social system that the choices of a single person can often affect the outcomes of others. By taking the others' outcomes into account in making choices, they provided a framework for theories of social decision. In this framework, social value orientations of self-interest, self-sacrifice, altruism, aggression, cooperation, and competition are established. These social value orientations are based on the simple operators of summations and differences. The approach of so-called *decomposed games* can also be seen in the 'ring measure of social values' (McClintock, 1978; Liebrand, 1984; Liebrand and McClintock, 1988). This ring measure is designed to assess social value orientations or interpersonal motivations of how individuals weigh their own outcomes versus outcomes of one or more others. We find 16 or 24 scenarios in which individuals choose one of two combinations of own or other outcome. A sample scenario would be a choice between 'A: $14.50 for me and -$3.90 for other' and 'B: $13.00 for me and -$7.00 for other'. Moreover the method can also be presented graphically on a Cartesian coordinate system where payoffs to the decision maker are presented on the *x*-axis and payoffs to another are presented on the *y*-axis (Murphy and Ackermann, 2010). A vector and the

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angle of the vector can be computed after the series of dichotomous allocations decisions (with the added numbers of own payoff and payoff for others). Finally, the decision maker can be classified among the four social value orientations: *altruistic*, *cooperative*, *individualistic*, and *competitive* (for further explanation see methods section 4.2.1.2).

While the 'ring measure' (McClintock, 1978; Liebrand, 1984; Liebrand and McClintock, 1988) was modified and adapted to the newest instrument called 'social value orientation slider' (Murphy et al, 2011), also questionnaire scales were designed to assess pro-social behavior via self-report. The 'pro-social personality battery' (Penner et al, 1995), for instance, presents for 30 or 56 questionnaire items seven sub-scales for social responsibility, empathy, perspective taking, personal distress, mutual moral reasoning, other oriented reasoning, self-reported altruism. Each question is scored on a Likert-scale from *0* to *5* and sample questions would be "My decisions are usually based on my concern for other people" (moral reasoning) or "I am often quite touched by things that I see happen" (empathy).

On the contrary, the 'social value orientation slider' (Murphy et al, 2011) follows the idea of assessing how participants vary their motivation or goals when evaluating different resources, or in other words how subjects prefer to divide resources between themselves and another person. This slider improved the 'ring measure' because a significant number of subjects could not be classified due to inconsistent choice behavior. For instance, the 'ring measure' would diagnose an inconsistency if a decision maker is motivated by inequality or loss aversion. The 'social value orientation slider' is highly efficient (validity and reliability $r = 0.92$) and distinguishes, again like the 'ring measure', between four common social value orientations. These social value orientations by Murphy et al (2011) are *altruistic* (maximize others' payoff), *pro-social* (maximize joint payoff or minimize difference between payoffs), *individualistic* (maximize payoff to self) and *competitive* (maximize the positive difference between own and others' payoff) behavior. This measure is explained in more detail in the methodology section (see 4.2.2).

2.2.2.4 The link between attitudes and behavior

It is interesting to test whether different interpersonal dispositions leads to intended behavior or not. The relationship between attitudes and behavior is not only an interesting research link for social psychology. Indeed the amount of economists who compare attitudes or belief measures with behavioral results from experiments is increasing (Glaeser et al, 2000; Gaechter et al, 2004; Fetchenhauer and Dunning, 2009). Basically, attitude is only one factor determining behavior. According to Katz (1960), an attitude can be considered as an individual predisposition to evaluate an object or an aspect of the world in a favorable and unfavorable manner. The psychological concept of attitude (values) is related to the economic utility (preferences). In contrast to attitudes, intentions are plans that some-

one intends to do, and consequently it can be described with planned behavior. Like attitudes, intentions contribute only a small extent of actual behavior (Antonides, 1991).

Attitudes may or may not lead to behavior. Ajzen and Fishbein (1977) are pioneers in examining the attitude and behavior relationship. They claim to ensure a high correspondence between these two measures. The researchers have identified the requirements of action, target, context, and time, which should be fulfilled in both measures in order to obtain a high correspondence. These requirements are associated with the attitude and behavior to be predicted. The element of *action* relates to the behavioral act to be predicted, for instance helping behavior. According to Antonides (1991), an attitude toward helping behavior in general will not be able to explain specific behaviors, such as helping a stranger who asks the way. The element of target relates to the object about which an attitude is stated, e.g. trust. If the statement only expresses the attitude toward trust, a successful prediction of specific acts in particular contexts (e.g. trusting a stranger) is not expected. Ajzen and Fishbein (1977) expect that the attitude can explain a single-act criterion to some extent. In studies, for instance, a high correspondence between the attitude toward drinking and smoking and self-reported behavior is reported. Correspondence of the context and time element is assumed to improve the attitude-behavior relation further. The problem is if all requirements are specified in an attitude statement, this statement can hardly be distinguished from a behavioral intention. Antonides (1991) suggest that a more fruitful approach would be to supplement the appropriate restrictions. Behavioral intentions have been found to explain specific behavior only to a relatively small extent. Attempts at achieving better predictions with more accurate measures of intentions have failed. The correspondence between attitude and behavior is increased by stating the attitudes with explicit references to the target, action, context and time of the behavior to be predicted. Such specific attitude statements become very similar to behavioral intentions which are less successful in predicting behavior.

To sum up, beliefs about others' behavior, relationship specific features such as commitment, social norms, and interpersonal dispositions are factors why people care about others. Regarding individual differences, we mentioned in particular pro-social and egoistic orientation. However, attitudes may or may not lead to predicted behavior.

2.2.3 NEGOTIATION APPROACH OF INDIVIDUAL DIFFERENCES IN SOCIAL MOTIVATIONS

Evidence from economics and psychology already indicated that concern of fairness and reciprocity are important for bilateral negotiations (Fehr and Fischbacher, 2002). These fairness and reciprocity considerations were made possible by the influence of psychology, where studies on motivations that underline interdependent decision behavior have a long history (Kelley and Stahelsky, 1970; McClintock, 1972; Liebrand, 1984; Murphy et al, 2011). People usually exhibit a wide range of different motivations when they choose among interdependent outcomes and hence we can also make the observation that people have the desire to enhance collective outcomes. The role of fairness from the negotiation sciences perspective is definitely related to achieving equal splits of resources.

According to Lax and Sebenius (1986: p. 11), negotiation is "a process of potentially opportunistic interaction by which two or more parties (agents), with some apparent conflict, seek to do better through jointly decided action than they could otherwise." Thus, negotiations can be defined as a discussion between two or more parties with the apparent aim of resolving divergence of interests (Van Lange and De Dreu, 2001). Negotiations are the most frequent social interactions. The art of negotiations is a critical business skill in national and international trade or politics and when private individuals purchase goods and services (Henning-Schmidt et al, 2010). Communication is an obvious way of solving coordination problems (Deutsch, 1962), since negotiation groups members usually face dilemma between their own interests and the collective interests of the group (Beersma and De Dreu, 1999). It is important for successful negotiations to understand the interests, goals, and motivations of the negotiation partners. This understanding ensures mutually satisfactory agreements (Henning-Schmidt et al, 2010).

The interest in negotiations is evident in a broad interdisciplinary field. The theoretical objective is to predict the outcome and the process of negotiations but also to describe individual differences in negotiation behavior (Raiffa, 1982; Bazerman, 1992), like the trade-off between *value claiming* (individual goals) and *value creation* (collective goals) (Lax and Sebenius, 1986). Research (e.g. Rubin and Brown, 1975; De Dreu and Van Lange, 1995) has shown that negotiators' emphasis on their own or group goals is influenced by their social motives. The dual concern model (Pruitt and Rubin, 1986) combines multidimensional bargaining goals. The negotiators' goals are determined by two independent factors: negotiators' concern for themselves and their concern for the other party. The key prediction is that high concern for oneself coupled with concern for the other party leads to higher joint outcome, which has generally been supported empirically (Pruitt and Rubin, 1986). Thus, negotiations have two central dimensions: the characteristics of conflicting interests and the communication element.

Since motivations of negotiators influence their interests, these are also expressed in their preferences either for maximizing own payoffs, Pareto-efficient outcomes, or equally dis-

tributed resources. In this section we deal with the question, why people go beyond self-interest, with different negotiation approaches, like value claiming, value creating, and mixed motives. We focus moreover on the different characteristics of negotiators and conclude with the well-known dual concern model.

2.2.3.1 Different interests in negotiations

Negotiation has been defined as an interpersonal decision-making process used for creating something new that neither party could obtain on their own, or to resolve a problem between parties (Lewicki et al, 1999). Negotiators have to accomplish these decisions in a background of uncertainty, conveying their goals to the other party, while also obtaining information about the other party's goals (Neale and Northcraft, 1991; Olekalns and Smith, 2003). This backdrop of uncertainty is particularly prominent at the initial stages of a negotiation when little or nothing is known about the other party. It also highlights the possibilities of being vulnerable to exploitation or betrayal. The trustworthiness of the other party, whereby trust is the willingness to take risks (Mayer et al, 1995), is thus paramount to the negotiator's strategic choices. In first-time negotiations, initial trust is based on first impressions. However, this could be trust in statements and trust in actions.

Negotiations basically consist of statements (process) and actions (outcomes). Contrasting approaches in negotiations have been identified, describing them as *competitive* and c*ooperative* (Deutsch, 1973), *concern for self* and *concern for other* (Pruitt and Rubin, 1986), *distributive* and *integrative* (Walton and McKersie, 1965), and *claiming value* and *creating value* (Lax and Sebenius, 1986). According to Raiffa (1982), using a mixture of negotiation approaches is most likely to result in processes and outcomes.

Claiming value

Negotiation is characterized by interdependence between parties who experience a conflict and interact strategically to their interest (Lax and Sebenius, 1986). Distributive bargaining are situations where the parties believe the outcome will yield a winner and a loser because a gain for one party results in a loss for another party (Walton and McKersie, 1965). Such situations with a fixed amount of value are referred to as zero-sum, fixed pie, or win-lose situations and involve a number of tactics intended to influence the negotiation. Raiffa (1982) mentions, for instance, as one tactic the reservation price, representing the smallest value one is willing to accept rather than walking away from the negotiation. Another value claiming tactic which is also a phenomenon (bias) would be anchoring. Anchoring as an employed tactic occurs when the initial offer made by a negotiator is a numerical anchor and becomes a mental reference point for other possible solutions (Ba-

zerman and Neale, 1992). According to Lax and Sebenius (1986), it is essential for claiming value to communicate one's preferred outcome from among the alternatives discussed.

Creating value

The approach of creating value involves efforts to expand the opportunities for exchange that will satisfy the objectives of all negotiation participants (Purdy, 2011). This approach expands the pie and is also called mutual gain or integrative negotiation because it identifies creative ways to share and coordinate resources. It is very cooperative, since parties seek to understand the needs and objectives of others and strive to find alternatives that will meet one's own and others' interests. This approach requires asking questions, sharing information about one's own interests, and building trust with the other party. The simplest tactic would be to expand the number of issues to negotiate, while an effective method is logrolling or trading off on items that the negotiators prioritize differently (Purdy, 2011). The underlying goal is to create joint gain when the positions of all negotiators are improved and the negotiators can get closer to the Pareto-frontier (Lax and Sebenius, 1986). This would involve ways to increase value without harming the other party. Creating value is more likely in situations where the parties have a prior positive relationship or trust exists. According to Friedman (1993), trust is needed in order to accomplish integrative bargaining. Trust in negotiation theory has multiple meanings, and one factor is that it influences and initiates creating value. For Ross and LaCroix (1996: p. 327) trust is "… a belief that the other negotiator (a) has a problem solving-orientation and/or (b) is generally unselfish." However, trust can also be exploited (see explanations in this regard in section 2.1).

Mixed motive negotiations

Balancing value claiming and value creating is needed for successful negotiations, which is also called the negotiator's dilemma (Lax and Sebenius, 1986). The behavior that leads to successful value creating, such as sharing information about preferences, interests and priorities, may make a negotiator vulnerable when it comes to claiming value. Efficient negotiators should definitely spend time on discovering shared interests with the other party. Therefore it could be useful to use reputations or offer references to provide assurances of trustworthiness. Moreover, people approach negotiations with different perspectives about what the purpose of the negotiation should be. In any case, it is very helpful to understand the perspectives motivating the other negotiator for determining how to balance between claiming and creating value. Understanding others' interests seems to make negotiations easier in order to identify opportunities, add value and create solutions that are more likely to be agreeable with others. The focus should be on interests, not positions. While positions identify what people want, interests describe people's motivation

regarding the reason behind the positions. Thus, it is essential to communicate and exchange information about different interests. In particular, opposing interests lead to creative solutions that expand the pie and lead negotiators to zero-sum situations (Purdy, 2011).

To sum up, claiming value is linked to a competing attitude in which one party's loss is another party's gain. Creating value is based on a cooperative attitude in which the parties exchange information in order to strive for solutions that create gain for both parties. Most negotiations require both creating and claiming value which requires actions that are incompatible with the other approach.

2.2.3.2 Negotiation characteristics about outcomes and process

Talking about characteristics, it is obvious to notice that negotiations are a popular and rather constructive way to do business, to settle international disputes, and to manage interpersonal conflicts (De Dreu et al, 2000). According to Thompson (1990), negotiations are built on five main pillars: (1) conflicting interests, (2) communication, (3) intermediate solutions and compromises, (4) offers and counteroffers, (5) acceptance by both parties. Moreover the negotiation literature can be divided into prescriptive and descriptive orientations and is also rooted in the Nash's bargaining theory (1950) by taking cooperative and non-cooperative games into account. Nevertheless, the fundamental purpose of negotiations is for individuals to determine available resources and how they will be allocated (Thompson, 1990).

Outcomes

Game theorists refer to situations where one person's gain is loss to the other as a fixed-sum game (Walton and McKersie, 1965). In social allocations, the goal conflict can relate to several allocations of resources, e.g. economic, power, or status symbols. On the other hand, also integrative potential exists when the nature of a problem permits solutions which benefit both parties, or at least when the gains of one party do not represent equal sacrifices by the other. This is closely related to what game theorists call the varying-sum game (Walton and McKersie, 1965). No matter whether fixed-sum or varying-sum situations, negotiations deal with the process to achieve agreements and outcomes.

It is often stressed that outcomes in negotiations are reached in form of joint decision-making in which two or more parties resolve their non-identical interests (e.g. Neale and Northcraft, 1991). In mixed-motive negotiation research, negotiators have simultaneous interests to compete and cooperate, and researchers often examine whether negotiators use cooperative versus competitive behaviors (e.g. sharing information truthfully versus lying)

and the extent to which a cooperative outcome is achieved (i.e. the extent to which the decision satisfies the collective interests of the negotiators).

According to Nash (1950), a successful mutual agreement is effective when the benefit of one party can be increased only by the solution in which the benefit of another party is diminished. This negotiated outcome is hence called Pareto-optimal. This economic approach is oriented towards outcome-related goals, in particular payoffs and economic efficiency such as Pareto-optimality. Thus, Raiffa (1982) and Lax and Sebenius (1986) try to advise negotiators as to how to reach efficient outcomes and not leave value on the table. Other outcome dimensions besides agreements and economic efficiency would be fairness consideration or result and partner satisfaction. Moreover, Raiffa (1982) suggests to study negotiation processes, since the process can affect the outcome. Research has already shown that social motivations influence the outcomes of dyadic negotiations. For instance, results of the meta-analysis by De Dreu et al (2000) suggest that pro-socially motivated dyads achieve higher joint outcomes because they engaged more in problem solving than egoistically motivated dyads.

Process

In the process of negotiation we usually have an initiation phase, followed by a problem solving phase, and ultimately a resolution phase (Koeszegi and Vetschera, 2010). The negotiation process means the communication and interaction between the negotiators, leading to the negotiation result (Nash, 1950). "Without communication there is no negotiation" (Fisher et al, 1991: p. 30). Thus, effective communication is essential for exchanging information, since otherwise negotiators could not inform one another of their interests. Without knowledge of one another's interests, it would be nearly impossible to negotiate mutually satisfying agreements. Thus, a negotiation begins, continues and ends with communication (Buchan et al, 2011).

A higher quality of the communication process during the negotiation definitely leads to a greater likelihood of an agreement, a deeper satisfaction of the negotiators with process and outcome of the negotiation, as well as more efficient agreements (Schoop et al, 2010). This enhancement of communication quality facilitates a variety of communicational factors that influence negotiation success. Commonly, these factors include the creation of an atmosphere of mutual understanding and trust between the negotiators. Communication behavior which is supposed to facilitate such an atmosphere includes friendly and integrative communication and the avoidance of insults, threats, and more generally, unfriendly behavior towards the negotiation partner (e. g. Northcraft and Neale 1991).

Thus, negotiation processes encompass both a substantive level, e.g. the exchange of offers suggesting values of issues being negotiated, and a relationship level, at which for example messages indicating empathy with the partner on the one hand, or threats on the other hand are exchanged (Koeszegi and Vetschera, 2010). In any case, negotiators use

different strategies and behaviors during the process. Therefore, in allocating resources, negotiators must balance two competing processes: value creation and value claiming (Lax and Sebenius, 1986), which we already mentioned. Value creation focuses on increasing the resources available for distribution and so expands the resource-pie and negotiators' settlement options. In contrast, value claiming determines each individual's share of the final resource pool. In general, these negotiation processes have been dichotomized in the literature into two dominant, well-known strategies – *integrative bargaining* and *distributive bargaining*, respectively (Thomspon, 1998; Lewicki et al, 1999; Olekalns, Brett and Weingart, 2003). Integrative bargaining describes "behaviors that seek to maximize both parties joint profit" and distributive bargaining stands for "behaviors that seek to maximize one's personal profit" (Harris, 1996: p. 463).

Negotiation is a dynamic process in which negotiators change their strategies in response to each other (Olekalns and Weingart, 2008). Therefore, negotiators use different strategies and behaviors, and their usage depends more or less on the counterpart. Most of the process models in negotiation focus on reciprocity as a central element of offers and concession making (Raiffa, 1982; Lax and Sebenius, 1986). These process models mainly focus on the aspect of reciprocity but also require in some sense "fair" concessions.

The individual attitudes of negotiators and the tendency to cooperate can definitely influence the negotiation process. Relative to individualists and competitors, pro-socials are more prone to make cooperative choices in negotiations (Van Lange and De Dreu, 2001). In the extreme case, this would mean that the negotiation process may lead selfish individuals to cooperation through interaction (Sirot, 2012). Thus, the negotiation process can be influenced by social motivations (social preferences/social value orientations), the heterogeneity of individuals, and different interests (Gsottbauer and van den Bergh, 2012). Charness and Dufwenberg (2006) also have shown that social motivations are important in bargaining situations. In that context, Weingart et al (1993) suggest that a pro-social motive would increase a negotiator's interpersonal trust, for which it is necessary to make parties enter into problem solving. Beersma and De Dreu (1999) found that trusting parties are more likely to be open about preferences and priorities, and it is therefore easier to reach an integrative agreement. Subsequently, it is reasonable when parties trust each other that being abused is less likely. Thus, the link is the following: more pro-social motivation leads to more interpersonal trust and this also leads to more problem solving. Or, in other words, when negotiators are pro-socially motivated, due to interpersonal trust they are more likely to achieve higher joint outcomes.

2.2.3.3 From negotiators' strategies to the dual concern model

According to Brett (2007), negotiation strategies are a set of behaviors that serve as a specific negotiation goal. Individual differences in social motivations (social preferences/social value orientation) affect negotiation outcomes by affecting negotiator's strategies. Thus, social motivation describes people's goals in context with social interaction (Brett, 2007). There are basically two types of negotiation strategies, which were already mentioned, (1) distributive strategy and (2) integrative strategy. Behaviors that support distributive strategy focus on seeking to influence, which would be persuading the other party to make concessions, substantiating positions (argument), making threats, and committing to positions. Behaviors that support integrative strategy focus on seeking and using information, which would be generating information about parties' priorities and interests and proposing outcomes that capitalize on differences. Research generally confirms the theoretical distinction between integrative and distributive strategy, and that negotiators may use both strategies in the same negotiation. When negotiators on both sides of the table share the same social motivations, the negotiation strategy cannot also be predicted with certainty. It is expected that, for instance, two cooperative negotiators use integrative strategy more and distributive strategy less than two individualistic negotiators (and the other way around). This expectation suggest how to start negotiations regardless of what the other party's social motivation is, to signal willingness to cooperate, since negotiators tend to reciprocate each others' strategic behaviors. Therefore, the appeal by Brett (2007) is that one should be able to get the other to engage in integrative bargaining.

Integrative strategies attempt to build joint gain and typically include behaviors that work toward creative problem solving and discovering mutually beneficial tradeoffs – characteristics required in value creation. Integrative bargaining, commonly referred to as 'win-win' bargaining, is characterized by cooperative behaviors such as giving information about underlying needs and interests, managing the negotiation process and being willing to make concessions. In contrast, distributive strategies attempt to distribute resources, often by focusing on single issues and individual desires – characteristics of value claiming. Distributive bargaining is commonly referred to as 'win-lose' bargaining and is characterized by competitive behavior such as positional arguing, substantiation, making demands and threats (Thompson, 1998; Lewicki et al, 1999; Olekalns and Smith, 2003).

In addition, these strategies can differ in their function as either information or action strategies (Olekalns et al, 2003). Task relevant information provides a basis for which agreements are created, whilst how negotiators use that information constitutes their actions. Information gathering can be integrative, for instance, if negotiators provide information about their priorities across issues, or distributive, for example if negotiators state facts in support of their position. Similarly, actions can be distributive in an implied sense when negotiators request information on the other parties' bottom line or attack their arguments (Oleklans and Smith, 2003), whilst integrative actions include multi-issue offers,

tradeoffs, insight into the other parties' perspectives and their general differences and similarities (Weingart et al, 2007).

Dual concern model

By taking the idea of integrative and distributive strategies into account, negotiations can be seen as a trade-off between value claiming and value creating which was done in the well-known dual concern model by Pruitt and Rubin (1986). According to this model, negotiators' goals are determined by two independent factors: negotiators' concern for themselves and their concern for the other party. This dilemma between self-interest and collective interest was also encountered regarding social preferences and social value orientations (see previous sections). The key prediction of the dual concern model (Pruitt and Rubin, 1986) is hence that high concern for oneself coupled with concern for the other party leads to a higher joint outcome, which has generally been supported empirically.

Concern about own outcomes means placing importance on one's own interest – one's needs and values. People with strong concern about their own outcomes are highly resistant to yielding. Concern about others' outcome implies placing importance on others' interest – feeling responsible for the quality of others' outcomes. This concern is sometimes genuine, involving an intrinsic interest in others' welfare. However, it is more often instrumental, being aimed at helping the other in order to advance one's own interest, e.g. building a working relationship with the other person by trying to satisfy one's own needs.
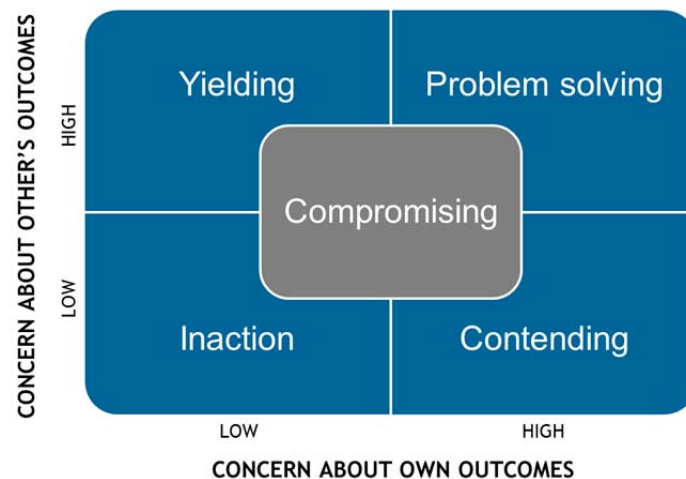
Figure 8: Dual concern model (based on Pruitt and Rubin, 1986)

The dual-concern model (Pruitt and Rubin, 1986) was developed as an attempt to understand the values or concerns that might underlie negotiations. In Figure 8, we see the two-dimensions model specifying the two basic concerns (1) concern about own outcome, and

(2) concern about other's outcomes. Each of these concerns runs from low to high. This model delineates five negotiation strategies based on low and high concern about own and other's outcomes. As it is indicated in Figure 8:

(1) *Problem-solving* is a function of high own-concern and high other-concern; this strategy would imply collaboration between the negotiators, since they reach a win-win situation with integrative negotiation strategies during the communication process.
(2) *Yielding* is a function of low own-concern and high other-concern; this would mean accommodation of one negation party and hence involves an imbalance of outcomes between the negotiators.
(3) *Contending* is a function of high own-concern and low other-concern; this would imply competition between the negotiators, since they reach a win-lose situation with distributive negotiation strategies during the communication process.
(4) *Inaction* is a function of low own-concern and low other-concern. This would mean that negotiators may have no time and take no effort for negotiation.
(5) *Compromising* is a function of moderate own-concern and moderate other-concern. This strategy can be seen as an extension of yielding and/or problem-solving.

Limitations

While a high own-concern paired with a low other-concern means to have a conflict situation, a high own-concern coupled with a high other-concern in negotiation emphasizes the chance for cooperation. Usually people participate in negotiations according to their interests. These interests relate to the benefits in terms of preferences and to distribute resources. The interests of the negotiating parties may be completely different directions so that a negotiated outcome to the benefit of one person always means a reduction in the benefit of another person. Under these circumstances, a negotiation is purely distributive, since the objectives of the two parties are assumed to be in conflict. However, each conflict and negotiation has the integrative potential and chance for compromises or even better problem solving, which is the preferable outcome according to the dual concern model (Pruitt and Rubin, 1986).

Negotiation research can contribute to the question, why people go beyond self-interest, that equal split of outcomes satisfies both negotiation parties, since a win-win situation makes all parties better off. The dual concern model in interplay with social value orientations has also been extended to include a third orientation (or concern), the pursuit of equality in outcomes. According to Van Lange (1999) it appears that pro-social individuals who tend to enhance joint outcomes (cooperation, problem-solving) are also strongly concerned with equality in outcomes, whereas individuals who are more individualistic or competitive are not very strongly concerned with equality in outcomes. Moreover, it is suggested (e.g. Kelley and Thibaut, 1978; De Dreu et al, 2000) that pro-social negotiators perceive negotiations as collaborative games in which social welfare is important. On the

other hand, egoistic negotiators conceive negotiations as competitive games in which power and personal success is the key.

To sum up, negotiation is, one the one hand, about claiming value, such as how much of a set of resources is distributed between oneself and other party. Successful value claiming negotiation leads to a distributive outcome that divides a fixed set of resources in such a way that your interests or the needs underlying your positions are met. But negotiation, on the other hand, can also be about creating value, such as how both negotiators can increase the resources available to divide. Successful value-creating negotiation leads to an agreement that is both integrative and distributive, one that divides an enhanced set of resources. The concept of integrative agreements, how to reach them is not intuitive. To create value takes transforming what appears to be a fixed set of resources into a set of resources that are differentially valued by the negotiators, and then distributing resources to the negotiators who value them the most.

2.3   THE COORDINATING ROLE OF COMMUNICATION

"One cannot not communicate" (Watzlawick et al, 2000: p. 50). Communication is one of the most fundamental activities in human societies (sending and receiving of information). Communicative acts have a long history of development and are necessary as a basis for negotiations, to make deals, to form alliances, and ultimately to cooperate (Lewicki et al, 1999). A dialogue is a two-way process of communication among individuals (Shakun, 2009). A prerequisite, however, is a common language. Nowak and Krakauer (1999) make the claim that the evolution of language is closely linked to the evolution of cooperation. Language emerged as social interactions got more and more complicated and the sharing of information became more and more crucial for our ancestors. At the beginning, only a small number of signals were sufficient. However, as signals multiplied, evolution had to overcome the problem of more signals leading to a decrease in understanding (Nowak and Krakauer, 1999). In order to maintain effective communication, languages evolved. A language can be divided into units, called words, which are arranged by rules, called grammar. Thus, the coherent form of communication is grammar, which enables words to form new meanings and us to understand each other (Nowak, 2001).

Communication obviously fulfills the function of coordination in social interactions. However, communication, being part of culture, is complex; understanding rests on more than just the words spoken (Buchan et al, 2011). "Communication can involve natural language (written text, speech, non-verbal), data, artificial (computer) language, etc. In addition to face-to-face, physical connectivity for communication may be provided by technology–telephone, internet (data, text, audio and video), wireless mobile etc." (Shakun, 2009: pp. 94-95). According to Deutsch (1962) communication is an obvious way of solving a coordination problem. Therefore, to the extent that the basic features of a cooperative interrelationship are made explicit in what is communicated among parties, communication is likely to be an effective coordination device (Deutsch, 1962). These basic features are, for instance, expressions of one's intention, of one's expectation or planned reactions. Moreover, "mutual trust is most likely to occur when people are positively oriented to each other's welfare" (Deutsch, 1962, p. 315). Mutual trust in people can again be established through communication (we already addressed this fact in the trust section 2.1.3.2). In reality, we find both coordination through communication and mutual trust in buyer-seller transactions, husband-wife relationships, or even pedestrian-driver interactions.

Communication can not only facilitate coordination and cooperation in real world settings, but also in experimental settings. However, this coordination and cooperation effect can depend on several different aspects of communication. Dawes et al (1977) assume that individuals first get to know each other as human beings (humanization); second, they get a chance to discuss the dilemma with which they are faced (discussion); third, they have the opportunity to make commitments or promises about their own behavior and to at-

tempt to evoke such commitments or promises in others (commitment). Thus, commitment requires discussion, and discussion in turn requires humanization.

In psychological experiments, this fact has been empirically observed for a long time; that the degree of cooperation is higher when communication between parties is allowed (Antonides, 1991). The coordination and cooperation effect has also been investigated in experimental and behavioral economics. Roth (1995), for instance, claims that face-to-face bargaining experiments, compared to anonymous ones, produce highly Pareto-optimal outcomes, meaning that the payoff of one party cannot by increased without reducing the payoff of the other party. Roth (1995) gives two main explanations for these efficient outcomes. The first explanation is that high levels of efficiency in face-to-face bargaining are simply due to the fact that the parties could talk to each other. Moreover, there are many channels of communication available, including the tone of voice, body language, and facial expressions (Eckel and Wilson, 2003). Conversely, one might argue that lower levels of efficiency are due to restricted channels of communication. The second explanation is that the experimenter may affect the individual's performance or decisions in the experiment (Rosenthal, 1966). On the one hand, unconscious nonverbal cues may induce experimenter-demand effects by indicating the goals of the experiment. On the other hand, it may be the influence of instructions which try to give "moral authority" to the players. However, face-to-face interaction makes it difficult to control one's own preferences. Thus, it is argued that the results of face-to-face bargaining reflect motivations which are primarily derived from uncontrolled aspects of the social environment (Roth, 1995). Real-world settings include most of the time unrestricted communication and there is always someone who may influence the other party.

In the following, we take a closer look at the contextual factors of face-to-face communication, since we include this factor in our investigation of trust game negotiations. Furthermore, we deal with the *talk* is not *cheap* (Farrell and Rabin, 1996) discourse and, hence that communication can influence subsequent payoffs. Finally, we stress the benefits of communication, such as facilitating cooperation.

2.3.1 *FACE-TO-FACE COMMUNICATION AS A CONTEXTUAL FACTOR*

The main advantage of face-to-face communication identified in the literature is the tendency that people keep promises made as part of the communication with a specific partner (Ellingsen and Johannesson, 2004; Bicchieri et al, 2010). For instance, Andreoni and Rao (2011) demonstrated that dictators who communicated with recipients in dictator games gave the promise to be, and consequently were, more generous. When people perceive promises as credible, they simultaneously need to make judgments about their partners' trustworthiness (Lev-On et al, 2010).

Reasons, why people mainly keep promises are that they want to be perceived as pro-social (Allison et al, 1989; Roberts, 1998; Bicchieri et al, 2010) and they care about their reputation. Many people care about their self-image (Bénabou and Tirole, 2002; Ellingsen and Johannesson, 2004) and they have strong preferences for keeping their word (e.g. Gneezy, 2005; Charness and Dufwenberg, 2006; Sanchez-Pages and Vorsatz, 2007). These tendencies protect people against negative consequences for their reputation. The maintenance of a positive self-image and reputation seems to be important; hence one has a deep desire to see oneself in a positive light both morally and behaviorally. Ultimately, people look for consistency in behavior, since it helps to sort out whom to trust. In this sense, the humanization-discussion-commitment approach by Dawes et al (1977) seems to be evident. Indeed, face-to-face communication allows getting to know the interaction partner better, to discuss the prevailing issue, and to agree on mutual commitments.

Kieserling (1962) defines "communication among those present" as the result of interaction in social systems. Thereby he follows the idea of Luhmann's systems theory that the core element of social systems is communication. According to Luhmann (1994: p. 24) "every communication differentiates and synthesizes its own components, namely information, utterance, and understanding". Therefore, communication means selection of information, notification and understanding of information. Thus a communication between two individuals occurs only when the other party understood the information that was conveyed to him/her well.

In a social system, such as economic systems, legal systems, politics or science, (Luhmann, 1994), we are always confronted with environmental characteristics, such as interaction and communication. Smith (2010) stresses the importance and relevance of how context matters.[25] The contextual factor of face-to-face communication facilitates an atmosphere on the interpersonal level. Face-to-face communication has the benefit of visual cues (body language, eye contact, facial expressions, etc.), verbal cues (tone of voice, phrasing, fluency, manner of expressing moral rhetoric, etc.), and social cues (status, group membership, gender, etc.) which guide conversations (Bicchieri et al, 2010).[26] When individuals are able to talk to each other, this can be seen as a natural social cue because it forms the backbone of the interaction between parties (Andreoni and Rao, 2011). According to a survey by Frey and Bohnet (1995), mutual coordination acts, meaning face-to-face communication, mainly serve as function to learn about the other parties' attitudes or intentions, to agree on a specific distribution, or to make binding agreements. Moreover, other advantages of communication are that it helps to improve individuals' positions, and individuals feel more comfortable deciding after having spoken to the other

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[25] With his essay, Smith (2010) started an extensive discussion in the Journal of Economic Behavior and Organization (Volume 73).

[26] Verbal conversations evolved out of gestures and mimics in order to facilitate mutually beneficial coordination acts (Tomasello, 2008).

person. Less frequently, participants of this survey mentioned that communication achieves clarification of the problem structure or reduces uncertainty and psychic decision-making costs (Frey and Bohnet, 1995).

The communication function allows learning about the other party. In the presence of face-to-face communication, people can "read" the trustworthiness of others based on something signaled by their counterpart" (Wilson and Eckel, 2006: p. 189). Eckel and Wilson (2003) also suggest that intentions of another party can be read through a set of cues, like facial expressions, body language, and the tone of voice. However, it is very difficult to predict the right intention or behavior of a counterpart. The ability to read other people's intention or to put oneself in another person's shoes is associated with the psychological theory of mind, perspective-taking and empathy (Hewstone and Strobe, 2001). This understanding of the other party was already mentioned as an antecedent for the development of trust. However, observing a signal is not enough, the signal must be interpreted in the right way by drawing inferences about the counterpart's response. This ability can also be seen as a necessary precondition for negotiations in order to assess the other party correctly (Eckel and Wilson, 2003). In a face-to-face interaction, the human face is a rich set of cues, which can only partially be consciously controlled. For instance, a smile invites trust and conveys trustworthiness. But false smiles can easily be detected, since they appear as asymmetric in the facial expression. Thus, the challenge is not just to read signals but also to read the intentions behind social signals. In any case, face-to-face communication plays an important role for assessing the character of another party.

There is experimental evidence showing that individuals are more generous towards strangers when the other party is identified (compared to anonymous settings), and obviously generosity increases when the other party is known. According to Gintis (2010) and Ostrom (2010) people pay attention to their own outcome when they cannot communicate, when they do not have the chance to know with whom they are playing in an experiment and information about one's own past behavior and that of others is not made available. Indeed, it is seen to be beneficial to gain personal information about the other party and past behavior. The more people know about the other party, the more they care also about the other party (Schelling, 1960). Several experiments manipulating social distance found that people are more likely to be generous to friends than to strangers (e.g. Leider et al, 2010; Leider et al, 2009). The main explanation is that identification with the other party increases generosity, which is also related to the phenomenon of empathy or emotional contagion (Singer and Lamm, 2009). For instance, Bohnet and Frey (1999) who performed dictator games with one-way visual identification found that donations are doubled compared to anonymous settings. Therefore, when one talks about the contextual factor of face-to-face communication, it is worth to take up the concept of empathy.

Empathy is an affective and cognitive mechanism which enables us to "put ourselves into someone else's shoes" (Singer and Lamm, 2009). According to Andreoni and Rao (2011), communication affects empathy and subsequently triggers altruism. They refer to social psychology literature, where researchers (Hoffman, 1981; Batson et al, 1988; Eisenberg et

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al, 1989) have shown that feelings of empathy are strongly connected to altruistic and pro-social behavior. It is notable that the link between empathy and pro-social behavior exists on a conceptual level, whereas clear empirical evidence is missing. The empathy-altruism hypothesis by Batson (1987) asserts that feelings of empathy are the primary explanation for altruistic acts for which the individual does not expect to receive compensation or answers with reciprocity immediately. While social psychologists mainly link empathy with pro-social behavior (e.g. Batson et al, 1988), economists tend to describe such phenomenon with guilt aversion (e.g. Charness and Dufwenberg, 2006). However, people may also alter their social preferences as a result of increased empathy towards the other party (Zultan, 2012).

Basically face-to-face communication influences behavior, which also implies that the norm of fairness is activated. Therefore communication can create social pressure. Frey and Bohnet (1995: p. 291) made the claim that "The more people interact, the higher the probability is that fairness norms are activated because social sanctions become a restriction on individuals' action". Usually, fairness norms remain in the background in anonymous settings. But when the allocator and the recipient identify each other, in the sense they are able to speak to another (verbal communication), fairness norms are activated. Fairness norms are activated in an even stronger manner when the parties are allowed to talk face-to-face to each other (verbal and nonverbal communication). In general, the intrinsic motivation to follow fairness norms means to achieve and meet equal distribution completely between parties (Diekmann, 2004; Fehr and Schmidt, 2001).

Sharing is definitely associated with fairness, and the effect of face-to-face communication leads to higher cooperation. Early bargaining experiments studying face-to-face communication found higher cooperation levels compared to anonymous bargaining situations (Zultan, 2012). According to Roth (1995), the common finding is that the rates of agreement are close to 100% in face-to-face communication settings, whereas in anonymous settings substantial disagreement rates are observed. Although such communication effects can also be observed in written communication, such as chat communication, the face-to-face communication effects are typically stronger (Brosig et al, 2003). An explanation would be that sharing is an everyday activity and individuals tend to rely on everyday "sharing" rules (Frey and Bohnet, 1995).

2.3.2 COMMUNICATION SOLVES SOCIAL DILEMMAS

Social dilemmas happen every day and everywhere. They are known by many different names, such as social exchange, shirking, free-rider problem, or moral hazard (Ostrom, 2003). This phenomenon represents the conflict between individual and collective goals and is studied in different fields like economics, sociology, law, or philosophy. In literature the attempt to combine one's own concern with the concern for other people can be

seen, for instance, in the social preference theory in economics (e.g. Fehr and Schmidt, 1999), the theory about social value orientation in psychology (e.g. Liebrand, 1984), or the dual concern model (Pruitt and Rubin, 1986) in negotiation sciences (for further explanation, see section 2.2.3.3). In a social dilemma, individuals can be better off in terms of payoffs and benefits, if they cooperate. "Each individual, however, would gain more if others cooperate, and consequently they could free ride" (Ostrom, 2010: p. 68). Typical examples for social dilemmas are pollution or traffic jams. Social dilemmas are studied in laboratory and field experiments (e.g. prisoner's dilemma or public good game).

However, there are different approaches to solve the dilemma. The realm of non-cooperative game theory suggests the concept of backward induction for collective actions or decisions (Nash, 1950). This concept considers that the decision-maker takes the perspective of the final decision and determines which decisions are optimal for the whole way back to the initial decision nodes. In non-cooperative game theory, subjects are assumed to be unable to make enforceable agreements (Harsanyi and Selten, 1988). The realm of cooperative game theory, however, allows communication which makes enforceable agreements possible, with the consequence that communication substantially increases cooperation in all types of social dilemma experiments (Von Neumann and Morgenstern, 1947). Game theory provides a clear theoretical prediction that can be tested in experimental settings. However, "making one simple change in the design of the experiment – allowing participants to engage in face-to-face communication (cheap talk)" enables the subjects to approach an optimum outcome (Ostrom, 2010: p. 68). Communication can be provided as either a "costless" institution or a "costly" institution (Ostrom and Walker, 1991).

If communication is in place, the question is whether the dilemma can be solved by means of conversation or not. Since communication is non-binding, self-interested people are expected to try to convince others to cooperate. But then they would choose the Nash equilibrium strategy when they make their private decisions (Barry and Hardin, 1982). As Miller (1992: p. 25) expressed the described situation, "it is obvious that simple communication is not sufficient to escape the dilemma". This statement and the described situation emphasize that communication can be seen as *cheap talk*, entailing that individuals' messages do not directly affect payoffs and do not have outcome consequences (Crawford, 1995). In particular, the fact that no set of words should affect behaviors is valid under the assumption that people are self-interested, strictly rational and maximize their payoffs (Farwell and Rabin, 1996).

Communication is not only cheap talk (Farwell and Rabin, 1996), since it creates commitment and influences human behavior. In most of the cases the exchanged words are translated into actions. Individuals care about the information content, when the sender conveys private information to the receiver. For instance, Valley et al (1996) studied a double action experiment with and without communication and they found that communication allowed individuals to coordinate decisions, so that the outcomes were split equally. They concluded that "talk", even if it is anonymous and not face-to-face, is "not cheap".

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Furthermore, it was suggested that written communication may be more suitable than face-to-face communication (Roth, 1995). Brosig et al (2003) compared different forms of communication and demonstrated the importance of both verbal and nonverbal communication. Ostrom (2003) also argues that communication can affect the subsequent payoff, meaning that people tend to change the social dilemma structure with the help of communication to improve joint-outcomes. Cheap talk matters. Communication can significantly enhance contributions, and, therefore increases efficiency in various experimental settings (Ostrom and Walker, 1991; Ashraf et al, 2006; Brosig, 2006; Putterman, 2009).

Several studies found that communication can greatly enhance the cooperation level in social dilemma situations, where there is conflict between individual and collective goals. Charness and Dufwenberg (2006), for instance, explain this well-established effect with the norm of promise-keeping. Biccheri (2002) and Bicchieri and Lev-On (2007) named also the social norm of promise-keeping which subsequently increases levels of cooperation. This and other norms that are shared between interaction partners, learning and reputation effects can establish due to the allowed communication. Communication is hence beneficial in order to learn rules of thumb for solving social dilemmas. Although some related literature has already existed for a long time, it is still noticed that there is a growing interest in the role of communication, (also in mixed-motive interactions) (Lev-On et al, 2010).

A large number of experimental studies show that (pre-play)[27] communication matters and influences the individuals' outcomes. For example, Ben-Ner et al (2011) have shown recently in a 'trust game' setting that communication is a means for signaling the willingness to cooperate. Their paper confirms the Charness and Dufwenberg (2006) finding that promises made by a single message in a 'trust game' increase trust and trustworthiness operationalized by the actions taken. Furthermore, the content of communication can alter the preferences of the subject by modifying the social perception of the outcomes (Zultan, 2012). Therefore the strategic content of communication can lead to more equal outcomes, as Zultan (2012) has shown with more egalitarian offers by proposers in ultimatum games. The strategic content of communication activates social egalitarianism or, in other words, a norm of fairness.

Face-to-face communication in particular allows shared norms to emerge between two parties. It is emphasized that people use rules of thumb as heuristics (e.g. cooperate when the expected outcome is positive) which are learned, and employ furthermore norms which are adopted (Camerer, 2003; Roth, 1995). An example for a norm would be the tit-for-tat-strategy suggested by Axelrod (1984) who suggested first to cooperate, and then to do whatever the other party did in the last round. Reciprocity is another basic norm which

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[27] There is a short period of decision before the individual decision to trust is taken.

is taught in all societies.[28] Reciprocity is strongly connected with trust, which is the belief that one can rely on the actions of another person (for further explanation see section 2.1.2.4). If trust is not returned, it means immediately that cooperation is stopped. However, when parties are provided the opportunity to see one another, the level of trust and the resulting levels of cooperation can be increased (Frey and Bohnet, 1995).

The norms of fairness and reciprocity, however, are not inherited through biological processes, they are actually learned. Learning is based on prior experience (socialization) and is derived from visual or verbal cues which one gets from another person in a face-to-face situation. The growing evidence from neuroeconomics demonstrates that some people gain pleasure from following norms (Rilling et al, 2002). Whether the norms are kept or broken has consequences for the reputation of a person. While with communication, individuals judge the other one's trustworthiness by watching facial expressions and hearing the way something is said, without communication the willingness to cooperate can just be measured through the actions taken. Communication allows individuals to increase (or decrease) their fairness and reciprocity in the reliability of others. Therefore, it is hard to establish trust among strangers who will make decisions independently and privately without seeing and talking to each another.

Communication is hence beneficial in order to learn rules of thumb for solving social dilemmas. Furthermore, another possible explanation is the fact of reputation-building. Once a subject is identified, he/she has the incentive to cooperate to build up his/her reputation and reap the indirect benefits of cooperation (Zultan, 2012). If the communication exposes information about the other party's identity, it is rational also for a self-interested person to behave in a pro-social manner in order to build up a good reputation (Mohlin and Johannesson, 2008). Experimental and behavioral economics stress several factors, such as norms, learning, reputation, or other heuristics which are also responsible for solving social dilemmas (Camerer, 2003; Roth, 1995).

2.3.3 COMMUNICATION FACILITATES COOPERATION

Cooperation is based on "the capacity to perceive that there is a reality which exists independently of one's self and to recognize that other human beings with like experiences will perceive this reality in similar ways" (Deutsch, 1962: p. 290). Therefore, cooperation requires the ability to take the other person into account, and individuals should perceive their goals as interrelated (Deutsch, 1962). This would mean that cooperation is easy to achieve if there is mutual interest in each other's welfare. In general, communication has

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[28] It would mean to reward a positive action with another positive action or to punish a negative action with another negative action.

been found to have robust and positive impact on cooperation levels (Ostrom, 2003). In particular, personal communication has a greater impact than impersonal communication (Bicchieri et al, 2010). A possible explanation is the fact that language as "the gift of the gab" and cooperation coevolved (Nowak and Highfield, 2011). In addition, communication influences also social preferences and hence affects also responders' strategies (Zultan, 2012).

Communication can facilitate cooperation that is also extensively demonstrated in empirical evidence. In particular, individuals with 'other regarding' or social preferences and internal norms achieve higher levels of cooperation than predicted by conventional theory (Ostrom, 2010).[29] Researchers have shown that communication increases cooperative and pro-social behavior in various experimental designs (Camerer, 2003; Mohlin and Johannesson, 2008). In the literature, the positive effect of face-to-face communication is also mentioned as a positive influence on pro-social behavior which may be further conducive to trust (Lev-On et al, 2010). In detail, several studies suggested that just a brief period of discussion (as discussed in the previous section) greatly improves cooperation (Deutsch, 1958; Brosig et al, 2003). Additionally it is remarkable for cooperation that this effect of pre-play communication remains strong for actual decisions and actions (e.g. Balliet, 2010; Ben-Ner et al, 2011).

We already mentioned the consistent finding that (face-to-face) communication substantially increases the levels of cooperation for either one-shot or repeated experiments. For instance, Frey and Bohnet (1995) demonstrated that the factor of face-to-face communication leads to more generous offers in the ultimatum or the dictator game. Sally (1995) found that communication was the single most effective effect for increased cooperation in one-shot or repeated prisoner's dilemma. The conclusion of the meta-analysis by Sally (1995) is that the positive effect of communication increases cooperation by 40%. In Figure 9, we see contributions to a public good that differs according to the different communication medium (Brosig et al, 2003). It is remarkable that in the absence of verbal communication (reference, identification), the average cooperation level is below 50% and for passive communication (lecture, talk-show, audio conference) the cooperation is intermediate between 50-60%, whereas for face-to-face communication (video-conference, table-conference) the cooperation level is above 90% on average (Brosig et al, 2003). It is remarkable that the communication mechanism significantly improves the efficiency of resource allocation decisions (Ostrom and Walker, 1991; Ashraf et al, 2006; Brosig, 2006; Putterman, 2009).

(Face-to-face) communication can channel the discussion into a pro-social path, even though the persons involved are strangers and hence did not know each other before (Bicchieri et al, 2010). This effect can be observed among strangers also due to the fact that

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[29] Conventional theory assumes that individuals maximize short-term benefits to self (Ostrom, 2010).

the parties exchange promises to cooperate or reciprocate, which depends on the experimental context (Bicchieri, 2002). Therefore, the powerful norm of promise-keeping can be held responsible, as already mentioned. These promises to take actions or reciprocate are mainly driven by the motive of guilt-aversion. The basic idea of guilt-aversion taken from social psychology is that "decision makers experience guilt if they believe they let others down" (Charness and Dufwenberg, 2006: p. 1580). Thus, people suffer from guilt if they inflict harm on others, such as breaking promises. According to Charness and Dufwenberg (2006) guilt aversion is a motivation that provides a route by which communication influences trustworthy behavior and promises.
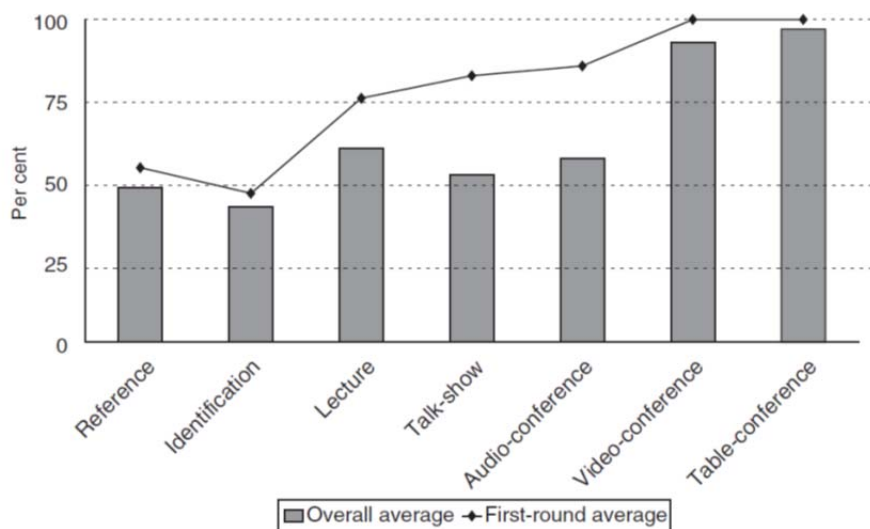
Figure 9: Average contribution in the public good games by Brosig et al (2003)

People do not always keep promises made during the communication process. Experimental work on social dilemmas and also on 'trust games' (Brosig, Ockenfels and Weimann, 2003; Ben-Ner and Puttermann, 2006; Ben-Ner et al, 2011) shows that unrestricted computer-mediated communication yields significantly lower trust and cooperation rates than unrestricted face-to-face communication. The explanation would be that when promises are conveyed through the computer, people don not perceive others' promises as credible (Lev-On et al, 2010). Thus, cooperation is driven by communication, and according to Balliet (2010), a moderator for the communication-cooperation relationship is the communication medium, like chat or face-to-face communication, and additionally whether one deals with pre-play communication or continued communication.

Why does communication facilitate and, in particular, increase cooperation levels? We provide some reasons that are based on theoretical explanations (e.g. Ostrom and Walker, 1991; Ostrom, 2003) and mostly on experimental research (e.g. Sally, 1995; Balliet, 2010). In negotiations, verbal communication is responsible for successful conflict solving. Verbal messages are meaningful representations of the negotiation process, since ne-

gotiators' verbal communication reflects behavioral preferences and choices (Harris, 1996). A dialogue is fundamental in the negotiation process towards an agreement (Shakun, 2009). Information is transferred through communication from those who can figure out an optimal strategy to those who do not fully understand which joint strategy would be optimal (Ostrom, 2003). Evidence from one-shot public good games supports the following hypotheses:

(1) There is the already stressed and obvious reason that communication allows the exchange of promises (or non-enforceable social contracts) (Orbell et al, 1988).

(2) Communication increases mutual trust and thus affects the expectations of others' behavior (Ostrom, 2003).

(3) Communication adds value to the subjective payoff (Ostrom and Walker, 1991).

(4) Communication reinforces prior normative values towards cooperation, and it promotes norms that favor cooperation (Orbell et al, 1988).

(5) Communication facilitates the development of a group identity that helps to motivate cooperative behavior (Ostrom and Walker, 1991).

Simply put, face-to-face communication has the major benefit of promoting trust and cooperation. Ostrom (2003) hence identified that trust and reciprocity should be included in a model beyond complete rationality. Building up trust appears to be the key link in the communication-cooperation connection. Thus, it is also a managerial implication that it is important to build up relationships on the basis of trust and reciprocity.

3 RESEARCH QUESTIONS

Words have longer life than deeds.
—Pindar, Ancient Greek lyric poet (522-433 BC)

Trust is a relevant and important element of human behavior because it reduces complexity as one of the main benefits people can rely on each other (Luhmann, 1979). However, trust behavior differs for people with different social motivation, since some are more social-minded while others are more egoistic orientated. We have already introduced the concept of "other regarding" or social preferences (Fehr and Schmidt, 1999) and the concept of social value orientations (Murphy et al, 2011) for describing individual differences. From the literature review we are also acquainted with the beneficial role of (face-to-face) communication. Communication enhances cooperation levels of shown trust and trustworthiness and it increases efficiency in terms of optimal negotiation outcomes (Brosig, 2006).

With this in mind, the overall research question of the trust game negotiations is: What trust behavior do people with different social motivations display when they have the chance to communicate? In other words, we want to know if and how social-minded and egoistic orientated people differ in the context of strategic interactions. In particular we are interested in addressing the question: What happens to different trust behavior under conditions when communication is allowed and when an option of overriding the agreement is provided? The explorative and descriptive focus of this research is mainly interested in the subjects' behavior but also seeks to analyze further aspects in the context of trust game negotiations. We therefore pursue the following objectives:

(1) Analyzing the consequences of subjects' different motivations in the social interaction and negotiation context (*individual differences*);
(2) Analyzing what subjects *say* (negotiation strategies) in order to understand what they do in the negotiations (*content analysis*);
(3) Analyzing how subjects with different social motivations *decide* in the negotiation and exchange situation (*actual decisions*);
(4) Analyzing how subjects with different social motivation *behave* in the negotiation and exchange situation (*observed bargaining behavior = decision and communication*);
(5) Analyzing what subjects *think* about themselves in order to understand what they do in the negotiations (*self-reports*).

Figure 10 summarizes the research framework. We study the behavior of subjects with their individual characteristics as antecedent to the actual decisions. Our interest lies in

whether these individual differences can be asserted in negotiation and exchange situations like the trust game negotiations. We also focus on the observed bargaining behavior by studying the impact of spoken words on negotiation outcomes with the help of content analysis (for further explanations see section 4.4). Here the key issue is in how far the words exchanged are congruent with actual actions (Mayer et al, 1995). Thereby we consider the aspect of face-to-face communication and the impact of communication content. Finally, we study the link between attitudes and behavior in respect to the phenomenon of trust. Here the key issue is to compare questionnaire answers, as a form of self-report, with the negotiation results.
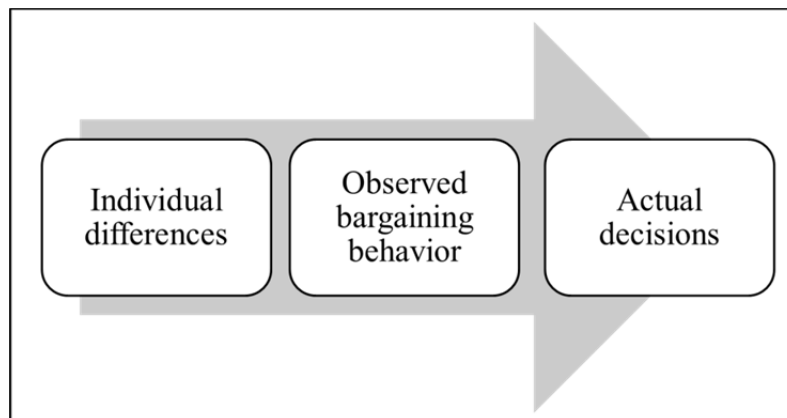
Figure 10: Research framework

Figure 11 (again) stresses that building up trust appears to be the key link in the communication-cooperation connection. However, knowing that individuals show differences in trust behavior, we start with the individual differences of the negotiation dyads as the input factor. We add face-to-face communication, which allows learning about the intentions of the negotiation partner and sizing up his/her character. Moreover, face-to-face communication fosters the development of shared norms. Ostrom (2003) identified three important attributes of human behavior which could be included in a model that goes beyond complete rationality. First, trust, the expectation that individuals have about other's behavior, is an attribute easily established via face-to-face communication. Second, reciprocity, as the answer to trust, is another attribute. This reciprocity norm is established when individuals learn from socialization and life experience. Third, the attribute of reputation – in Figure 11 between trust and reciprocity – is established when individuals make projections about the intentions and norms of another person. We do not control for reputation effects in our research framework. In contrast to Ostrom (2003), we take into account the communication content in the negotiations (observed bargaining behavior) and the answers from pre-questionnaires and post-questionnaires (self-reports). However, we are similarly interested in cooperative behavior as measured by output factor. Therefore, we expect that higher cooperation levels can be achieved with the presence of face-to-face

communication, given that trust and reciprocity are in place, and depending on the individual differences of the negotiation dyads.
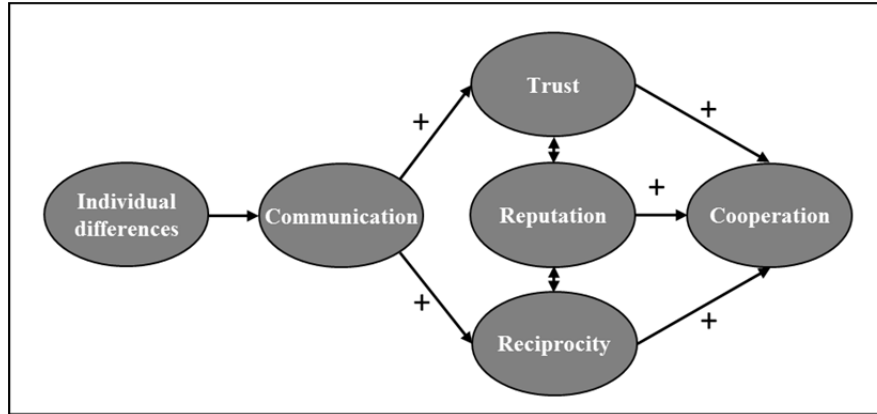
Figure 11: Conceptual communication-cooperation model by Ostrom (2003)

With this background and the research framework in Figure 10 in mind, we formulate the following three main research questions which we would like to answer with the trust game negotiations research:

(1) How do individual differences in social motivations influence the trust behavior (outcome $t=1$) in the context of face-to-face negotiations?
(2) How does communication content (negotiation strategies used) affect the actual decisions?
(3) How do individual differences in social motivations and the face-to-face negotiations influence the trust behavior (outcome $t=2$) in the presence of an option to override the achieved agreement (outcome $t=1$)?

In the following this chapter provides information about the research gap and contributions. Furthermore theoretical and behavioral predictions are presented and finally we derive the hypotheses which we test in the results section.

3.1 Research gaps and contributions

Empirical research about trust and trustworthiness in general reveals plenty about human nature, but many phenomena are still insufficiently explained and would benefit from further insight. Trust behavior investigated together with individual differences, face-to-face negotiations and a defection (overriding) option encompasses several unexplored aspects that have attracted research attention separately, but not together (Weingart et al, 2007; Fischbacher and Heusi, 2008; Ben-Ner et al, 2011). Some of these unexplored aspects appear to be important and worthy of investigation in the context of negotiations and social dilemmas. Investigating these issues is important because we know, for instance, that people tend to trust strangers and that people usually reciprocate trust with trustworthiness. However, trust also implies vulnerability. Just like individuals show differences in their trust behavior, people are heterogeneous in terms of their propensity to exploit or abuse trust. Previous empirical research has focused primarily on trust behavior in anonymous experimental settings. Kagel and Roth (1995) suggest that face-to-face bargaining introduces several channels of communication which are unavailable in an anonymous setting. In laboratory experiments subjects are usually confused about whether they are interacting with a real counterpart or whether they are just playing against a computer. That is also a reason why subjects do not perceive the others' promises as credible and reliable (Lev-On et al, 2010). Very little research has been done on trust behavior with unrestricted communication (Bicchieri et al, 2010; Servatka et al, 2011).[30]

In the trust game negotiations research we seek to extend the investigations on trust behavior by addressing certain gaps in the current research, such as individual differences in social motivations, face-to-face negotiations and the defection (overriding) option. Cook and Cooper (2003), for instance, have done research on contextual factors of trust behavior, such as communication, which is seen as by-product of cooperative relations. In this context Deutsch (1962) found out that communication presents an obvious way of solving coordination problems. In order to investigate the actual behavior even closer, we try to create a real world setting by including face-to-face communication in the experiment. Extending the 'trust game' (Berg et al, 1995) by adding face-to-face negotiations is beneficial not least because of the existing skepticism among participants of laboratory experiments. Eckel and Wilson (2006) state that, as subjects have only the experimenter's word as evidence that they are playing with real counterparts, they harbor doubt about their counterpart's actual existence. Thus face-to-face communication is one of the main benefits of the trust game negotiations, and also meets the requirements set by Levit and List (2007) of having experimental interactions that resemble real world social interactions.

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[30] This research deals with unrestricted communication before an individual decision (pre-play communication).

During the face-to-face negotiations the credibility and reliability of promises can be perceived. Lev-On et al (2010), for instance, conclude that, in addition to face-to-face communication, additional variables, such as the content of the conversation, can influence trust behavior. Therefore, employing the method of content analysis, we include the communication content in the form of negotiation strategies in our experiment. The main benefit of this is that we do not predominantly focus on the outcome, but also on the actual process of the trust game negotiations. The benefit of this approach is also supported by Cooper and Kagel (2009) as well as List (2009), who suggest that an additional focus on qualitative insights could prove fruitful, since it would provide a crucial primary understanding of the underlying mechanisms of trust behavior. Our research implements qualitative content analysis in order to study to what extent actions are congruent with the words exchanged during the process.

Besides communication, individual differences in social motivations among negotiators and the consequences of the negotiation interaction on the output variables are worth examining. While Bicchieri (2006) mention pro-social behavior as a positive effect of face-to-face communication, in most cases, the experiments are conducted anonymously because it is argued that face-to-face interaction would probably affect the strength and the pattern of social preferences. The existence of social preferences seems to be a matter of prevailing conditions (Falk and Heckman, 2009) and a substantial heterogeneity should exist among subjects (Charness and Rabin, 2002). According to Levitt and List (2007), there is not a general cross-situational trait called social preferences. They note that subjects view one situation as relevant to social preferences, while perceiving another as irrelevant. Fehr and Schmidt (1999) also emphasize that the economic environment determines whether fair types or selfish types dominate the interactive behavior. Therefore, another contribution of the trust game negotiations is to bridge the gap between social preference theory and negotiation sciences.

Since many researchers (Friedman, 1993; McAllister, 1995; Lewicki et al, 1998) have already shown that trust facilitates negotiations, it could also be true that social preferences have a similar effect to trust. Negotiators with social preferences can probably more readily overcome social boundaries, and thus make interactions run more smoothly. Thus, since mutually beneficial outcomes can be achieved through agreements, social preferences may play an important role in the negotiation context (Wilson, 2010). However, social preferences seen as a trade-off between one's own outcome and the outcome of another person are comparable with the well-known dual concern model by Pruitt and Rubin (1986).[31] Bohnet and Frey (1999) reveal that, for instance, social preferences, such as altruism, inequality aversion, and welfare maximization, are strengthened due to mutual

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[31] This model is also two-dimensional with the concern for the own outcome and the concern for the other's outcome and was discussed in chapter 2.2.3.

identification through communication. With this mind, we employ the theory of social preferences in explaining trust behavior in the interpretation of our results.

Despite the fact that social preferences play an important role as incentives, it needs to be stressed that we also take care to assess the impact of individual differences and provide an overriding (defection) option. Regarding individual differences in social motivations, we compare an economic instrument (social preferences measurement by Vetschera and Kainz, 2012) and a psychological instrument (social value orientation slider by Murphy et al, 2011) for screening and matching subjects. These differences in social motivations are taken as prerequisites for the different dyad compositions of the trust game negotiations: from social-minded to egoistic orientated subjects. Individual differences may add additional value in explaining behavior and may help us to understand the decisions of individuals in interactions (De Dreu et al, 2000). Often pro-social negotiators face an egoistic opponent, and research is needed to better understand the process and outcomes when dyad members differ in social motivations (De Dreu and Boles, 1998; De Dreu et al, 2000). More recent research in experimental economics has begun to focus on individual differences, in particular gender differences (Croson, 2005). It is definitely a research gap that economics has ignored for a long time to explain individual differences (Eckel and Grossman, 2001). The advantage of individual differences in social motivations is that it may accounts for variation in trust and trustworthiness (Kanagaretnam et al, 2009) and in the usage of the overriding (defection) option. This option is presented after subjects have already met for face-to-face negotiations and bargained about their investment decisions.

We offer subjects an option to override the decisions they have taken and change the agreement unilaterally. Pro-social negotiation dyads are expected to achieve higher joint outcomes which can be explained by a higher level of trust. Moreover, pro-social negotiators are expected to enhance the quality of negotiation outcomes (Beersma and De Dreu, 1999). Furthermore, social-minded (homogeneous) dyads should be more likely to keep promises and less likely to employ the overriding option when compared to heterogeneous negotiation dyads. Negotiations or bargaining situations can be seen as dynamic processes in which negotiators change their strategies in response to each other. The challenge is to provide answers about whether social-minded subjects behave the same way when paired with egoistic orientated counterparts or whether they adapt their behavior accordingly (Weingart et al, 2004).

Our contribution is thus threefold: (1) we consider individual differences in social motivations – theoretical contribution; we screen our subjects based on pre-questionnaires and pair them according to individual differences in social motivations – methodological contribution; (2) we allow participants to meet in a face-to-face negotiation and bargain about their personal decisions – methodological contribution; (3) we offer participants an option to override the decisions they have taken and change the agreement unilaterally – theoretical contribution.

3.2 PREDICTIONS AND HYPOTHESES

After the theoretical predictions for the 'trust game' in general in chapter 2.1.4, we now present some behavioral predictions and the associated hypotheses for the following group of hypotheses:

(1) The individual differences and matched pairs,
(2) The effect of face-to-face communication,
(3) The impact of communication content, and
(4) The link between attitude and behavior.

Recalling the theoretical predictions, the standard game theory assumptions are that: (1) subjects are concerned only with their own payoffs, (2) they are not guided by fairness considerations or norms like reciprocity, (3) they decide and behave rationally, (4) and the same is assumed for their counterparts in the interaction/exchange situation (Ben-Ner et al, 2011). However under behavioral predictions derived from empirical research we could mention, for instance, the following:

(1) *Communication* helps to enhance cooperation (e.g. Sally, 1995; Ostrom, 2003; Balliet, 2010),

(2) *Trust/Trustworthiness* is often displayed in real-life interactions and 'trust games' (e.g. Camerer, 2003),

(3) *Reputation:* Many people have a preference for keeping their word (e.g. Gneezy, 2005; Charness and Dufwenberg, 2006; Sanchez-Pages and Vorsatz, 2007),

(4) *Reciprocity* is often observed; people tend to return shown kindness with own kindness or to punish shown unkindness with punishment (e.g. Hoffman et al, 1998, Fehr and Gaechter, 2000, Gintis et al, 2005),

(5) *Social preferences:* People are heterogeneous when it comes to money-maximizing and other regarding preferences, but their decisions are also influenced by their interaction partner's characteristics, as well as their past past actions (e.g. Charness and Rabin, 2002; Levitt and List, 2007; Ben-Ner et al, 2011).

For the trust game negotiations our own predictions lead us to expect the following: (1) the presence of face-to-face communications allow for considerable monetary amounts to be invested and returned, when compared to anonymous 'trust games', (2) many subjects will adhere to agreements and keep promises, (3) individual differences in social motivations will influence the degree of commitment, (4) the communication content will affect behavior, and (5) many dyads will achieve both equitable and efficient outcomes.

In the trust game negotiations two participants – so-called negotiation dyads or matched pairs – are placed in a strategic interaction where they make investing and returning decisions. We expected that social motivation will affect an individual's decision-making during interaction. The dyad compositions are determined by social context factors and seen as antecedent traits. These antecedent traits are established with the social preferences measurement (Vetschera and Kainz, 2012) and the social value orientation slider (Murphy et al, 2011). The sample consists of three dyad types: one homogeneous dyad, with a "pro-social" sender and receiver, and two heterogeneous dyads, where a "pro-social" sender is paired with an "egoistic" receiver and vice versa. This composition reflects real world settings where negotiators are split into 33% individualists and 67% cooperators (Brett 2007).

We expect *social preference measurement (SPM)* and *social value orientation (SVO)* to be comparable instruments for screening the subjects. Although both instruments measure how subjects care about other people, they differ in nature. On the one hand, the SVO slider is an extension of the 'ring measure of social values' (McClintock, 1972; Liebrand, 1984). The SVO slider assesses how participants prefer to divide resources between themselves and another person, resulting in common social value orientations (i.e. altruistic, pro-social, individualistic, and competitive). On the other hand, the SPM instrument, based on an idea by Daruvala (2010), lets subjects indicate indifference values for equal distributions that seem equivalent to shown unequal distributions. This instrument measures participant's social preferences depending on their willingness to give up part of their personal payoff. Based on the results of the SPM and SVO instruments subjects are classified according to individual differences in social motivations; either as "pro-social" or as "egoistic" (for further explanations see section 5.1). The negotiation literature traditionally distinguishes between these two types (De Dreu and Boles, 1998; De Dreu et al, 2000): (1) "*egoistic*" negotiators are motivated to serve their own interests and to disregard the interests of the other side; and (2) "*pro-social*" are motivated to serve their own interests as well as those of the other side. Hereafter we define our individual differences in social motivations as "egoistic" and "pro-social".

The negotiator's social motivation is expected to influence both investing and returning decisions, as well as the observed bargaining behavior during the communication process. However, researchers' predictions about the impact of social motivation vary. In negotiations, pro-socials are found to be more trusting, archive higher joint outcomes, and establish a collaborative climate compared to egoistic orientated subjects (De Dreu and Boles, 1998). Kelley and Stahelski (1970) state pro-social subjects are more likely to shift from cooperation to noncooperation when confronted with self-interested opponents than the reverse (self-interested subjects shifting from noncooperation to cooperation). De Dreu and Van Lange (1995) reveal that pro-social individuals judge their opponent fairer and

more considerate of their needs than do egoistic ones. In experimental economics, subjects who are social-minded should also achieve fairer agreements (equal divisions of outcomes) than subjects who are egoistic orientated (Kagel and Roth, 1995). Camerer and Fehr (2006) assert that an altruistic behavior should induce self-interested subjects to behave cooperatively and that the existence of strong reciprocators should generate cooperative outcomes most of the time, even if both players are completely self-interested. Fleiß and Leopold-Wildburger (2012), in a repeated prisoner's dilemma experiment, did not find evidence of higher cooperation rates between two pro-social subjects when compared with two egoistic subjects or one pro-social and one egoistic subject. Moreover, pro-social subjects are expected to use more integrative negotiation strategies during the communication process, whereas egoistic subjects should display more distributive bargaining behavior (Weingart et al, 2007). Though the exact effect remains unclear, it is beyond doubt that the subjects' social motivation carry economic consequences and that the interaction of differently motivated types is an important factor in many economic questions (Fehr and Fischbacher, 2002). Thus, we state the following two hypotheses for the influence of the negotiator's social motivation on actual decisions and observed bargaining behavior:

(1) *The homogeneous dyad of "pro-social" sender coupled with "pro-social" receiver (SoSe-SoRe) decides more cooperatively than the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=1 of the trust game negotiations.*

(2) *The homogeneous dyad of "pro-social" sender paired with "pro-social" receiver (SoSe-SoRe) uses more integrative than distributive negotiation strategies compared to the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=1 of the trust game negotiations.*

3.2.2 THE EFFECT OF FACE-TO-FACE COMMUNICATION

Usually cooperation takes place, as already mentioned (Ostrom, 2003), if trust and reciprocity is "signaled" between the interaction partners. This "signaling" is easier when we have an interaction or exchange situation with face-to-face communication (Frey and Bohnet, 1995; Eckel and Wilson, 2003; Wilson and Eckel, 2006). Therefore the role of face-to-face communication facilitates the learning about and sizing up of the other party. However, in the game-theoretic solution of a traditional anonymous 'trust game', the receiver would keep all the money, and a rational sender, knowing this, would invest nothing. Krueger et al (2008) found that receivers must know their own social preferences. Once established they should either return nothing or aim for payoff equality. Even self-interested senders who know this should invest all or nothing depending on their assumptions about the receivers' social preferences (Krueger et al, 2008). However, a sender's own social preferences may justify partial investments. Depending on the total strength of their social preferences, receivers can maximize their utilities by returning nothing or establishing equality. Thus, when the strategy is to invest/return all or nothing, communica-

tion should improve both individual and joint outcomes for sender and receiver, because face-to-face communication facilitates the assessment of the partner's attitudes and intentions. Fehr and Gaechter (1999) confirmed this finding, arguing that some minimal social contact among strangers increases contributions, since trust is more viable and probable in a face-to-face situation (Jacobsen and Sadrieh, 1996).

We expect that the different phases, the face-to-face situation (*t=1*) versus the email follow-up (*t=2*) situation, will influence the individual decisions and outcomes of the trust game negotiations. The benefit of these two phases is to observe the stability of trust-based agreements when there is an interaction partner given the opportunity to override a taken decision after the split. While face-to-face communication is seen to increase efficiency in the contribution (Ostrom and Walker, 1991; Ashraf et al, 2006; Brosig, 2006; Putterman, 2009), the transition from face-to-face to email communication may have an influence on the corresponding decisions; in particular due to the overriding option of the settled agreement. While nobody wants to be exploited, trust is occasionally abused in economic interactions, usually when the probability of being detected is low (Sutter et al, 2011). Pro-social individuals may have a lower tendency to exploit trust when compared with egoistic ones and thus do not break reached agreements as frequently (e.g. Gneezy, 2005; Bohnet et al, 2008; Fischbacher and Heusi, 2008). Hence, social-minded subjects should subsequently have a higher outcome. Consequently, the higher outcome should also influence the satisfaction level. It is expected that social minded subjects should also be higher satisfied. Therefore, we present the following hypotheses:

(1) *The homogeneous dyad of "pro-social" sender coupled with "pro-social" receiver (SoSe-SoRe) is less likely to use the option of overriding the settled agreement than the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=2 of the trust game negotiations.*
(2) *The homogeneous dyad of "pro-social" sender coupled with "pro-social" receiver (SoSe-SoRe) is more satisfied than the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=1 of the trust game negotiations.*

3.2.3 *THE IMPACT OF COMMUNICATION CONTENT*

With the communication analysis we take a closer look at the negotiation strategies in the trust game negotiations. What people say during face-to-face communication influences the results is examined by observing the actions they take (negotiation strategies) and the outcomes they reach. This analysis should shed light on the question of whether face-to-face negotiations can be seen as cheap talk or not. The game theory prediction, based on selfish individuals, is that words alone cannot change the subsequent payoff. Allowing the two partners to talk to each other is expected to have no effect as long as non-binding contracts can be formed (e.g. Frey and Bohnet, 1995; Farrell and Rabin, 1996). However,

several empirical studies have shown that communication can greatly enhance cooperation in strategic interactions (e.g. Charness and Dufwenberg, 2006). Our research uses content analysis methodology for research questions, such as: Do certain negotiation strategies during face-to-face communication increase trust and reciprocity by leading to better individual and joint outcomes? Does communication content display other effects? Do the different matched pairs use different negotiation strategies? Does the content of messages lead to the promised actual decisions, i.e. are spoken words congruent with taken actions? For that reason the communication process was recorded, transcribed, and analyzed. The main benefit is the explorative nature and the process orientation besides the actual outcomes of the trust game negotiations.

We expect that content of messages to have effects and that social motivation influences the choice of negotiation strategies. Subjects should vary the usage of integrative versus distributive and information versus action strategies; entailing that pro-social subjects, being more sensitive to their interaction partners' motivation, would employ more integrative strategies on the individual level. According to Kelley and Stahelsky (1970) and Weingart et al (2007) pro-social individuals are also more likely to shift their negotiation strategies depending on the actions of the counterparts, while egoistic ones maintain their strategy regardless of the strategy of their opponent. However, in negotiation experiments that allow unrestricted communication it is also possible that egoistic orientated negotiators use more integrative strategies, since they can ascertain and respond to the presence of social-minded negotiators (Dawes et al, 1977). We cannot make accurate predictions about what happens in mixed negotiation dyads. One strategy orientation may dominate or one dyad member may converge to different negotiation strategies that reflect diversity of the dyad. By observing the promises given in the process on the outcome, we can establish the validity of contentions like that of Servatka et al (2011), suggesting that words may have a stronger effect than money. Moreover, the objective is to study what effect the use of negotiation strategies has on the satisfaction level of the partner and/or on the perception of the partner's social orientation. It is expected that negative distributive negotiation strategies will have a stronger influence on the partner's satisfaction level than positive integrative strategies. Since people care more about negativity or potential loss (Kahneman and Tversy, 1979; Rozin and Royzman, 2001), it seems likely that satisfaction levels are influenced comparably. In this context, the respective hypotheses are the following:

(1) *A strong cooperator, who invests everything or returns half of the tripled investment, uses more integrative than distributive negotiation strategies compared to a not-strong cooperator in t=1 of the trust game negotiations.*
(2) *An integrative information/action negotiation strategy has a positive impact on negotiation outcome/individual decision.*
(3) *A distributive information/action negotiation strategy has a negative impact on negotiation outcome/individual decision.*

(4) Distributive negotiation strategies in the communication process affect the partner's satisfaction in a negative way and have a stronger effect than the positive integrative strategies in the communication process t=1 of the trust game negotiations.

(5) Integrative negotiation strategies in the communication process affect the perception of a partner's social orientation positively and distributive negotiation strategies used by one person in the dyad have a negative influence on how their social orientation is perceived by the partner.

3.2.4 THE LINK BETWEEN ATTITUDE AND BEHAVIOR

Comparing attitude and behavior is the focus of the last group of hypotheses. The focus is to analyze what subjects (1) say (*content analysis*) and (2) think (*self-reports*) in order to understand what they do. Researchers (Glaeser et al, 2000; Gaechter et al, 2004) have previously tried to predict the actual trust behavior with attitudinal trust questions. Glaeser et al (2000), for instance, found a poor correlation between the amounts sent in a 'trust game' and the trust stated in survey questions. Gaechter et al (2004) combined the General Social Survey (*GSS*) with experimental evidence and, studying a subject pool in rural Russia, found that socioeconomic measures affect trust attitudes, but do not affect decisions in the game. They conclude that questionnaires may not predict behavior in real world situations. We also explore the link between past pro-social behavior and decisions for the trust game negotiations. In the self-reports, following, among others, Bierhoff (2001), participants answered questions about helping friends/strangers, donating money/blood, contributing to a voluntary service and saving nature; questions that should indicate how often subjects have practiced specific pro-social activities in the last six months. People in general seem to care about their pro-social behavior (Allison et al, 1989). The hypotheses are the following:

(1) The GSS variables do not have an impact on investing and returning in the trust game negotiations (t=1) and they do not make a substantial contribution in explaining the likelihood of the subject being of a strong cooperator type.

(2) Past pro-social behavior has a positive impact on the outcome of the trust game negotiations.

4 METHODS

If a covenant be made, wherein neither of the parties perform presently, but trust one another ... he that performeth first, has no assurance the other will perform after; because the bonds of words are too weak to bridle men's ambition, avarice, anger, and other Passions, without the fear of some coercive Power ...

— Thomas Hobbes,

Leviathan (1651)

There are basically two approaches to measure human behavior, observational and experimental. The observational approach entails observing behavior in the field, filling out questionnaires, and/or performing interviews in order to get a 'snapshot' of human behavior. This approach has high external validity, observing behavior that is close to natural behavior, but low internal validity, as the measurements, influenced by confounding factors, will be very noisy. In contrast, an experimental approach entails observing behavior in a laboratory setting. This would imply lower external validity but high internal validity due to the ability to control confounding factors and specific manipulations (Friedman and Cassar, 2004). The internal validity is influenced by a number of factors, for instance, the self-selection bias (entailing that the selection of participants is not sufficiently random and balanced), or the experimenter bias (i.e. the experimenter provides cues to the participants or the participants' responses are misjudged) (Rosenthal, 1966). To avoid such biases and confounding factors, the methodical design should be organized very carefully and pretests should be included in the conception and implementation of the research (Antonides, 1991).

In general, what people say they would do in hypothetical circumstances does not necessarily correspond to what they actually do, especially if actions have monetary consequences. Fershtman and Gneezy (2001), for instance, presented an example of this, examining types of discrimination among Israeli Jewish society. This "sensitive" type of research would not be easy to carry out with the help of questionnaires. Many sociological surveys that treat such very sensitive topics suffer from the well-known social-desirability bias, meaning that participants give favorable answers to appear likeable. Experiments present a helpful method in order to overcome the problem of finding out what people *really* do. In contrast to questionnaires, experiments are based on preferences, which participants reveal when they face a strategic interaction with another person. Precisely for examples such as the sensitive given above it would be an advantage to conduct an experiment rather than hand out a questionnaire. A further advantage of experiments is that they have a 'reward medium' or an incentive structure that allows for controlling subjects' preferences. However, it does also make sense to combine an experiment with questionnaires; while experiments illustrate individuals' actual behavior, questionnaires reveal

what they think, helping us to understand their respective behavior (Fershtman and Gneezy, 2001). Thus, a complementary approach using both methods seems to be beneficial.

Triangulation is the key word for this combination of different methods, such as measuring trust or social behavior with experimental decisions and questionnaire items (Flick, 2009). The benefit lies in using different perspectives when answering a research question. Furthermore, triangulation of different methods and/or data helps validating the results obtained with individual methods and increases the scope, depth, and consistency of the methodological proceedings. According to Flick (2009), this approach will be most fruitful if it produces new and additional insights. These insights could lead to results that are both contradictory and complementary. Therefore, our main objective concerning methodology is to compare the different methods of experiment and questionnaire. Additionally, our research bridges the gap between quantitative and qualitative analysis. This is done by comparing the quantitative actual decisions from the experiment with the qualitative negotiation strategies, which are recorded during the communication process. This qualitative analysis is conducted with the help of the content analysis method (Srnka and Koeszegi, 2007).

The main interest of our research is to investigate trust behavior. The 'trust game' (Berg et al, 1995) is definitely well-suited to this purpose, as it is a model of behavioral trust. The 'trust game' has clearly defined rules and sequences of actions, which are the respective actual decisions. Ultimately, incentives (payment of money) are introduced, since the use of incentives allows the assessment of preferences, such as social preferences. In general economic experiments are context-free (or context-neutral) because the argumentation is that context may add systematic bias or social demand effects (Croson, 2005). We introduce the context of face-to-face communication (negotiation) and take into account the individual differences in social motivations of our subjects which have limited application in experimental economics. Usually, individual differences are considered in psychological experiments. The goal in economics is to develop and test simple theories and explain the behavior (Croson, 2005).

In order to acquire an insight into the prevailing methods of trust game negotiation research, we use this section to present the details on how it was done, providing the relevant information for replicating this study. This section is sub-dived into six main items: The 'Interplay between experiment and questionnaire' refers to the link of measuring attitude and behavior with questionnaires and experiments; the 'Questionnaire design' gives an overview of the questionnaires design, in particular that of the online pre-questionnaire with its social preference measurement and the social value orientation slider; the 'Experiment design' section gives an overview of the structure of the experiment; the 'Content analysis' section gives detailed information on the whole process from transcription, unitization, and categorization, to coding; the 'Procedure' section describes how the research was carried out in practice; and the 'Participants' section provides the necessary information about the subjects who took part in this research.

4.1 INTERPLAY BETWEEN EXPERIMENT AND QUESTIONNAIRE

The phenomenon of trust and social behavior can be measured in experiments and questionnaires. Like for measuring social motivation in economics and psychology regarding individual differences between social preferences and social value orientation (see literature section 2.2), one can also compare indicators measured for trust, trustworthiness, and reciprocity in experiments with some items taken from questionnaires. In the past two decades, the measurement of trust, trustworthiness, and reciprocity by means of psychological items in questionnaires has received a strong competitor in the use of economic experiments in the 'trust game' (Berg et al, 1995). In experimental laboratories, decisions are observed as behavior or actual decisions in contrast to the general attitude towards trust and social behavior or trust propensity in questionnaires. Research shows that the resulting correlations between behavior in 'trust game' experiments and questionnaire items are missing or rather weak (Glaeser et al, 2000; Holm and Nystedt, 2008; Johansson-Stenman et al, 2011). This is a reason to conduct experiments.

Holm and Nystedt (2008) investigated several possible explanations for the difference between 'trust game' behavior and trust questionnaires. First, they refer to the respective subject pool. While large trust surveys use large heterogeneous representative samples, the subject pool in 'trust games' is oftentimes relatively homogenous. The main subject target group is often undergraduate students, since this group is easy to recruit at universities. Second, the location where subjects make their choices matters. While 'trust game' behavior is mainly observed in experimental laboratories, questionnaires (paper- or mail-based) can be filled out everywhere without any control. Third, financial stakes or incentives are of relevance. Discrepancies between 'trust game' and questionnaire do happen, since money is usually at stake in 'trust games' but not in questionnaire questions. When the 'trust game' is played without financial incentives, there is the finding (Holm and Nystedt, 2008) that the correlation between 'trust game' behavior and questionnaire trust is significant. Participants perceive trust situations with and without money differently. A possible reason is given by a meta-analysis by Camerer and Hogarth (1999), which focuses on the effects of financial incentives in experiments. Here they argue that financial incentives increase attention and cognitive effort, so that higher stakes encourage participants to higher-level thinking.

To address this relevant point of financial stakes, the experimental economics literature stream mentions always the benefit of incentives (e.g. Kagel and Roth, 1995; Camerer, 2003). The given explanation is that the use of a 'money reward' allows the experimenter to induce pre-specified characteristics in participants, so that their innate characteristics become irrelevant. In order to support this argument, three incentive conditions should be fulfilled: (1) *monotonicity*, entailing that the result which is seen the best in the experiment leads to more 'money reward' preferred by the participants; (2) *salience*, meaning that the incentive depends on the participant's choices and interdependence or relationship to part-

ners is known, and (3) *dominance*, assuming that participant's utility is predominantly influenced by the incentive from the experiment, and other influences are negligible. In any case, questionnaires do not have salient payments, and what people say they would do in hypothetical situations does not always reflect what they actually do. Thus, by comparing experiments and questionnaires, the main difference is that in experimental economics cash is used to induce value (Friedman and Cassar, 2004). According to Levitt and List (2007) people can be manipulated, and they respond to incentives.

Basically, experiments provide a direct observation of the participants' behavior, whereas questionnaires provide more information about the participants' traits and states. Furthermore, experiments are designed to study causal relationships (Antonides, 1991). In particular, experimental games are a research tool for examining social interaction, derived from game theory, as well as from research on behavior in ongoing relationships, negotiation situations and organizations (Van Lange and De Dreu, 2001). In contrast to questionnaires, experiments have the benefit of controlled conditions under 'ceteris paribus' (i.e. other things being equal) and rely on induction. In this context, validity and reliability need to be stressed. While reliability refers to the accuracy and the consistency of the measurements, validity refers to the extent that the measurements relate to the concept that is measured (Friedman and Cassar, 2004). Internal validity refers to the replicability, meaning that other studies should get the same results. External validity instead means that the observed regularities should be expected in similar situations in the naturally occurring world. Thus, we can conclude that experiments in general have a higher internal validity but lower external validity, whereas questionnaires are classified by lower internal validity but higher external validity.

In the case of experiments, it can be distinguished between laboratory and field experiments. Laboratory processes mainly differ in that they are simpler than naturally occurring processes in the field. However, laboratory experiments "are real processes in the sense that real people participate for real and substantial profits and follow real rules in doing so. It is precisely because they are real that they are interesting" (Plott, 1982: p. 1482). From the methodology point of view, laboratory experiments measure the impact of factors on the behavior. They provide the 'ceteris paribus' condition of individual economic agents, which are otherwise difficult to obtain. It indicates a main advantage for using laboratory experiments. The three main objectives of laboratory experiments are (1) to test theories, (2) to establish regularities as a basis for a new theory, and (3) to determine preferences (Friedman and Cassar, 2004). Thus, the main focus is to compare predictions with the experimental outcome and also to explore reasons for a theory's failure. It is possible that well-established empirical regularities direct the theorists' effort to develop empirically relevant theories. In view of that, for instance, the testing of the "homo oeconomicus" concept (rationality, utility maximization, selfishness, constant preferences, and perfect information) has led to a great body of new theories like bounded rationality, learning, fairness theories or social preferences. Moreover, fairness or social preferences can be

determined in an experiment by observing choices among different allocations (Blanco et al, 2011).

Obviously, every method has some disadvantages. It mostly concerns the generalizability, such as what happens in laboratory experiments is not equally valid in a broader world ('construction of social reality': Bradsley, 2005). Therefore, one might consider that the behavior in the laboratory can be influenced by some effects known as Hawthorne effect or social demand effect (Bradsley, 2005). Additionally, Levitt and List (2007) and List (2009) mention the following influences in laboratories: (1) self-selection of the participants making the decisions, (2) the already stressed extent of stakes and/or incentives presented in the experiment, (3) the presence of moral and ethical considerations, (4) the nature and extent of scrutiny of one's actions by others, and (5) the context in which the experimental decisions are embedded. Context matters because all people participating in laboratory experiments have a complex set of relational situations, frames, past experiences and lessons learned. But all in all, laboratory experiments are a major source of knowledge in social sciences. Ultimately, the interpretation of laboratory findings through the lens of theory helps to understand the observed patterns of results, which is at least a really good argument for using laboratory experiments (Falk and Hackman, 2009).

Coming back to the mentioned interplay between experiment and questionnaire, one has to consider that there is a difference between attitude and behavior. "The experiments illustrate people's behavior rather than what people believe to be their own behavior" (Fershtman and Gneezy, 2001: p. 352). Therefore, also results derived from experiments and questionnaires do not necessarily correlate in general. For instance, trust measured in a 'trust game' has more in common with questionnaire trust, when no 'money reward' is involved. But aside from monetary calculations, also other factors can have an impact, such as moral and ethical considerations and/or the context in which the decisions are embedded. In any case, participants bring to the laboratory the moral sensibility and practical knowledge that they experienced in the past (Bowles and Gintis, 2011). In the result section (see section 5.4) we also correlate questionnaire items taken, for instance, from Glaeser et al (2000) with the behavior taken from the actual decisions in the trust game negotiations. Therefore, we additionally test the link between attitude and behavior.

4.2 QUESTIONNAIRE DESIGN

There exist different sources of independent variables that we took into account in the trust game negotiations. In any case, the independent variables are based on individual differences between the participants, which were collected either with the help of questionnaires or with the help of content analysis. On the one hand, there are variables about the participants' social preferences, social value orientation, and the subsequently matched pairs' compositions, which are characterized as antecedents. On the other hand, some other independent variables were collected in questionnaires about trust propensity and past pro-social behavior. Finally, we have variables from the content analysis regarding bargaining process, entailing independent variables for different categories of negotiation strategies.

In short, we have one main independent variable, namely the individual differences concerning participants' social motivation. The participants are distinguished according to whether they are mainly social-minded ("pro-social") or mainly self-interested ("egoistic"). For the experiment itself, we used a mixed-design, with "pro-social" or "egoistic" participants assigned to a role of either sender or receiver, assigned to a selected interaction partner, and taking decisions in the face-to-face phase ($t=1$) and the email-follow up phase ($t=2$). The dependent variables are either the sender's investment or the receiver's return. Moreover, we employed also the individual outcome or the satisfaction level as dependent variables.

While behavioral measures are simply measures of a particular behavior in which researchers are interested in, counting the number of times a behavior occurs, self-report responses in questionnaires conversely rely on subjective experiences, when researchers are interested in measuring satisfaction, attitudes and intentions (Field and Hole, 2003). Self-perception bias or social desirability might happen in such self-report situations. Sometimes people tend to see themselves as better than average and hence would give favorable answers in the questionnaires. We overcome these biases and confounding factors by employing two questionnaires following the same ideas, but the social preference measurement originates in the economic literature stream, and the social value orientation originates in the psychological literature stream.

4.2.1.1 Social preference measurement

Social preference measurement (SPM) is based on an idea by Daruvala (2010) and was refined by Vetschera and Kainz (2012) and/or Graf, Vetschera and Zhang (2012). Six decisions in total have to be taken where participants indicate an equal distribution which

seems equivalent to a shown unequal distribution. To give up part of the personal payoff is an indicator for having social preferences.
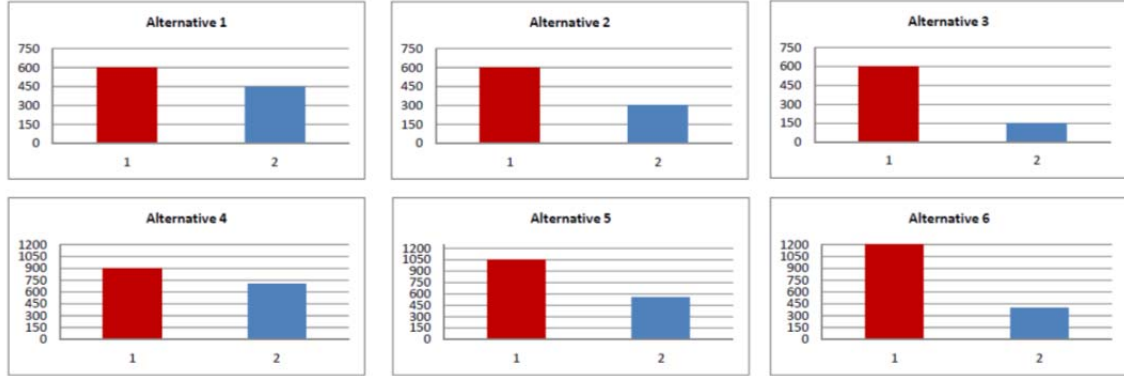
Figure 12: Social preference measurement with its six distributions

Distributions of the social preference questionnaire

The distributions used in the six questions are shown in Figure 12. This figure represents the questions posed to each participant, where the dark bar stands for the participant's payoff of actually filling out the questionnaire, and the bright bar indicates the payoff for the other party. The participant answering the question would receive a payoff of 600 in the first three questions (Alternative 1-3) and the endowment varied in the last three questions (Alternative 4: 900; Alternative 5: 1,050; Alternative 6: 1,200). While in Alternative 1-3 the sum of payoffs to all participants in the unequal distribution was different (Alternative 4: 1,050; Alternative 5: 900; Alternative 6: 750), the sum of payoffs in Alternative 4-6 is held constant to 1,600 in the unequal distribution. The indifference value was required to be at most at the shown endowment of participant 1 who is the focal player. All the questions only concern the altruism part of the Fehr-Schmidt model, since all other players receive a lower payoff than the focal player. The altruism properties were in place to observe whether subjects were willing to sacrifice some individual utility to make the other partner better off or not. In order to avoid unequal distributions, the total altruism share accounts for 150, 300, and 450 in Alternative 1-3 and is slightly higher with 200, and 500 for total altruism in Alternative 4-6.

Measurement model

The measurement model considers only two participants in a group. The vector of payoffs is denoted by **x** and the payoff to the dyad member i by x_i. Furthermore, we refer to the dyad member whose preferences we are modeling as member 0. Let $\mathbf{z} = (z_0, z_1)$ be the vector of an unequal distribution and $\mathbf{e} = (x^E, x^E)$ be the equal distribution in which each player gets x^E so that the focal player is indifferent between these two distributions. As-

suming that the focal player is inequality-averse and does not derive extra utility from the fact that payoffs are unevenly distributed, then $x^E \leq z_0$ must hold.

According to Graf, Vetschera and Zhang (2012), we consider a social preference function of the form $u(x, \beta) = x_0 + \sum \beta_i f_i(x)$, where f_i represents different attributes of the unequal distribution. In our case the unequal distribution is as follows: $u(z) = x_0 - \beta(x_0 - x_1)$ and the equal distribution as follows: $(e) = e$, where $e = x_0 - \beta(x_0 - x_1)$. From the Fehr and Schmidt model, we use the total payoffs where players are worse off than the focal player. Under the assumption that players are able to specify their exact indifference value x^E, the equation $u(z) = u(e)$ is used to estimate the parameter values, such as $\beta = \frac{x_0 - e}{x_0 - x_1}$. Furthermore, most models in literature also require $-1 \leq \beta \leq +1$, since properties of the payoff distribution are also expressed in monetary units (e.g. the payoff to the group member who is worst off), and no property can have a larger impact than the focal player's own payoff.

The procedure of how the parameter is calculated is that at first, each participant gave six indifference values for the shown six alternatives of distributions in Figure 12. For each distribution, a parameter is calculated, and the average one for each participant is then used for further analysis. The selected equal distribution is compared with the given unequal distribution by calculating β as described above. This would mean that the own endowment subtracted by the chosen indifference value is related to the own endowment minus the endowment of the other party.

4.2.1.2 Social value orientation slider

In the literature section 2.2.2.3, we already introduced some psychological scales for measuring social motivation. The 'ring measure of social values' (McClintock, 1978; Liebrand, 1984; Liebrand and McClintock, 1988), for instance, was designed to assess interpersonal motivations, specifically social value orientation or how individuals weigh their own outcomes versus the outcomes of one or more others. An extension would be the 'social value orientation slider' (SVO) by Murphy et al (2011). This measurement tool also assesses how participants prefer to divide resources between themselves and another person and is a high resolution measure, with strong psychometric properties and sensitive to individual properties. Six decisions are taken about allocating resources between oneself and another person. Afterwards, the slider distinguishes between the common social value orientations (i.e. altruistic, pro-social, individualistic, and competitive).

How does the SVO slider work?

The decision maker chooses between two options which are presented to him/her, such as in Figure 13. These options illustrate the notion of interdependent interests. A rational decision maker ('homo oeconomicus' type) would select option 2 in this example as it results in a larger individual payoff (15 is gained at the cost of 35 from the other person). Murphy and Ackermann (2010) report that in accordance with other findings, option 1 is chosen in usually 40% of the cases of their data collection. All the other items have the same form as presented in Figure 13 by giving a resource allocation choice over a well-defined continuum of joint payoffs (Murphy et al, 2011). For instance, we consider a decision maker choosing a value x between 50 and 100 inclusive. The decision maker's payoff would be x, while the payoff of the other person would be *100 – x*.

Option 1	Option 2
\$85 to the DM	\$100 to the DM
\$85 to another person	\$50 to another person

Figure 13: Social value orientation item
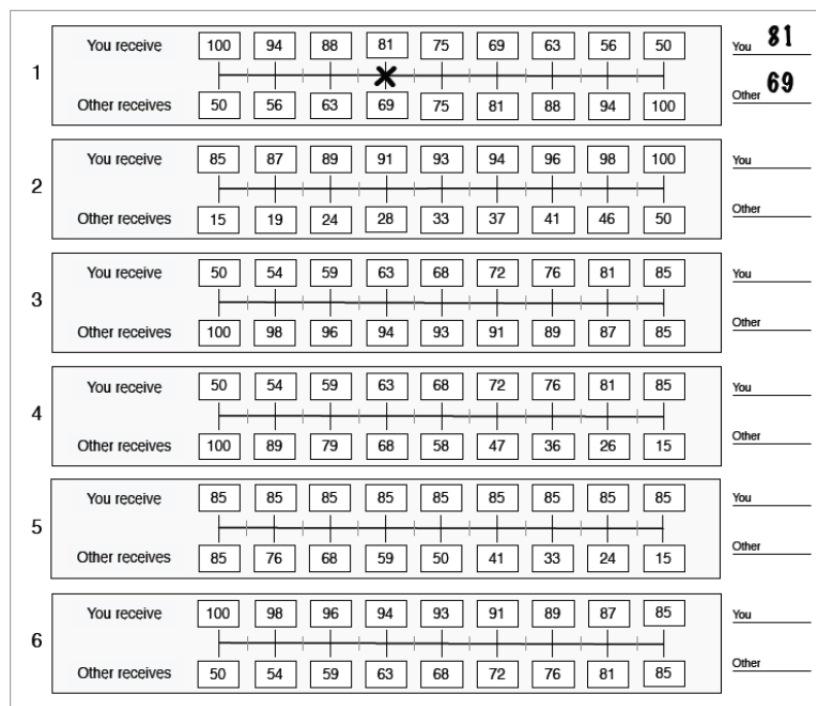
Figure 14: Social value orientation slider with its six items

The SVO slider measure can be administered as a paper based survey or as an online measure. The decision maker gets six allocation decisions presented and chooses between different joint distributions, where one portion of a certain amount of money is for him-/

herself and some portion to be given to another person, who is unknown to him/her. These resource allocation decisions are sometimes referred to as 'decomposed games' in order to study choice behavior. It is a method to measure preferences alone without any strategic interactions. In Figure 14, we see the paper-based choice task of the 'social value orientation slider'. For all six items, the decision maker would indicate his/her allocation choice by marking a point which is the most preferred joint distribution. At the right hand side of the figure, the corresponding payoffs resulting from the choice are displayed once more. We used an online measure for the pre-questionnaire (screenshots can be seen in Appendix 3).

How are the SVO slider' results calculated?

According to Murphy et al (2011), the six SVO slider items were derived from the six lines that fully interconnect the four points of the most common social value orientations (i.e. altruistic, pro-social, individualistic, and competitive). The decision maker evaluates each item sequentially and indicates for each the most preferred joint distribution. In Figure 15, the *x*-axis corresponds to the value of the decision maker's individual payoff. The *y*-axis corresponds to the other person's payoff. For instance, the point *x*=100 and *y*=50 is assigned to individualistic motivation, while *x*=85 and *y*=85 is associated with pro-social motivation. Subsequently, the six responses are scored to yield a single score for the decision maker.
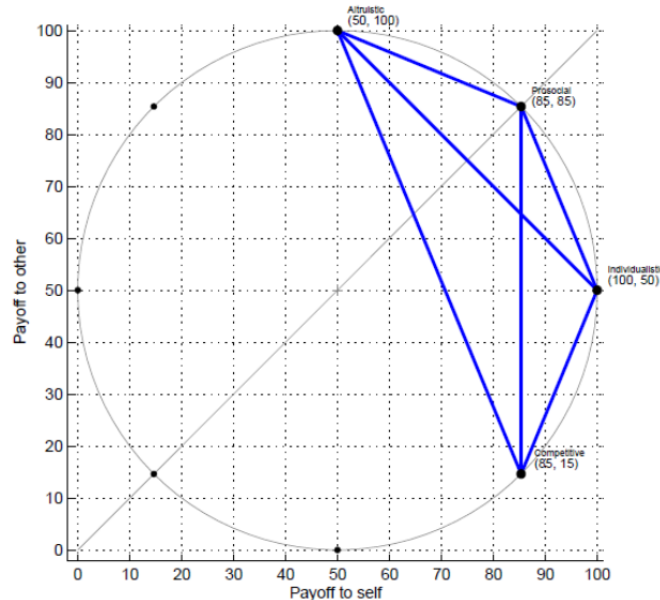
Figure 15: Social value orientation slider with its different classification forms

The computation of the single score for the decision maker involves five steps. After the subject has made all six allocation choices, a vector can be computed by adding his/her

chosen options together, thus yielding two numbers (the sum of money the decision maker allocated to him-/herself, and the sum of money the subject allocated to the other person). First, 50 is subtracted from each of these choices in order to shift the base of the resulting angle to the center of the circle (50, 50) rather than having its base start at the Cartesian origin (see Figure 15). Second, the mean allocation for the decision maker him-/herself ($\bar{x}$) and the mean allocation for the other person ($\bar{y}$) is worked out. Third, the ratio of mean payoff to other person in relation to the payoff of the decision maker him-/herself is calculated. Forth, the inverse tangent of the ratio between these means is computed, resulting in a single index of a person's SVO. Fifth, the radians would be converted into degrees. Summarized the formula would have the form as follows:

$$SVO° = arctan\frac{(\bar{y}-50)}{(\bar{x}-50)}.$$

The resulting point can be interpreted as a vector, and the angle of this vector corresponds to a decision maker's social value orientation. Ultimately, the length of the vector indicates the internal consistency of the decision maker's allocation decision.
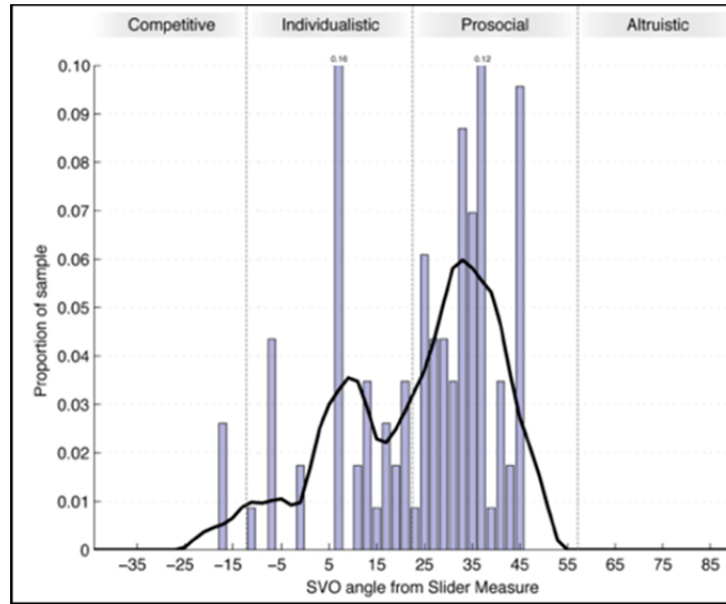
Figure 16: SVO slider distribution following Murphy et al (2011)

How are the SVO slider' results interpreted?

As already mentioned, the SVO angle lies within the most common social value orientations. These are defined by Murphy et al (2011) as the following:

- Altruism (maximize other's payoff): SVO° ≥ 57.15°,

- Pro-sociality (maximize joint payoff or minimize difference between payoffs): $22.45° < SVO° < 57.15°$,
- Individualism (maximize payoff to self): $-12.04° < SVO° \leq 22.45°$, and
- Competitiveness (maximize positive difference between self and others' payoff): $SVO° \leq -12.04$.

In any case, at $r = 0.92$, the test reliability is quite high. Moreover, the distributions of the different social value orientations according to Murphy et al (2011) would correspond to the presentation in Figure 16. Here, we find no altruistic motivations and a small number of competitive motivations. But to a high extent, we observe decision makers classified as individualistic or pro-social.

4.3 EXPERIMENTAL DESIGN

Sorting and randomization

Most experiments select a random sample of participants by recruiting them and observing them in a specific experimental environment. This approach is called *randomization*, where subjects' individual habits and idiosyncrasies are basically uncontrollable and unobservable nuisance variables (Friedman and Cassar, 2004). By the way, important nuisance variables are learning, experience, boredom and fatigue, extracurricular events, self-selection, or idiosyncrasies of individuals. Moreover, potential roles are also assigned randomly following this approach. Randomization is very important. However, individuals are sorted into and out of environments based on their preferences, beliefs, or skills in real word settings. Thus, it can be assumed that individuals who take part in a specific market are unlikely to be a random sample of the population (Lazear et al, 2009). Therefore, also in laboratory experiments, the approach of *sorting* can be implemented by varying specific factors, such as individual differences between participants. Sorting in an experiment allows to influence self-selection and to match different pre-selected individuals in defined negotiation dyads. There are several trust experiments investigating the relationship between individual differences, such as gender, age and ethnicity, and trust behavior (Eckel and Grossman, 2001; Fershtman and Gneezy, 2001).[32] Some experiments examine the relationship between religion and trust. Johansson-Stenman et al (2008) and (2011), for instance, matched Muslims and Hindus within and across religion. In particular in social psychology and negotiation sciences, researchers sort participants by screening personality-related factors, such as motivations or orientations (Beersma and De Dreu, 1999; Weingart et al, 2007).

Our sorting starts by screening the participants' individual differences according to their social preferences and social value orientation. Subsequently, the participants were matched with a specific partner and assigned to a specific role in order to reach balanced negotiation dyads. According to the sorting result, "egoistic" and "pro-social" participants were either invited or not invited to the trust game negotiations. For both roles, sender and receiver, we distinguished between "egoistic" and "pro-social" motivation as individual differences. Ultimately, we formed three different negotiation dyads, which are also presented in Figure 17. There is one homogenous dyad, where a "pro-social" sender is paired with a "pro-social" receiver, and two heterogeneous dyads, where at first an "egoistic" sender is coupled with a "pro-social" receiver and then a "pro-social" sender matched with an "egoistic" receiver. The second homogenous group of "egoistic" sender and "egoistic" receiver is missing because the self-interested social motivation among the potential par-

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[32] The findings show that there are effects for standard socioeconomic variables on behavioral trust, like men put more trust in others than women do, but women reciprocate more than men.

ticipants was limited. Nevertheless, the matched pairs are in accordance with the finding of Brett (2007), who suggests that negotiation dyads in real settings are composed of 33% of "egoistic" negotiators and 67% of "pro-social" negotiators. In any case, the screened individuals and matched pairs are a prerequisite for our experiment, where the sorted participants made decisions for two environments that differ.
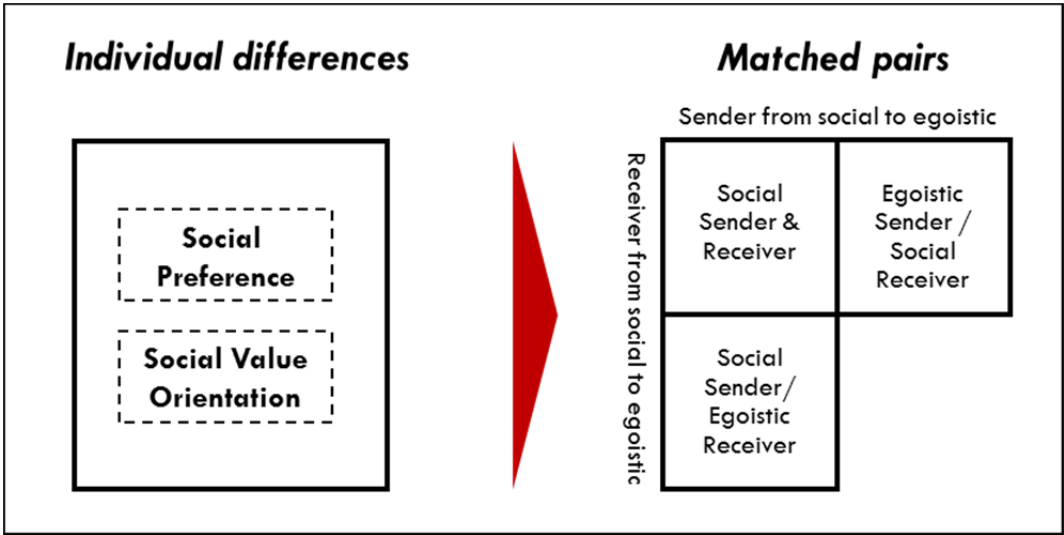
Figure 17: Participants sorted by individual differences for obtaining matched pairs

Experimental design

Basically *between-subjects designs* (or independent measures) mean using separate groups of participants for each of the different conditions in the experiment. Each participant is tested once only and is exposed to only one condition. While the advantages are simplicity in the performing, less chance of practice and fatigue effects, the main disadvantages are that between-subjects designs are conservative in nature and require a lot of participants, the recruitment is time-consuming and laborious, and in the worst case, participants are insensitive to experimental manipulations. In contrast, *within-subjects designs* (or repeated measurements) have more power but potentially suffer from confusions. Each participant is exposed to all of the conditions of the experiment. The purpose is to examine how individual behavior changes when the circumstances of the experiment change. The advantages are that such experiments are more economical to run in terms of time and effort, since each participant is used several times and it is more likely to reveal the effects of the experimenter's manipulation due to less random variation. Not to ignore are also disadvantages of carry-over effects from one condition to another, entailing that participants will spontaneously vary their performance slightly from condition to condition. Finally, hybrid or *mixed designs* can overcome the two extremes by combing between-groups and within-subjects designs (Field and Hole, 2003; Charness et al, 2012).

We have some kind of mixed experimental design. Each participant is assigned the role of either sender or receiver in the 'trust game' and he/she makes his/her respective decisions. Additionally, we vary two different conditions or environments in the 'trust game'. Thus, negotiation context is added by introducing a face-to-face phase ($t=1$) and an email follow-up phase ($t=2$), entailing that each participant makes his/her decisions in each phase. This mixed design allows to test whether participants change their behavior or not when they are exposed to different conditions.

Figure 18 brings together what was said before concerning the sorting and the experimental design. We have the individual differences and/or matched pairs as *antecedents* and the outcomes of the 'trust game' as *consequences,* divided by the face-to-face phase ($t=1$) and the email follow-up phase ($t=2$). Finally, the relationship between antecedents and consequences is mediated by the communication context. Our experimental design allows communication as a contextual factor in order to upgrade the 'trust game', obtaining more real word character. On the one hand, we allow communication as a fact itself, and on the other hand we also consider the communication content by recording the communication process between sender and receiver as a negotiation dyad.
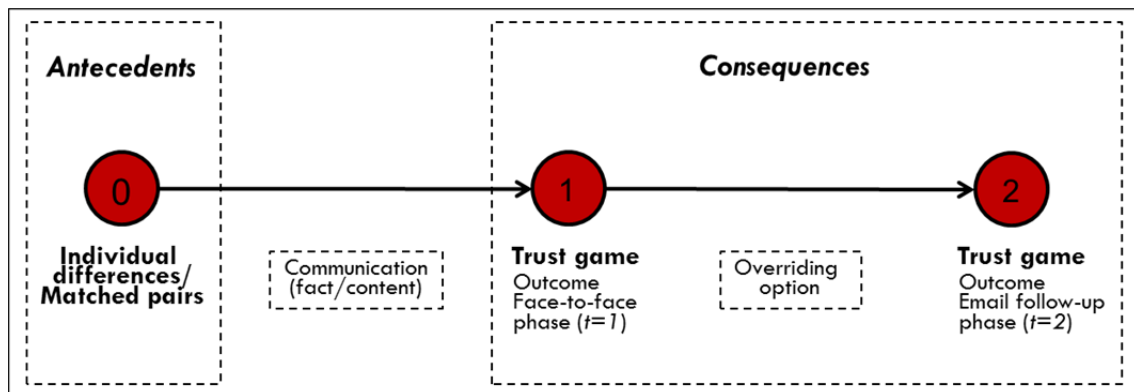
Figure 18: Experimental design with its antecedents, settings, and consequences

Variables

Concerning variables, the independent ones are the factors that are manipulated by the experimenter (Field and Hole, 2003). Thus, for the trust game negotiations, it would mean that there are in particular two conditions to consider. Firstly, the individual differences in social motivations, and subsequently, the matched pairs of the negotiation dyads are manipulated. Furthermore, the second manipulation is based on two decision situations that differ in the environment. At first, the negotiation dyads meet face-to-face for negotiations, and they settle their agreement bilaterally ($t=1$). But then there is the overriding option after leaving the negotiation table, which can change the agreement unilaterally, and the choice of this option communicated via email ($t=2$). We have neither an independent-measures nor a repeated-measures design, but a mixed design using a combina-

tion. In any case, each participant takes decisions either in the role of the sender or the receiver, but also, each participant takes part in the face-to-face negotiation (*t=1*) and the email follow-up phase (t=2). Concerning the dependent variables, we have outcome measures which are based on the individual payoff and satisfaction. In more detail, the investment on the sender side, the return on the receiver side, the corresponding individual outcomes, and the satisfaction in the trust game negotiations are measured.

Trust game

The 'trust game' that we employ is in essence a sequential dilemma game for trust and trust responsiveness (Berg et al, 1995). According to Mulder et al (2006), the purpose of this game is to model human exchanges that are not forced by contracts, since trust-based exchanges have a longer evolutionary history than contract-based ones. In order to recall shortly, the sender can either take the decision to trust or not to trust, while the receiver can decide whether to show trustworthiness or not. We already know the game-theoretic solution is that the self-interested sender knows that the receiver is also rationally self-interested and keeps all money in the case he/she would invest some money between *0* and *10* at his/her disposal. Therefore, the sender invests nothing and takes the endowment of ten monetary units. The receiver would go away empty-handed. This is the Nash equilibrium. Empirically, we know that trust makes both sender and receiver better off. Many senders invest large sums, whereas many receivers return something of the tripled amount. These receivers are conditional reciprocators, and senders seem to expect conditional reciprocity, or else they would invest nothing. For the sender, it is efficient to invest the whole ten monetary units. In case the receiver has a preference for inequality aversion, he/she would return half of the tripled amount to the sender so that both sender and receiver equally get an outcome of 15 monetary units. Usually, the traditional 'trust game' is played in anonymous settings in computer laboratories, where the participants do not know with whom they interact. Thus, sender and receiver get the information about the partner's action (decision) provided via computer screen. In our case, sender and receiver also do not know each other, but unlike in the aforementioned scenario, we allow them to interact face-to-face and make their decisions with paper and pencil by filling out a common decision form. We did a pre-test with 15 students at the University of Graz before the trust game negotiations were conducted at the University of Vienna.

4.4 CONTENT ANALYSIS

Communication behavior is supposed to shed light on the question whether communication content, such as chosen negotiation strategies during the process, can affect the outcome or can be seen as cheap talk. The purpose of the content analysis method is getting insight into the communication content, and subsequently to test if the content may influence (negotiation) outcomes. While economic measures focus only on outcomes of a negotiation, social-psychological measures focus on both the process and the outcomes of a negotiation (Harris, 1996). Content analysis serves to understand the negotiation process. The greatest strength is the ability to provide information for analyzing the behaviors, motives, and tactics used (Harris, 1996). We follow the blue print plan for content analysis by Srnka and Közesgi (2007) with the stages, *data sourcing, transcription, unitization, categorization*, and *coding*, in order to ensure the quality of a reproducible and comprehensible process. Moreover, the whole content analysis process with all quality checks of the prevailing trust game negotiations is documented in more detail by Kuntner and Boudova (2012).

Krippendorf (2004: p. 18) defines content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use." Content analysis is a method specifically appropriate for the analysis of messages in mass communication (Lombard et al, 2002) and hence frequently used in negotiation research. It represents a process of qualitative exploration and coding of qualitative material (e.g. negotiation transcripts) in order to turn communication transcripts into codeable units, classify them, and finally create nominal data (e.g. Krippendorf, 2004). This method is definitely laborious and very time-consuming.

There are three lines of content analysis in the literature, the quantitative approach, the qualitative approach and the mixed methods approach. The quantitative approach is based on a deductive procedure and produces nominal data which is subsequently analyzed by statistical methods in order to test hypotheses (Zhang and Wildemuth, 2009). The qualitative approach is described as an attentive and accurate reading of text with the aspect of analyzing it from different perspectives (Kracauer, 1952), which is often confronted with criticism, such as missing objectivity and comprehensibility. Mayring (2010) combines the strengths of both approaches to a qualitative-quantitative content analysis. This mixed methods approach is characterized by systematic procedure that is theory-based and follows rules in order to make inferences about specific communication aspects. In particular, he stresses that qualitative steps play a role in the elaboration of the research question and the interpretation of the results.

A so-called generalization design (Mayring, 2001) was applied, which means that the analysis is both qualitative and quantitative. The starting point is the collection of qualitative data in open format, and this data is converted into nominal data so that it can be used

for further quantitative analyses. The blue print plan by Srnka and Koeszegi (2007) ensures a systematic procedure, so that besides quantitative analysis of nominal data also a new category scheme is elaborated by referring to the existing literature and analyzing the prevailing qualitative data (deductive-inductive approach). Moreover, we meet standards of validity, reliability, and theoretical relevance with the blue print plan (Harris, 1996). Our sample consists of 180 participants or of 90 negotiations. Only 82 of the 90 trust game negotiations had the best usable recording quality. Therefore, eight negotiations were excluded from further analysis. According to Srnka and Koeszegi (2007), this sample size can be considered a "medium-sized sample" and adequate for our purpose.

4.4.1 TRANSCRIPTION

"Data sourcing", stage one of the content analysis (Srnka and Koeszegi, 2007), was performed in the face-to-face phase ($t=1$) of the experiment by recording the negotiation process. Since negotiations were conducted face-to-face, the data needed to be transcribed in written format. Therefore, the stage of data sourcing could be regarded as redundant and the stage of "transcription" marks the beginning of the qualitative analysis. There is no common standard on how to transcribe recorded verbal communication. Flick (2009) suggests that the accuracy of the transcripts depends on the respective research question. Our particular attention is on the content of the negotiations.

In Figure 19, we show a sample transcription with the speaking turns, literally spoken, of both negotiators and the corresponding time. For each negotiation, a separate file was prepared, and the transcription was stopped when an agreement in trust game negotiations was achieved with filling the decisions in an extra form. As the negotiation language was German (sample with a majority of German-speaking students), almost all transcriptions are in German (with some few exceptions). While "A" stands for the speaking turns of the sender in the transcripts, "B" marks the speaking turns of the receiver, in order to ensure the anonymity of the participants. In the parentheses of the transcripts we find some comments, such as silence or laughing, if it was audible on the respective recordings. Interruptions, overlaps, uncompleted sentences, and conversation pauses are indicated in the transcripts with a sequence of dots (…).

Figure 19: Sample transcript

4.4.2 UNITIZATION

In the stage of unitization, the transcriptions of the negotiations are split into thought units which are independent from speaking turns, and each thought unit refers to one singular idea in terms of content. In general, unitization is a crucial step in content analysis (Holsti, 1969). The determination of the analysis unit has consequences for the further stages of the content analysis (categorization and coding). Each analysis unit should illustrate the smallest possible and independent text chunk, which is afterwards assigned to different content categories. Oftentimes, a speaking turn is taken as an analysis unit, which possibly could be very long in the case of main and subordinate clauses. We opted for extracting speaking turns into thought units in order to preserve the valuable information, since negotiation sentences may contain multiple ideas within their message content (Srnka and Koeszegi 2007). Thought units are defined "as words, sentences or paragraphs containing aspects related to each other through their content and context" (Graneheim and Lundman, 2004: p. 16).

Two independent, trained "unitizers" performed this task. The negotiation-material was initially kept in an Excel document, where each line represented exactly one speaking turn of the negotiators. The sequence of messages remained preserved; a "new" message-identification number was assigned to each "new" thought unit created. The material was split into two parts and each half was unitized by two independent and trained unitizers. Different possibilities of unitization were discussed, whether depending on broad or nar-

row thoughts. In order to attain the best possible agreement, we followed the suggested rule by Graneheim and Lundman (2004) that our smallest thought unit is a unique idea. For instance, if a negotiator was underpinning a thought with a specific argument, example or question that fit the context of the whole thought, the entire line was considered as only one thought unit. For example: "(harrumph) Actually, this is an arithmetic problem. Isn't it?"

After setting this rule, we ran the first unitization test round with a sample of six negotiations. The reliability was checked by Guetzkow's U measure, where the analysis (thought) units between the two unitizers are compared. We calculated the following formula $U =$ la $U = (O_1 - O_2)/(O_1 + O_2)$, where O_1 represents the number of thought units identified by 'unitizer 1', and O_2 the number of units identified by 'unitizer 2' (Guetzkow, 1950). The average Guetzkow's U for two unitizers amounted to 0.049, which can be regarded as very good. We discussed the 5% discrepancies that occurred in longer sentences or paragraphs, and specified our unitizing rules more precisely in order to reach even higher consistency and to eliminate differences for the entire set of negotiations.

For the second round, the remaining negotiations were unitized at first by two trained research assistants independently, and afterwards, we once more discussed some discrepancies in the whole group. We often observed that people gave short answers, very short feedback or neutral fragments that consist of only single words, such as "Yeah", "Hm", "Yes, well," or "Right". These single word statements happened when negotiators agreed with the argument of the other person, what was said before, or when they took over the same argument of the other negotiator for further explanations. In the literature, the term 'back-channel responses' is used for this kind of answers (Krauss et al, 1977). Only if such back-channel answers stand alone for themselves, they were treated as separate thought units. All remaining discrepancies were discussed and resolved, resulting in a final Guetzkow's U of zero.

Besides reaching an agreement on the absolute number of units, we made sure that the thought units extracted were also textually consistent among unitizers. This is very important for the stage of categorization, in which codes are assigned to each thought unit. For instance, the statement "Yeah, it is an arithmetical problem … I actually think of how we both can be better off" was split into two units ("Yeah, it is an arithmetical problem …" and "I actually think of how we both can be better off") as we regarded integrative aspects of statements as separate units subsequently. In total, we generated homogenously unitized 7,412 lines of thought units from the negotiation transcripts.

4.4.3 Categorization

The creation of a coding scheme is essential, since it represents the link between the data source and the statistical analysis. A category scheme is basically created using a deductive-inductive approach. As a starting point (deductive step) a category scheme found in the existing literature is applied (Srnka and Koeszegi, 2007) or a category scheme is elaborated derived from existing literature (Zhang and Wildemuth, 2009). We decided on a category scheme which was often employed by Weingart et al (1993, 1997, 2007), since this scheme is very elaborated and formed on the research of negotiation strategies. Moreover, this category scheme supports to identify the impact of different negotiation strategies on negotiation outcomes. However, in an iterative process the coding scheme is adapted in order to optimize it and to create a fit between the prevailing data and the respective categories through pre-tests. Thus, the iterative adaptation of category schemes is based on the preliminary coding of the existing material (inductive step). In any case, the creation of the coding scheme was the most time-consuming, but also the most creative task, as is also mentioned in literature (Mayring, 2010).

STRATEGIC FUNCTION	STRATEGIC ORIENTATION	
	Distributive	**Integrative**
Information	**(1) Distributive Information** • Positions • Facts	**(2) Integrative Information** • Priorities • Needs • Interests
Action	**(3) Claiming Value** • Substantiation • Threats • Power Use • Bottom-line • Single-issue offers	**(4) Creating Value** • Packaging • Tradeoffs • Creative Solutions • Multi-issue Offers

Figure 20: Category scheme following Pesendorfer et al (2007)

Figure 20 indicates the starting point of our category scheme (Olekalns et al, 2003; Pesendorfer et al, 2007; Weingart et al, 2007; Koeszegi et al, 2011). This shown scheme again is based on Weingart et al (1993, 1996) and Pruitt and Carnavale (1982) and is two-dimensional. The two dimensions are the following: (1) the strategic orientations in behavior distinguish between the two basic motivations of the negotiator – the dimensions *distributive* versus *integrative*; (2) the strategic functions classify communicative acts either as offering *information* or performing *action* (Weingart et al, 2007; Koeszegi et al, 2011). Whereas distributive strategies are egocentric and focus on an increase of individual gains, integrative strategies refer to joint outcomes and problem-solving orientation (Pesendorfer

et al, 2007).[33] We made some modifications and came up with the following five main categories: (1) *integrative information: takes other into account*, (2) *integrative action: value creating*, (3) *distributive information: refers to task and self-interest*, (4) *distributive action: value claiming*, and (5) *process management: procedural facilitating*.

Besides those main categories there are also more detailed subcategories. We present all the integrative subcategories in Figure 21, all the distributive subcategories in Figure 22, and the process management subcategories in Figure 23, all with explanations and sample statements. In the *integrative information* block we have types of information exchanges, such as *states/asks preferences*, and in the *integrative action*, block offers and suggestions are presented that are beneficial for both parties, such as *makes fair offer ≥ 50% splitting*. The *distributive information* block contains subcategories for comments about the negotiation, negative reactions or offensive questions in order to clarify the partner's position, such as *asks for substantiation*. The *distributive action* block includes statements that support the self-interested wealth creation and creative solutions, such as *refers to power/uses pressure*. Ultimately, we have procedural subcategories, such as *time management* or *neutral fragments*.

All the subcategories are described in detail with negotiation behavior in the parentheses following Putnam and Jones (1982) and Srnka and Koeszegi (2007). For instance, *signals trust/trustworthiness* is seen as tactical behavior because this category may influence the expectation and actions of the interaction partner. Substantive behavior constitutes fundamental negotiation behavior, such as fair or unfair offers/suggestions. The subcategory *refers to equality/uses supportive argument*, for instance, is described as persuasive behavior, since it supports the claims a negotiator makes. Task-orientated behavior is the subcategory *makes task-related comment*, entailing the interpretation of the experimental instructions, because it promotes or facilitates the problem solving but is not substantive, persuasive, or tactical. Affective behavior, such as makes *positive comment*, is linked to the expressions of feelings about the content, the interaction partner, or the bargaining situation. Finally, we have private communication that is not directly related to the negotiation itself, and procedural communication that facilities the communication process.

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[33] Literature suggests that there is a gradual shift from distributive behavior to integrative behavior over time (Pesendorfer et al, 2007).

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Main category	Sub category	Explanation	Example
Integrative Information = Takes other into account	*States/Asks preferences (Tactical behavior)*	Sharing own preferences (e.g. fairness) and priorities (e.g. efficiency) or asking the partner about preferences	*I wish we both have effectively the same.*
	Signals trust/trustworthiness (Tactical behavior)	Building of a mutual trust level	*You can count on me!*
	Joint processing (Tactical behavior)	Pursuing a common idea such as calculating intermediate results	*Then we each have 15 euros.*
	Asks for substantiation (Tactical behavior)	Asking partner arguments for justification	*Why do you share so much with me?*
	Relationship building / Off-task comment (Private communication)	Making comments towards the partner which go beyond the negotiation topic	*In which semester are you?*
	Makes positive comment (Affective behavior)	Commenting on the positive development of the negotiation process	*Now, we made it!*
Integrative Action = Value Creating	*Makes fair offer ≥ 50% splitting (Substantive behavior)*	Offer of the authorized decision-maker which is fair and makes both partners better-off (e.g. 50/50-split)	*I can give you seven Euro of my endowment .*
	Makes fair suggestion (Substantive behavior)	Offer of the non-authorized decision maker which is fair and makes both partner better-off (e.g. 50/50-split)	*I suggest to split the payoff.*
	Agrees to offer (Substantive behavior)	Agreeing to the offer of the authorized decision-maker	*Yes, I agree.*
	Agrees to suggestion (Substantive behavior)	Agreeing to the offer of the non-authorized decision-maker	*I can live with this proposal.*
	Refers to equality/ Uses supportive argument (Persuasive behavior)	Presenting arguments for improving the payoffs (e.g. equality)	*If we have the same amount, we have more than we had at the beginning.*

Figure 21: Coding scheme with integrative categories

In pre-tests, the coding scheme was checked in practice and adapted if necessary. We used the unitized material of six negotiations to conduct the test categorization round. Each unitizer (from now on coder) assigned thought units to the existing categories of the scheme and introduced new categories to represent thought units not fitting into any of the existing categories. However, the more detailed the coding scheme is, the more accurate the rules for coding need to be. Those rules include, for instance, the definition when the term "*we*" is mentioned in thought units, then they are treated as integrative categories, but when the term "*I*" is mentioned, then it refers to the distributive categories. There is also a distinction between offer and suggestion. While an offer can only come from the authorized decision maker who is able to take the respective decision, the suggestion comes from the interaction partner who tries to influence the decision maker. Moreover, we have sub-categories when intermediate results are calculated, such as *joint processing*, when a common idea is pursued ("Wait until we calculate again!") and *individual processing* ("I want to calculate it again!"), when a single or own idea of a negotiator is handled. In any case, subcategories were removed when they were not defined clearly enough. Therefore, temporarily we added the category "other", when the coder was unable to assign the thought units to categories from the scheme. This unclear and ambiguous "other" thought units were resolved either by adding new categories or subcategories, or by assigning them to the existing categories. We also developed the rules for assigning the units to each

category which substantially reduced the number of uncategorized units. The process was repeated until the categories "other" were empty.

Main category	Sub category	Explanation	Example
Distributive Information = Refers to task and self-interest	*States/Asks preferences (Tactical behavior)*	Sharing own preferences (e.g. own interest) or asking the partner about preferences	*I'd like to earn the highest possible amount for me!*
	Signals distrust/no trustworthiness (Tactical behavior)	Doubting a mutual level of trust	*I'm not sure whether I can trust you or not.*
	Makes task-related comment (Task-oriented behavior)	Interpreting the experiment instructions	*Do I understand correctly that right that only your amount is tripled?*
	Individual processing (Tactical behavior)	Pursuing one's own idea such as calculating intermediate results for oneself	*Then I have 30 Euro.*
	Asks for substantiation (Tactical behavior)	Asking partner – in a neutral manner – arguments for justification	*What do you mean exactly?*
	Relationship destroying/off-task comment (Private communication)	Making comments towards the partner which go beyond the negotiation topic	*I can't stand you!*
	Makes negative comment (Affective behavior)	Commenting on the negative development of the negotiation process	*Your arguments are really stupid!*
Distributive Action = Value Claiming	*Makes unfair offer ≤ 50% splitting (Substantive behavior)*	Offer of the authorized decision-maker which is unfair	*I can give you three Euro of my endowment.*
	Makes unfair suggestion (Substantive behavior)	Offer of the non-authorized decision maker which is unfair.	*I think I deserve two-thirds of the 30 Euro.*
	Disagrees to offer (Substantive behavior)	Disagreeing with the offer of the authorized decision-maker	*No, I can't agree!*
	Disagrees to suggestion (Substantive behavior)	Disagreeing with the offer of the non-authorized decision-maker	*I don't agree with that!*
	Refers to power/Uses pressure (Persuasive behavior)	Presenting counter-arguments that indicate pressure, power, or expert knowledge	*I can't influence your decision but I'm in a better position.*

Figure 22: Coding scheme with distributive categories

In this iterative process, the number of subcategories was often reduced, increased and then reduced again. For instance, comments or statements with trust and mistrust were first assigned to positive and negative comments. However, for statements, such as "Trust me, since I give you something back" and "I am wondering what the catch here is?", we agreed to introduced *signals trust* or *signals mistrust* subcategories due to research question reasons. In any case, this stage of categorization led to a total of 26 subcategories, which were then combined into 22 categories.

Main category	Sub category	Explanation	Example
Process Management = Procedural Facilitating	*Administration-related (Procedural communication)*	Statements about the experimental process	*I fill in the negotiation form.*
	Time management (Procedural communication)	Statements about time-constraints	*Ready with the instructions?*
	Neutral fragment (Procedural communication)	Filler words and meaningless non-finished sentences	*Mh. Yes. Sure……*

Figure 23: Coding scheme with process management categories

4.4.4 CODING

In the stage of coding, the two coders independently assigned a single code (main category and subcategory) to each thought unit after the coding scheme was finalized. Ultimately, nominal data is generated at the end of the coding stage (Srnka and Koeszegi, 2007). However, after six negotiations of the entire sample we did a first reliability check and created an intercoder consistency matrix (see table 1). The basic version of Cohen's kappa is calculated as follows (Cohen, 1960; Holsti, 1969):

$$\kappa = (\sum P_{ii} - \sum P_i * P_i)/(1 - \sum P_i * P_i),$$

where $\sum P_{ii}$ is the observed proportion of agreement, whereas $\sum P_i * P_i$ reflects the chance proportion of agreement. In the first round of categorization, we obtained an overall Cohen's Kappa of 0.77, which was regarded as worthy of improvement. By analyzing the intercoder consistency matrix and the Kappas for each main category – see table 1 – we realized that most of the problems occurred with the categories *integrative information*. Obviously, the rules of categorizations were not clear, and we had to discuss and clarify them. We isolated examples out of the negotiation sample and coded them together establishing clear guidelines for more complicated cases. All changes and decisions regarding category scheme and reliability measures are reported and explained in the detailed documentation of the analysis process in the work of Kuntner and Boudova (2012).

Table 1: Intercoder-Consistency Matrix in the beginning of the process

Coder 1 / Coder 2	Integrative Information_2	Integrative Action_2	Distributive Information_2	Distributive Action_2	Process Management_2	Total	Proportion
Integrative Information_1	67	5	3	0	0	75	0.2148997
Integrative Action_1	12	73	3	2	1	91	0.260745
Distributive Information_1	9	3	96	3	4	115	0.3295129
Distributive Action_1	0	0	2	15	0	17	0.0487106
Process Management_1	6	3	2	1	155	167	0.47851
Total	94	84	106	21	160	TOTALSUM: 465	
Proportion	0.269340974	0.240687679	0.303724928	0.06017192	0.458452722		

After we had coded 82 out of all 90 negotiations, and existing discrepancies had been discussed, we obtained an overall Cohen's Kappa of 0.89, which indicates high intercoder reliability. We found further agreement through discussion by all coders. Finally, the two coders discussed all remaining inconsistencies and eliminated them by finding a common solution.

Although the content analysis was very complex, since this procedure was very time-consuming by depending on two research assistants, this method can ultimately be mentioned as strength. The conducting of the content analysis takes indeed a long time because the research team needs to find a common ground, set up rules, and perform the single steps from transcription to categorization. We followed the blueprint of Srnka and Koeszegi (2007), which provides several quality checks and controls, and consequently, a lot of coordination meetings were required.

4.5 PROCEDURE

This section gives details on how we carried out the trust game negotiations research in practice. In the following, we present how the three research stages, (1) subjects' screening, (2) face-to-face phase (*t=1*), and email follow-up phase (*t=2*), and (3) post-questionnaire were administered. All participants were exposed to them in the same order, but in the experiment itself (stage 2), the participants were tested in separate negotiation dyads. The whole research process took between 45 minutes and one hour of time in total.

Before we were able to perform each of the single research stages of the trust game negotiations, we invested efforts in the recruitment of the participants. The recruitment process was tedious and time-consuming because we tried to advertise in different channels in order to achieve a suitable subject pool. On the one hand, we informed potential participants face-to-face about the experiment and the possibility of earning between five and 30 euro in different classes in the undergraduate business program at the Faculty of Business, Economics and Statistics, of the University of Vienna. Moreover, we distributed leaflets with the most important information about the time period when the experiment would be performed, how long an experimental session would approximately take, that the decisions taken influence the earnings, and last but not least, we provided the email address for registering for the experiment. On the other hand, this information was also provided via email in form of a newsletter that was sent out by the program director, and this advertisement was also shown on screens which are installed at several important meeting points in the university building.

A challenge was that not all participants who were willing to attend were invited to the 'trust game' experiment because they were screened according to their individual differences in social motivations. Therefore, after email registration, our subject-pool or potential participants got an internet-link via email for filling out the online questionnaire, which was subsequently used for sorting and matching the participants. That is the reason why more than 240 students filled out our online-questionnaire, but only about 180 of them were invited as participants for the trust game negotiations. In any case, it was easy to find participants who are pro-socially orientated, but it was difficult to find some who are egoistically orientated. Another challenge that was successfully solved was to find feasible time slots in the planned time period. We coordinated the appointments for the experiment or the face-to-face phase (stage 2) so that both participants and experimenter were satisfied and that the appointments were appropriate and suited the respective time tables.

Table 2: Sequence of research events

Stage 1	Stage 2	Stage 3
Online Pre-Questionnaire	Experiment	Post-Questionnaire
Attitude Focus	Behavior Focus	Attitude Focus
Part A: Social value orientation (SVO); Non-incentivized task with anonymous partner; SVO Slider by Murphy et al (2011)	**t=1:** Trust game negotiations (bilateral and binding); Face-to-face communication and incentivized task; Experiment following Berg et al (1995)	Questionnaire for negotiation evaluation; Items following inter alia Naquin and Paulson (2003)
Part B: Social preferences measurement (SPM); Non- incentivized task with anonymous partner; SPM Questionnaire by Vetschera and Kainz (2012)	[Interval one week] **t=2:** Trust game negotiations email follow-up (unilateral and overriding); option of changing the agreement	Pro-social behavior items following inter alia Bierhoff (2001) and demographics
Part C: Trust variables; Questionnaire following Glaeser et al (2000)		
15 Minutes	30 Minutes	15 Minutes

In order to answer the leading research questions, the following sequence of research events was chosen, which are also summarized in table 2:

In *stage one,* the attitude focus was determined by an online pre-questionnaire which took approximately 15 minutes. In form of an online-questionnaire, participants filled the SVO slider by Murphy et al (2011), the social preference measurement according to Vetschera and Kainz (2012), and eight trust propensity items following Gaechter et al (2004).

In *stage two,* the behavior focus was emphasized by performing the trust game negotiations experiment, which took on average 30 minutes of total time. The experimental task itself was limited to 15 minutes. At *t=1*, the face-to-face phase, two participants took part in the trust game negotiations with face-to-face communication where the agreement was binding. However, at *t=2*, the email follow-up phase (after a time interval of one week), a breach with the settled agreement was possible, therefore subjects were informed by email that they can override their agreement reached at *t=1*.

In *stage three,* the focus was once again on the attitude with a post-questionnaire which took roughly 15 minutes. Participants evaluated the face-to-face negotiations by assessing the satisfaction with their personal payoff result and their partners. Moreover, they filled out items for socioeconomics following Naquin and Paulson (2003), past pro-social behavior items following inter alia Bierhoff (2001), and some demographics. This was directly done after the face-to-face phase.

The apparatus or material for the paper-and-pencil experiment consisted of instructions describing the 'trust game' and the relevant decisions to take, a decision sheet where the

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participants filled out their individual decisions together, a stopwatch for monitoring the maximum time limit of 15 minutes to negotiate, a tape-recorder for recording the whole communication process, post-questionnaires for evaluating the bargaining process, and remuneration invoices for the payment of the incentives. The post-questionnaire is "home-brewed" but followed some items suggested by Nacquin and Paulson (2003) and can be viewed in Appendix 3. This was the material related to the paper-pencil-experiment or the face-to-face phase (*t=1*). However, the experiment itself was not finished with the face-to-face negotiation. For the email follow-up phase (*t=2*), an email by the experimenter was sent out to all participants, whereas the option of overriding was first presented to all senders, and then with the possible changes to all receivers.

4.6 PARTICIPANTS

We recruited participants from the undergraduate business program at the Faculty of Business, Economics and Statistics of the University of Vienna. A total of 180 students participated in the paper and pencil experiment who were grouped in 90 negotiation dyads. These 90 dyads were also sub-divided in three different types of negotiation dyads. The composition of the dyads is explained in the results section (see section 5.1). For each dyad, we conducted a separate experimental session[34]. Participants who were naive about the purpose of the experiment were seated in a room with a negotiation table, each person being identified by the role of either sender or receiver. Each session began with explanations by the experimenter. Then the instructions and decision sheet were provided. It was clarified that the decisions taken define the reward, and it was also stated that (as advertised in the recruiting leaflet) every participant would receive a minimum of five euro and could get up to 30 euro. Furthermore, it was noted that the face-to-face communication on the negotiation table would be recorded. Participants were informed that there would be an additional phase after the face-to-face phase, but they were not briefed on what would happen in the second phase. 90 dyads participated in the trust game negotiations and were paid according to the individual outcome they reached in the email follow-up phase (*t=2*). Thus, on average 14.33 euro of individual payoff were paid for an approximate time effort of 45 minutes to one hour.

The participants' characteristics are summarized in table 3. Concerning demographic variables, we had a data sample of 180 students from the University of Vienna aged between 19 and 39 years, which had on average 1.43 numbers of siblings. The gender distribution is nearly balanced with 48.9% female and 51.1% male participants. Among them, we observed 19 different mother tongues (77.8% German and 6.7% bi-lingual) and nine different fields of studies (86.1% business students). Although the participants were recruited in the undergraduate business program, not all of them are business students. The reasons are that some participants from other major fields of study need to attend some business classes for their curricula or they are just interested in business and hence choose some elective classes. Additionally, we find some differences on the dyad level. For instance, 37.8% of the 90 dyads consisted of opposite genders, meaning that in 62.2% of the cases, the negotiation partner had the same gender. Moreover there was a difference in 53.3% of the dyads regarding mother tongue, and in 66.7% of the cases the negotiation partner differed in the number of siblings.

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[34] The experimental instructions and the questionnaires can be found in Appendix 2.

Table 3: Participants' characteristics

Variables	Mean	SD	Min	Max
Female	49%			
German mother tongue	78%			
Business students	86%			
Strangers	91%			
Age	23.44	3.41	19	39
No. of siblings	1.43	1.07	0	7

N=180 for all variables

An important piece of information is that 91.1% of the 180 experiment participants had never met before. Thus, the vast majority of the participants were strangers. This fact is beneficial because social distance allows measuring trust and trustworthiness among strangers. Only 6.7% of them knew each other by sight, and 2.2% indicated that they were actually friends. However, among this student sample taken, there is a positive but not to be underestimated chance that the participants would have significant personal interactions with each other in the future, since they met face-to-face and identified themselves by filling out the decision sheets with their real names. Therefore, 48.9% of the participants indicated that are very likely to interact with the experiment partner in the future.

5 RESULTS

Doveryai, no proveryai (Trust, but verify).

— Russian proverb

The main purpose of researching trust game negotiations is to explain the actual decisions of investing and returning and the resulting consequences for outcome and satisfaction. This is done by analyzing the individual differences in social motivations within matched pairs and by observing the bargaining behavior by means of analyzing communication content and self-reports. We now have the answers to some of the following overall research questions: How do individual differences in social motivations influence the trust behavior (outcome $t=1$) in the context of face-to-face negotiations? How does communication content (negotiation strategies used) affect the actual decisions? How do individual differences in social motivations and the face-to-face negotiations influence the trust behavior (outcome $t=2$) in the presence of an option to override the achieved agreement (outcome $t=1$)?
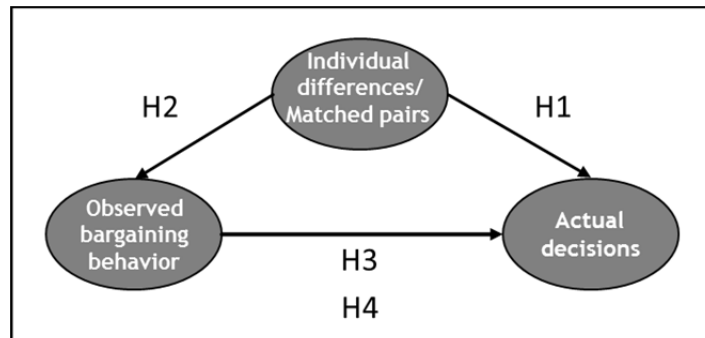
Figure 24: Research framework with experimental relationships

Figure 24 gives an overview of the relationships which we examine in this section. With individual differences we mean the differences in social motivation which serve as a giuding principle for matching participants in homogenous and heterogenous pairs. Under the term *observed bargaining behavior* we understand the recorded content of the negotiation dyads communication during face-to-face interaction and the individual self-reports ("snapshots") in the pre- or post-questionnaires, whereas with *actual decisions* we mean the indvidual decisions of investing and returning which directly affect the output variables of the outcome and indirectly the satisfaction level.

Friedman and Cassar (2004) suggest that basic and simple techniques should suffice for the data analysis of a well-designed experiment. Basically we support this approach. However, given the possibility of sampling and measurement errors, the structure of the data gained from the experiment may have some problems. Predominately the distributions of investing and returning variables are skewed and do not conform to a normal dis-

tribution. Hence, methods used for testing differences are non-parametric tests, like the Wilcoxon signed-rank test for dependent samples of two groups or the Kruskal-Wallis-*H*-test for independent samples of more groups. The former is non-parametric equivalent of the dependent *t*-test. The latter uses a chi-square approximation instead of normal distribution and it can be seen as the non-parametric *ANOVA* (Field and Hole, 2003). However, at first we present the descriptive statistics in order to get acquainted with the trust game negotiation data. Secondly, we test the hypotheses by conducting statistical analysis. Thus, we are able to distill quantitative information about the research questions.

The results section is organized in four blocks. In the first block, we start with the results of the economic measurement tool of social preferences (SPM) and with the psychological measurement tool of social value orientation (SVO) and their consequences for the matching of the negotiation dyads. In the second block, we investigate the effect of face-to-face communication and of keeping and breaking agreements on the investing and returning decisions. The research focus of block three is the impact of the communication content. Here the research aim is to explore which negotiation strategies affect the outcome variables. Last but not least, in block four, we study the link between attitude and behavior and we bridge the gap between the questionnaire assessment and the economic experiment.

5.1 THE INDIVIDUAL DIFFERENCES AND MATCHED PAIRS

In real world settings we find roughly 67% cooperators or social-minded negotiators and about 33% individualists or negotiators who are mainly motivated by self-interest (Brett, 2001; Weingart et al, 2007).[35] Our idea was to not randomize the negotiation partners but take control over the composition and social motivation of the dyads. In this context, we preselected the subjects according to an online pre-questionnaire before they were invited to participate in the trust game negotiation experiment. The main benefit was the added information gained about the subjects' social motivation balanced by the three types of negotiation dyads. Therefore, we classified and matched the negotiation partners according to two different measurement instruments, which are, as mentioned in the methodology section (for further explanations see chapter 4.2.), social preferences measurement (SPM) and the social value orientation slider (SVO). The main difference between the instruments is that economists only distinguish between subjects having social preferences or not, while the psychological SVO slider by Murphy et al (2011) describes a continuum from individualistic or pure selfish through moderately pro-social to purely altruistic subjects and a second dimension of efficiency.

The results obtained with these measurements were used for the composition of three dyad types, which should represent dyads in real world settings. There is one homogenous negotiation dyad, which consists of two social-minded negotiators and two dyads which are mixed in respect to their social orientation or motivation. Similar to real world negotiation settings, where self-interested negotiators are fewer, in the following sections we present our matched negotiation pairs based on the negotiators' individual characteristics. Therefore, the negotiation dyads in the trust game negotiations consist of 33% more or less "egoistic" and 67% more or less "pro-social" orientated negotiators.

5.1.1 SOCIAL PREFERENCE AND SOCIAL VALUE ORIENTATION DISTRIBUTION

Starting with the social preference measurement (SPM), an individual parameter is calculated for the six given indifference values by all participants (see the methodology section 4.2.1 for the model). Table 4 shows that the 180 selected subjects that were invited to the trust game negotiations have a social preference mean value of -0.36 (SD 0.24). While a parameter value of zero signifies no social preferences and no active interest in the welfare

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[35] Brett (2001) did some studies where she compared negotiations of managers in collective and individualistic cultures.

of others, a negative value indicates the willingness to give up individual utility in order to ensure a more balanced outcome.

Table 4: Descriptive statistics for social preferences and social value orientation

		Mean	Median	SD	Min	Max
SPM parameter	*N=180*	-0.36	-0.46	0.24	-1.33	0.00
SVO angle		22.40°	26.15°	14.91	-16.26°	51.51°

In Figure 25 we observe that 77.3% of the subjects have social preferences because they were willing to sacrifice some parts of their payoff. Only 22.7% did not remove the existing inequality and have no social preferences. This finding is similar to results (18.1%) of Vetschera and Kainz (2012). Gender differences concerning social preferences exist, since the results between female and male are not balanced. Therefore, a t-test (t=1.70, *df*=178) is significant at the 10-percent level and a Levene's test for equality of means (F=7.25) is significant at the 1-percent level, since more females (55%) than males (45%) have social preferences in our sample and, conversely, less females (33%) than males (67%) show no social preferences. As it is controlled, there are no differences regarding the roles of sender and receiver in the trust game negotiations.
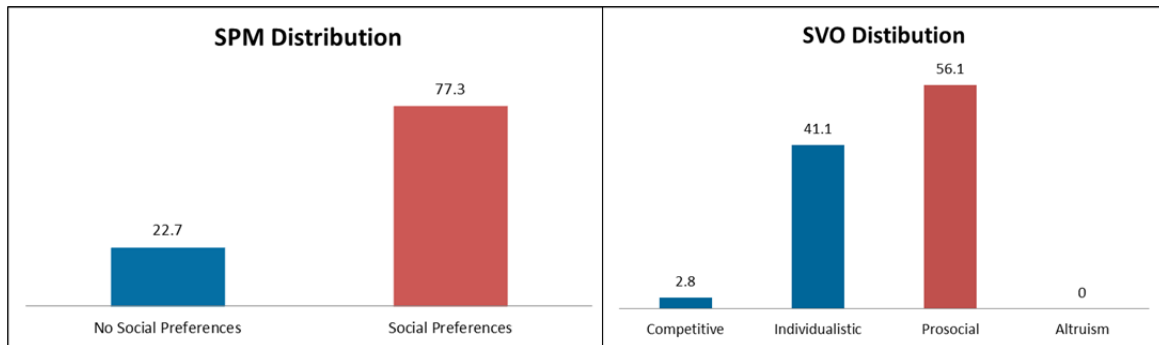
Figure 25: SPM and SVO distribution

Concerning the SVO slider, the mean value of the SVO angle for our 180 subjects is 22.40° (SD 14.91) but the standard deviation is quite high indicating that the values differ from the average value. Hence, we have the case that on average the selected individuals are located at the very upper end of the *individualism* spectrum (-12.04° <SVO <22.45°), which is on the border to the pro-sociality category. However, the median is at 26.15° entailing that the value is on the range of the *pro-sociality* category (22.45° <SVO <57.15°). Figure 25 in the prevailing sample reveals that the SVO instrument classified just 2.8% of the subjects *competitive*, 41.1%, *individualistic*, and 56.1% *pro-social*. These patterns are almost similar to the results of Murphy et al (2011) and in neither study did anyone reveal altruistic social values. If the SVO distribution is pooled by gender (51% male vs. 49% female) the shown picture in Figure 25 does not change. A t-test of signifi-

cant differences failed; the same is true for the distribution between the roles of sender and receiver.

Since the SVO slider is used besides the SPM instrument for sorting and matching subjects for the trust game negotiations, we need to ensure that both measurement instruments are treated equivalently. Therefore, we summarize 43.9% of the competitive and individualistic SVO subjects in a new group or SVO category called "egoistic". De Dreu and Van Lange (1995) also collapsed competitive and individualistic SVO into an "egoistic" category that we use hereafter. This "egoistic" category, which is presented in Figure 25 as dark bars on the right hand side, should be similar to the no social preferences group, where subjects tend to maximize their own payoffs. 56.1% of the "pro-social" SVO subjects are seen to be comparable to the social preference group, where the subjects' main interest (bright bars) consists of maximizing joint payoffs or minimizing differences between payoffs.

Table 5: Correlations between SPM and SVO

		SPM parameter	SVO angle
SPM parameter	Pearson correlation	1	-0.21**
	P		0.01
	N	180	180
SVO angle	Pearson correlation	-0.21**	1
	P	0.01	
	N	180	180

*** Correlation is significant at the 0.01 level (2-tailed)*
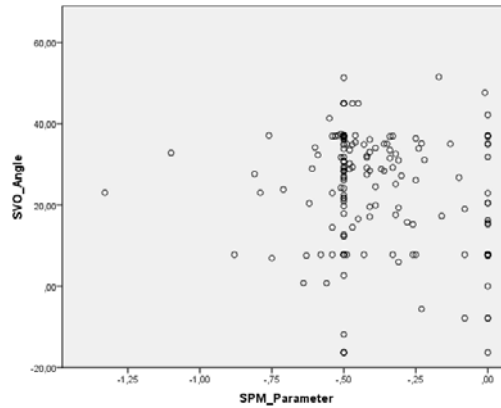
Figure 26: X-Y plot of SPM and SVO per individual subject

It seems worthwhile to compare the results of the SPM instrument and the SVO slider because both measure preferences regarding others. Both instruments pursue the same idea of allocating resources between the participant and another party. However, the differences in the presentation may sometimes produce different results. While subjects need to compare equal and unequal payoff distributions for the SPM, different payoff pairs are compared for the SVO (see Appendix 3). Hence, cases occurred where individuals had,

for instance, no social preferences but were classified as "pro-social" in the SVO slider. In table 5 we see some correlation between SPM parameter and SVO angle, which is a negative significant (Pearson correlation = -0.21 at the 1-percent level). As taking the other party into account is indicated by a negative SPM parameter, the negative sign is due to the majority of subjects showing social preferences. A negative relationship is correct, since a negative parameter sign indicates having social preferences. In contrast, a higher SVO angle indicates a higher level of social orientation. However, there is a significant relationship between both measurement instruments. In the X-Y plot of the SPM and SVO distribution (see Figure 26) we are able to draw a linear as well as a non-linear adaptation-line for describing the relationship.

5.1.2 SORTING AND MATCHING OF PARTICIPANTS

The main advantages of the online pre-questionnaire before the trust game negotiation is not only that we can measure subjects' individual differences in social motivations in advance, but also that it gives us the option to perform a subject sorting in order to get subsequently matched pairs and specific setting compositions. Of the 240 potential participants that filled questionnaires for the two measures, the SVO slider (Murphy et al, 2011) and the SPM instrument (Vetschera and Kainz, 2012), only 180 were invited for the experiment. Due to the prevalence of social-minded people we could not allow all individuals to participate, leading to 60 of them being sorted out. Especially in demand were people who showed an orientation of self-interest in order to produce two heterogeneous negotiation dyads in which we could change the role between sender and receiver. The matching of pure pro-social sender and receiver was an easy task. The classification of participants to heterogeneous negotiation dyads, however, presented more of a challenge. Therefore the following heuristic methods for classification have been applied:

(1) If the SVO slider indicates individualistic/competitive orientation, subject is classified as "egoistic".
(2) If the SVO slider indicates altruistic/pro-social orientation, subject is classified as "pro-social".
(3) If the SPM parameter is zero or close to zero, which is an indicator for no social preferences, subject is classified "egoistic".
(4) If the SPM parameter has a negative sign, which is an indicator for social preferences, subject is classified "pro-social".

In case of a mismatch the SVO slider, due to the four features on its continuum, was prioritized over the other instrument. In some cases the SPM instrument can override the SVO slider, such as when individuals showed extreme SPM parameter values (i.e. significantly higher than the mean value). 50% of the subjects are unambiguously "pro-social" and

16.7% unambiguously "egoistic" according to the SVO slider and the SPM instrument. However, in 33.3% of the cases mismatches between the two instruments were identified.

The above mentioned rules resulted in the following match-ups for sender and receiver:
(a) 29 negotiation dyads with an "egoistic" (*Eg*) sender matched with a "pro-social" (*So*) receiver (hence *EgSe-SoRe*),
(b) 31 negotiation dyads with "pro-social" (*So*) sender coupled with an "egoistic" (*Eg*) receiver (hence *SoSe-EgRe*), and
(c) 30 negotiation dyads with a "pro-social" (So) sender paired with a "pro-social" (*So*) receiver (hence *SoSe-SoRe*).

5.2 THE EFFECT OF FACE-TO-FACE COMMUNICATION

These three types of dyads of matched pairs and the individual differences form the pre-requisite for the subsequent (communication enriched) trust game negotiation experiment. Here we concentrate on the subjects' actual behavior – the respective subjects' decisions in both studied phases – and its relationship to the individual differences on average and the matched pairs. Concerning notation we use the label *t=1* for the face-to-face phase and the label *t=2* for the subsequent email-notification and the subjects' answer.

Our expectation is first of all that the investments and the returns will be higher compared to traditional 'trust games' (Johnson and Mislin, 2011), since we allow for face-to-face interaction in the laboratory experiment. The main objective, however, is, as already mentioned in the previous sections, to see whether subjects would use the option presented to each negotiation partner separately via email, to override a settled agreement. We expect that social-minded negotiators will tend to keep agreements more than self-interested ones. In either case, the role of face-to-face communication is analyzed on the basis of four different variables: (1) *investing* (*t=1* and *t=2*) which is an indicator for trust – the amount in euro sent by the sender (between 0 and 10), (2) *returning* (*t=1* and *t=2*) which is an indicator for trustworthiness – the amount in euro returned of the tripled investment by the receiver, (3) the individual *outcome* (*t=1* and *t=2*) for sender and receiver or, respectively, the joint payoff, and (4) the *satisfaction* level (*t=1*) of the respective actor and his/her partner.

In this section we first present the descriptive statistics. All the data on the individual level can be looked up in the detailed tables of Appendix 1. This section then continues with a report about the influence of negotiators' social motivation, followed by an explanation of the keeping and breaking of agreements, and a study of the relationship between individual differences/matched dyads, outcome, and satisfaction level.

5.2.1 DESCRIPTIVE STATISTICS

Table 6 shows the mean values in absolute numbers of investing and returning and the corresponding sender and receiver outcome for *t=1* (the face-to-face phase). While senders invested 9.28 on average, receiver returns averaged 13.71. Hence, the first mover invests large sums, and the second mover returns more than the invested sum. We can observe a greater variation in the returning decision, since the standard deviation (SD) is slightly larger. The receiver seems to be a conditional reciprocator and the sender seems to expect conditional reciprocity, otherwise he or she would invest nothing. Moreover, the sender has a slight advantage (not significant) compared to the receiver concerning the outcome.

Table 6: Mean values of senders' investment *i*, receivers' return *r*, and outcome *π*

Sender			t=1	Receiver			t=1
Total	*N=90*	*i*	*9.28*	**Total**	*N=90*	*r*	*13.71*
		SD	2.02			**SD**	3.88
		π	*14.43*			*π*	*14.15*
		SD	1.94			**SD**	2.80

If we take the relative sender's investment and the relative receiver's return of *t=1*, we can present the frequency distributions in Figure 27. Immediately we recognize that the most prominent decision amongst senders is to invest the whole endowment – located on the left hand side of the graphical presentation. The right hand side shows the most prominent decision among receivers; to return half of the tripled amount (tripled by the experimenter). The interaction invokes reciprocal behavior, since the high level of trust shown is honored with a high level of trustworthiness. The results of the trust game negotiations research are thus comparable with results in the existing literature (e.g. Johnson and Mislin, 2011). Ben-Ner et al (2011), who conducted a 'trust game' with pre-play communication via chat, demonstrated that their sender sent on average 9.21 and their receiver returned on average 56% of the money received. In our case it would be 49%, if we determine the ratio of mean returning and tripled mean investing.
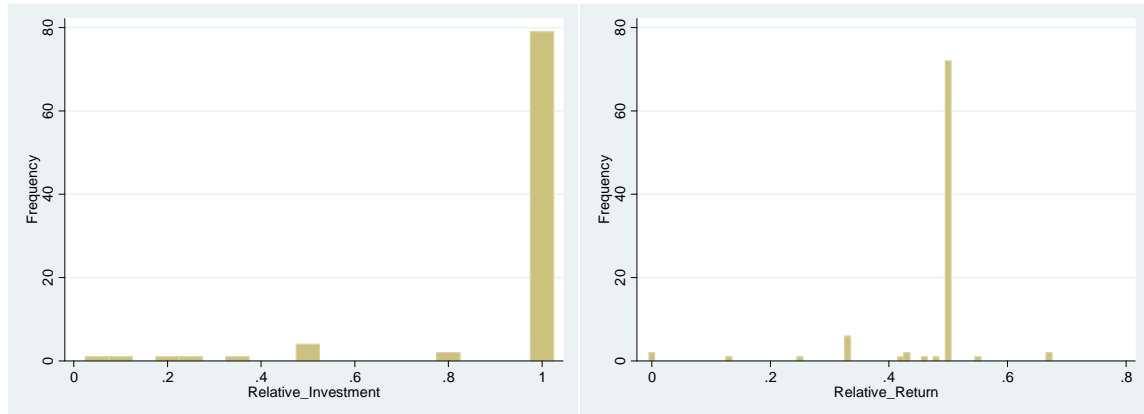
Figure 27: Distributions of amounts invested and returned

Nowak and Sigmund (2005) conclude that there is significant positive correlation between the number of gifts given and received in a series of experiments. We can confirm their finding, since the variables investing and returning have a positive highly significant Pearson correlation coefficient of 0.30 at the 1-percent level. Moreover, we also make the observation of a highly positive correlation between the investment amount and the sender's

outcome (0.66 at the 1-percent level) and between the amount of returning and the receiver's outcome (0.79 at the 1-percent level). Furthermore Figure 28 indicates that the receiver has a tendency to return more, the more was sent. This finding corresponds to those of Johnson and Mislin (2011).
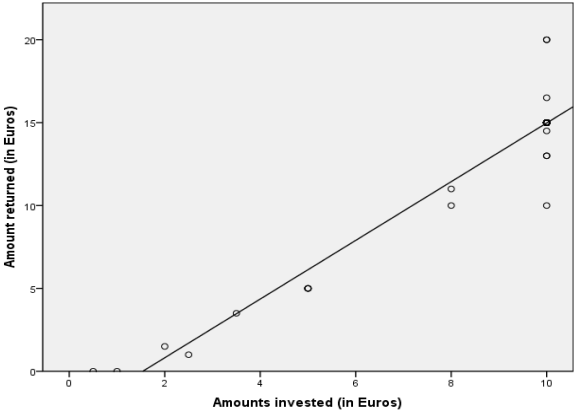
Figure 28: Scatterplot of amounts invested and returned

Figure 29 shows the distributions of the trust and trustworthiness indicators over all trust game negotiation dyads in $t=1$. All the matched pairs are sorted in ascending order by the amount invested (black bars) and then by the amount returned (grey bars). It is noteworthy that the vast majority of negotiation dyads have agreed on a fair and efficient solution. This solution was predominately instigated in $t=1$ by senders who invest the whole endowment of ten euro and the respective receivers, who, disposing of 30 euro after the investment's tripling, return half, thus ensuring a fair split amounting to an outcome of 15 euro for each.
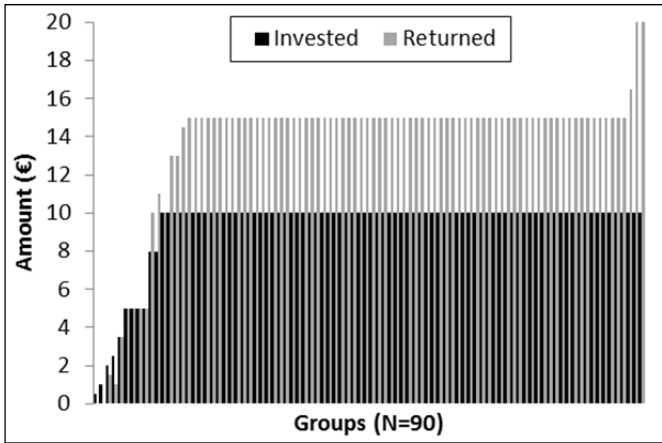
Figure 29: Distribution of trust and trustworthiness by the total number of negotiation dyads

Moreover, Figure 30 exhibits the distribution of the trust and trustworthiness indicators of the different matched pairs in the trust game negotiations, which are again sorted by the amount invested and then by the amount returned. The patterns in the mixed-motives

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groups are almost identical. However, for the SoSe-EgRe group, at the very beginning, we see that single sender's investments are very low; what happens here is that single "egoistic" receivers are not willing to return anything due to low wealth creation in the tripling process. Noteworthy is also the SoSe-SoRe group, where we find a peak at the very right of the spectrum, which demonstrates that single "pro-social" receivers seem to be motivated by altruism, since they return two-thirds of the augmented money.
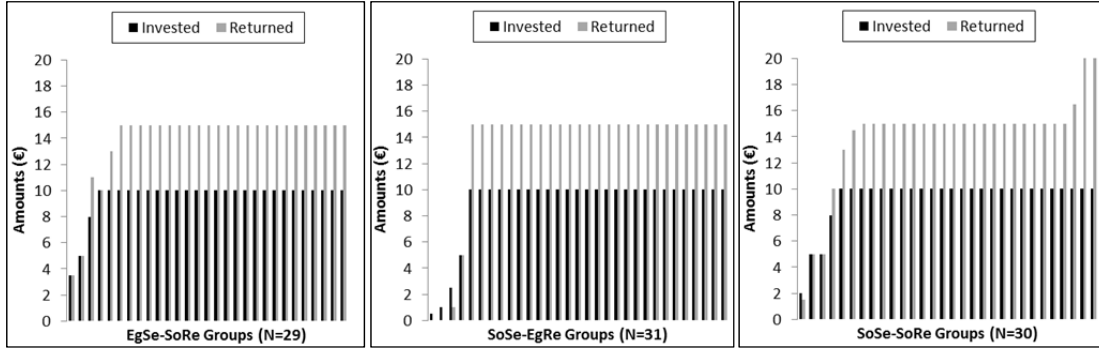
Figure 30: Distribution of trust and trustworthiness by the matched pairs

5.2.1.1 Investing and outcome

In the next step we compare the sender's behavior between the face-to-face negotiation ($t=1$) and the follow-up email phase ($t=2$). Table 7 compares the absolute value of a sender's investment (i) and outcome (π) with the two phases. It is noticeable that the mean value of the sender's invested endowment increases ($t=1$: $i=9.28$; $t=2$: $i=9.44$) but the sender's outcome (π) decreases ($t=1$: $\pi=14.43$; $t=2$: $\pi=13.41$). In other words, we are observing a counter-trend between invested endowment and corresponding payoff. In a wider sense this could mean that, while trust or positive foreseen reciprocity increases, the respective outcome decreases in the context of the trust game negotiations. It is obvious that the slightly higher investment by the sender is not statistically significant, but the non-parametric Wilcoxon test is highly significant at the 1-percent level for the outcome decline ($\Delta\pi=-1.01$).

Table 7: Mean values of senders' investment i and outcome π comparing $t=1$ and $t=2$

Sender			t=1	t=2	p^{a}
		i	*9.28*	*9.44*	*0.50*
		SD	2.02	2.01	
Total	*N=90*	*π*	*14.43*	*13.41*	*0.01*
		SD	1.94	3.79	

^{a} Wilcoxon signed ranks test (non-parametric, dependent samples)

93% of the subjects playing the sender role send 7.5 to 10 monetary units to their matched receiver in $t=1$. In traditional 'trust games' it is usually roughly 50% (Berg et al, 1995) in anonymous settings where no direct communication is allowed. Surprising is that 94% of the sender's endowment is invested after the changed situation in $t=2$, where, without communicating with the partner, the option of overriding the settled agreement via email to the experimenter can be chosen. This finding seems to be in accordance with Bicchieri et al (2010) who postulated that senders' investments are significantly higher following unrestricted communication than restricted, pre-play, or no communication. While the results of our experiment also confirm this conclusion, we cannot so far, apart from communication, disentangle other factors, like social norms. These factors can also be responsible for the significant overinvestment of subjects (see chapter 6 for discussion).

The mentioned counter-trend of increased investment but decreased payoff can also be seen in two matched pairs of EgSe-SoRe and SoSe-SoRe in table 8. It seems that a sender perceives a "pro-social" receiver as more trustworthy than an "egoistic" one. Hence, when looking at the different controlled negotiation dyads, we see that a sender coupled with a "pro-social" receiver invests a higher amount in $t=2$. In case of an "egoistic" receiver, the sender contributes the same amount or even less, as can be observed in the SoSe-EgRe dyads. The minor changes, like for the dyads EgSe-SoRe ($\Delta i=+0.40$, $\Delta \pi=-0.47$) and SoSe-SeRe ($\Delta i= +0.44$, $\Delta \pi=-1.15$), do not represent significant differences between the negotiation dyads (Kruskal-Wallis test). Only the difference in individual outcome for the SoSe-EgRe matched dyad is statistically significant at the 5-percent level between the face-to-face phase and the email follow-up phase (Wilcoxon test), which indicates a decrease of $\Delta \pi=-1.42$.

Table 8: Mean values of senders' investment i and outcome π comparing $t=1$ and $t=2$ across matched pairs

	Sender		t=1	t=2	p^{a}
EgSe-SoRe	*N=29*	*i*	*9.53*	*9.93*	*0.18*
		SD	*1.52*	*0.37*	
		π	*14.35*	*13.88*	*0.35*
		SD	1.59	2.92	
SoSe-EgRe	*N=31*	*i*	*9.00*	*8.68*	*0.32*
		SD	2.72	3.15	
		π	*14.26*	*12.84*	*0.03*
		SD	1.97	4.08	
SoSe-SoRe	*N=30*	*i*	*9.33*	*9.77*	*0.18*
		SD	1.90	0.97	
		π	*14.68*	*13.53*	*0.11*
		SD	2.22	4.24	
p^{b}		*i*	*0.90*	*0.16*	
		π	*0.86*	*0.40*	

[a] Wilcoxon signed ranks test (non-parametric, dependent samples)
[b] Kruskal-Wallis-H test (non-parametric, independent samples)

It is clear that this fact does not change if, instead of absolute numbers, we take the relative investments into account. However, Figure 31 demonstrates that the SoSe-EgRe dyad has the lowest share of relative investments compared to the other dyads and to the total average. What is more, this dyad does not follow the counter-trend of investment and outcome, again demonstrating how the sender's investment depends on the receiver type or social motivation. It is interesting that the EgSe-SoRe group has the highest investment and not the SoSe-SoRe dyad.
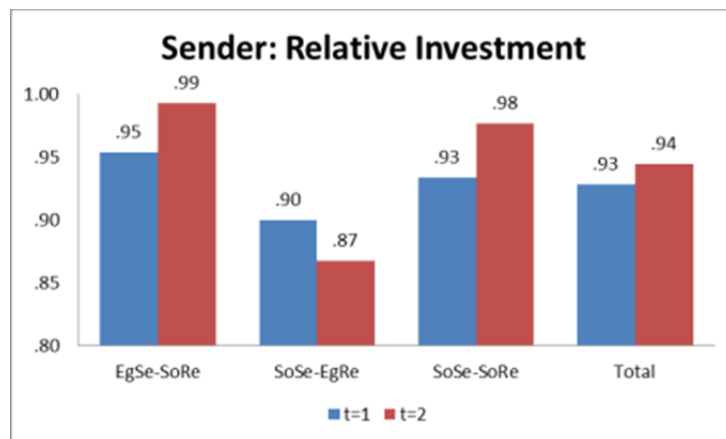
Figure 31: Distribution of relative investments across matched pairs

5.2.1.2 Returning and outcome

Besides the sender's behavior we also take a closer look at the receiver's behavior in table 9, which again compares the receiver's absolute return (*r*) and outcome (π) between the face-to-face and the email follow-up phase. It is noticeable that the mean value of the receiver's repayment decreases (*t=1*: *r=13.71*; *t=2*: *r=12.93*), which is statistically significant at the 10-percent level (Wilcoxon test). However, the receiver's payoff gain is highly significant (*t=1*: π=14.15; *t=2*: π=15.48). Whereas the sender (*t=1*: π=14.43) has a slightly higher outcome compared to the receiver in the face-to-face situation, in the email follow-up situation the receiver is better (*t=2*: π=13.41). Interpreted broadly this could mean that positive reciprocity suffers when the overriding option is presented, since face-to-face interaction is missing. Moreover, the receiver, in contrast to the sender, was asked an additional question in the email follow-up phase; what amount he/she would return if the sender would be an anonymous partner who he/she did had not met before in face-to-face negotiations. Table 9 indicates clearly what one would expect; that the return would be lower in case of an anonymous partner to a statistically significant degree at the 0.1-percent level (Wilcoxon test).

Table 9: Mean values of receivers' return *r* and outcome *π* comparing *t=1*, *t=2*, and anonymous

Receiver			t=1	t=2	p^a	Anonymous	p^b
Total	*N=90*	*r*	*13.71*	*12.93*	*.07*	*9.61*	*.01*
		SD	3.88	4.62		6.55	
		π	*14.15*	*15.48*	*.00*		
		SD	2.80	4.62			

[a] Wilcoxon signed ranks test (non-parametric, dependent samples)
[b] Wilcoxon signed ranks test between *t=2* and anonymous

The receiver behavior shows that 84.4% of the subjects in this role sent an amount between 10 and 15 euro back to their matched sender in *t=1*. Ben-Ner et al (2011) obtained similar results; receivers with pre-play communication returned significantly more of what was invested (56.2%) than receivers in anonymous 'trust game' settings (42.5%). However, less of what was invested is repaid after the changed situation in *t=2*, where, without communicating with the partner, the option of overriding the settled agreement via email to the experimenter can be chosen. Thus, there is also a decline in our investment to return ratio from 49% in *t=1* to 46% in the email follow-up phase *t=2*. Usually the returning rate in traditional 'trust games' (Berg et al, 1995) is roughly 33% in anonymous settings where no direct communication is allowed. Of course, anchoring could be a further explanation for the receiver behavior across the two phases. Again the question needs to be raised what the responsible factors are, like communication, relationship or social sanctions, that cause people to give above-average returns. An answer concerning the communication content is given with the analysis of the negotiation process in section 5.3.

Table 10: Mean values of receivers' return *r* and outcome *π* comparing *t=1*, *t=2*, and anonymous

Receiver			t=1	t=2	p^a	Anonymous
EgSe-SoRe	*N=29*	*r*	*13.88*	*13.81*	*0.85*	*9.76*
		SD	2.93	2.97		6.01
		π	*14.72*	*15.98*	*0.08*	
		SD	2.07	2.97		
SoSe-EgRe	*N=31*	*r*	*13.26*	*11.69*	*0.09*	*7.65*
		SD	4.66	5.75		7.14
		π	*13.74*	*14.52*	*0.24*	
		SD	3.53	6.13		
SoSe-SoRe	*N=30*	*r*	*14.02*	*13.37*	*0.40*	*11.48*
		SD	3.87	4.48		6.01
		π	*14.02*	*16.00*	*0.03*	
		SD	2.54	4.09		
p^b		*r*	*0.86*	*0.30*		*0.08*
		π	*0.48*	*0.64*		

[a] Wilcoxon signed ranks test (non-parametric, dependent samples)
[b] Kruskal-Wallis-*H* test (non-parametric, independent samples)

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Across all the matched pairs in table 10, we make the observation for all receivers that positive reciprocity suffers in case of no personal communication in $t=2$ (due to the lower return). We see a reduction of return but an increase of receiver's payoff in $t=2$ compared to the face-to-face phase in all negotiation dyads. In particular an "egoistic" receiver gives back less (SoSe-EgRe: $\Delta r= -1.57$) between $t=1$ and $t=2$, which is statistically significant at the 10-percent level (Wilcoxon test). In any case, this shift in the actual decision between $t=1$ and $t=2$ is the only significant change. The "pro-social" receiver in the EgSe-SoRe dyad keeps the return almost constant, both in the mean value and standard deviation. In respect to the outcome, the "pro-social" receivers are all better off in comparison to the "egoistic" ones, since the Wilcoxon test for the payoff in the EgSe-SoRe ($\Delta\pi=+1.26$) and SoSe-SoRe ($\Delta\pi=+2.00$) matched pairs gives a significant deviation. It seems that social-minded subjects are rewarded by the trustworthiness they show, a factor which is particularly salient for the SoSe-SoRe matched pairs.

Furthermore, table 10 shows the results of what receivers would decide to return in case of an anonymous sender, compared to the results of $t=2$. Here, for the anonymous setting the Kruskal Wallis test detects differences across the matched pairs. In the mixed SoSe-EgRe dyad the "egoistic" receiver would repay the lowest amount ($\Delta r=-4.04$), in the second mixed EgSe-SoRe pair the return also falls significantly ($\Delta r=-4.05$), whereas in the homogenous pair of SoSe-SoRe the decline is comparatively moderate ($\Delta r=-1.89$). There is an effect of social motivation observable when comparing the return between the email follow-up phase and what it would be to an anonymous partner, since the decline for the homogeneous dyad is moderate. Finally, Figure 32 takes the relative return across the different matched pairs into account. The relative return is based on the respective sender's tripled investment. Once again we see that the SoSe-EgRe dyad again has the lowest share compared to the other groups as well as to the total average. This dyad was already noticed for the lowest sender's return.
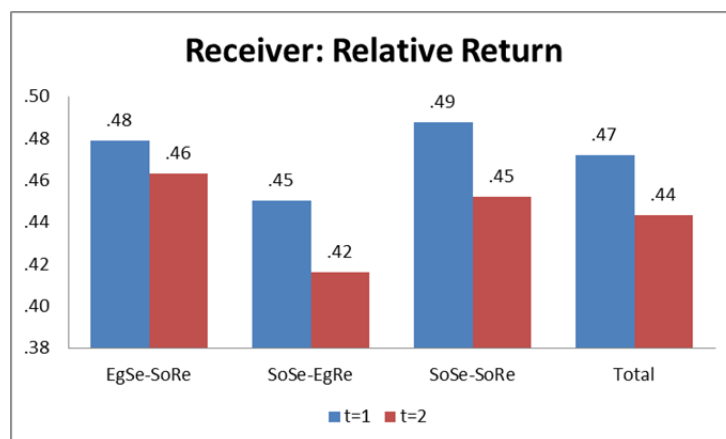
Figure 32: Distribution of relative returns across the negotiation dyads

5.2.1.3 Joint outcome

Table 11 presents the average joint outcomes for the total sample and across the different matched pairs for *t=1* and *t=2* with comparison to the individual sender's and receiver's outcome. The joint outcome mainly depends on the sender's investment decision. However how the receiver is being perceived may also indirectly influence the actual decision by the sender. The joint outcome increases slightly on average, in spite of the transition from face-to-face interaction to the separately communicated overriding option. Due to this defection option, we would have expected common value to be reduced, instead we observe a small, not statistically significant, increase of joint outcome (joint $\Delta\pi=+0.30$). Across the matched pairs, this increase can also be seen in the mixed negotiation dyad EgSe-SoRe and the homogeneous dyad SoSe-SoRe. Only the mixed dyad SoSe-EgRe reduces the joint value. This may be due to the "egoistic" social motivation of the receiver, which might be perceived as less trustworthy, leading the sender to anticipate a lower tendency for reciprocity. It is remarkable that the matched pair EgSe-SoRe shows the highest joint outcome and reaches the most efficient joint outcome in both phases. The mixed negotiation dyad of SoSe-EgRe, on the other hand, shows the lowest joint outcome for both *t=1* and *t=2*.

Table 11: Comparison of mean joint outcomes to individual outcomes

	Outcome π		t=1	t=2	p^{a}
Total	*N=90*	*Joint*	*28.6*	*28.9*	*0.50*
		Sender	14.4	13.4	*0.01*
		Receiver	14.2	15.5	*0.00*
EgSe-SoRe	*N=29*	*Joint*	*29.0*	*29.9*	*0.18*
		Sender	14.3	13.9	*0.35*
		Receiver	14.7	16.0	*0.08*
SoSe-EgRe	*N=31*	*Joint*	*28.0*	*27.3*	*0.32*
		Sender	14.3	12.8	*0.03*
		Receiver	13.7	14.5	*0.24*
SoSe-SoRe	*N=30*	*Joint*	*28.7*	*29.5*	*0.18*
		Sender	*14.7*	*13.5*	*0.11*
		Receiver	14.0	16.0	*0.03*
p^{b}		*Joint*	*0.90*	*0.16*	
		Sender	*0.86*	*0.40*	
		Receiver	*0.48*	*0.64*	

[a] Wilcoxon signed ranks test (non-parametric, dependent samples)
[b] Kruskal-Wallis-*H* test (non-parametric, independent samples)

Kugler et al (2007) point out that the receiver role is usually better off in 'trust games' experiments. Looking at the differences between the senders' and receivers' outcomes in Table 11, we see that the sender is better-off in the face-to-face phase, except in the mixed

EgSe-SoRe dyad, where an "egoistic" sender is paired with a "pro-social" receiver. However, all the receivers are better off in $t=2$ – Kugler's findings can thus be confirmed for the email follow-up phase. A kind of redistribution seems to occur between the face-to-face negotiations and the email follow-up phase. As already mentioned, the sender's outcome decreases, whereas the receiver's outcome increases. This pattern is only statistically significant for the whole sample, but there are also some statistical differences for the matched pairs.

In Figure 33 the left hand side reveals the distribution of efficient payoff splits, which occur when the full amount is invested and subjects tend to share the augmented money evenly in the trust game negotiations. The first finding confirms what was expected; that the extent of sharing is quite high. 83.9% of the subjects agree on an outcome of 15 monetary units for both sender and receiver in $t=1$. The second finding is that we observe some decline of 50:50 splits for the total sample between the two phases. However, the mixed dyad SoSe-EgRe shows the most occurrences of efficient splits in the face-to-face phase (87.1%), while in the email follow-up phase it has the lowest share (75.8%). The "egoistic" receiver tends to use the option of overriding the agreement made in $t=1$ and keeps a highly significant amount of money for him-/herself in $t=2$. In contrast, the dyad of "pro-social" sender paired with "pro-social" receiver (SoSe-SoRe) shows an increase from 78.3% to 81.7% of efficient payoff splits between the phases. Actually only the sender's decision can be characterized as efficient.

On the right hand side of Figure 33 we present fair exchanges, meaning characterized by an equal payoff for sender and receiver, even though in some cases investment and return are not the optimal. 89.4% of the subjects agree on a fair split of the outcome in $t=1$, which is slightly higher than the percentage of efficient exchanges but falls to 84.4% in $t=2$. Again we make the observation of a decline for the total sample between the two phases. In the case of fair exchanges, the mixed dyad EgSe-SoRe shows the most occurrences of fair splits in the face-to-face phase (93.1%), whereas the homogenous dyad of SoSe-SoRe has the lowest share in the email follow-up phase (85.0%). However, the dyad of "pro-social" sender paired with "pro-social" receiver (SoSe-SoRe), shows a consistency between the two phases, with 85% fair payoff splits in both. These subjects seem to feel a sense of solidarity with partners that share their social motivation, even though the extent of this solidarity is lower than expected.

It is interesting that the matched pair SoSe-EgRe is the dyad that tends most toward efficient exchanges, as characterized by full investment and a fair split of the payoff, in the face-to-face interaction. In the email follow-up phase this role is taken over by the EgSe-SoRe group. For fair exchanges, on the other hand, all outcomes showing an equally shared payoff are taken into account. The fairest exchanges happen in the EgSe-SoRe negotiation dyad in $t=1$ and $t=2$. The homogenous dyad stands out by opposing the trends found in the whole sample, such as an increase in efficiency or constant fair exchanges.
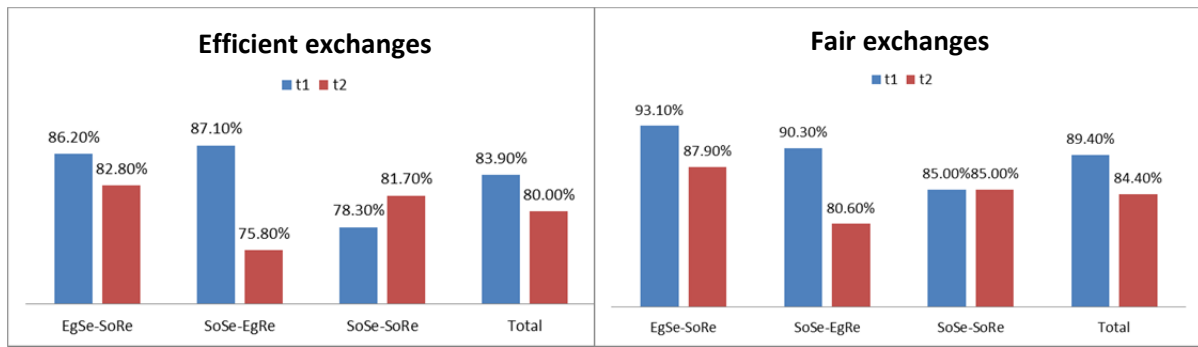
Figure 33: Distribution of efficient / fair payoff-splits across the negotiation dyads

5.2.1.4 Satisfaction

After the face-to-face negotiations subjects also completed a post-questionnaire. In an evaluation of the negotiations they assessed their outcome and their interaction partner in *t=1*. In all, 62.7% (Satis_Res) of the subjects were very satisfied with the outcome, 84.4% (Fair_Res) perceived the payoff as fair and more than half could not assess if their results were better or worse than the average outcome. In the evaluation of the partner, the following results were obtained: 74.45% (Satis_Part) were very satisfied with the partner, 74.4% perceived the partner as "pro-social" oriented, while only 12.2% were perceived as "egoistic" and 48.9% (Future_Part) suggested they would be willing to interact with the same partner in the future.

Table 12: Statistics of satisfaction level across the negotiation dyads

		Satis_Res	*Fair_Res*	*Satis_Part*	*Future_Part*
Total	*N*	*180*	*180*	*180*	*180*
	Mean	6.33	6.67	6.46	5.96
	Median	7.00	7.00	7.00	6.00
	SD	1.16	0.99	1.12	1.44
EgSe-SoRe	*N*	*58*	*58*	*58*	*58*
	Mean	6.60	6.86	6.59	6.09
	Median	7.00	7.00	7.00	7.00
	SD	0.75	0.44	0.96	1.39
SoSe-EgRe	*N*	*62*	*62*	*62*	*62*
	Mean	6.27	6.63	6.39	6.00
	Median	7.00	7.00	7.00	7.00
	SD	1.30	1.26	1.36	1.55
SoSe-SoRe	*N*	*60*	*60*	*60*	*60*
	Mean	6.12	6.52	6.40	5.80
	Median	7.00	7.00	7.00	6.00
	SD	1.29	1.05	0.99	1.39

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Table 12 reveals the descriptive statistics for the satisfaction variables in detail, which were measured on a 7-point-Likert scale, where *1* means last satisfied and *7* completely satisfied. Overall the subjects were highly satisfied with their individual outcomes (*Satis_Res*), both in total and across the matched pairs, and also perceived the outcomes as very fair (*Fair_Res*). Furthermore, the subjects were also quite satisfied with their interaction partner (*Satis_Part*). Interestingly, the homogenous SoSe-SoRe dyad, was slightly less satisfied with the outcome than the average, and also showed the lowest probability of future interaction (*Future_Part*), even though they achieved individual and joint outcomes in the trust game negotiations that were comparable to those of the total sample. In contrast, the mixed pair of EgSe-SoRe showed the highest satisfaction level regarding both result and partner; this matched pair also achieved the highest joint outcome (see table 11). In the Appendix 1 in table 41, satisfaction levels of senders and receivers are listed separately. Since senders are better off with respect to individual outcome in the face-to-face interaction (*t=1*), they accordingly also show higher satisfaction levels. All senders' satisfaction variables (*Satis_Res, Fair_Res, Satis_Part, Future_Part*) are slightly higher than the receiver ones. Again the matched pair of EgSe-SoRe is noticeable. The senders of this group display the highest partner satisfaction and its receivers the highest outcome satisfaction. Indeed, this "pro-social" receiver (π=14.7) is the one with the highest individual payoff in *t=1*. On the other hand, the senders of the SoSe-SoRe dyad show the lowest satisfaction level with regard to their interaction partners, and its receivers the lowest satisfaction level with the outcome compared to the total average.

5.2.2 TESTS FOR HYPOTHESES

In this section we focus on the relationship between the *individual differences/matched pairs* and the *actual decisions*, which concern the hypothesis group 1 (see also section 3). According to Beersma and De Dreu (1999) it is expected that the more social orientated subjects are, the more trust should be displayed. This finding can also be interpreted to mean that the more people are social-minded, the higher their cooperation level should be. The main insight from the previous descriptive statistics section is that there are minor differences across the matched pairs with respect to investing, returning, individual or joint outcomes, and result- or partner satisfaction, which are statistically significant. Moreover, these small differences correspond more or less with specific social motivations. Analyzing the roles of sender and receiver we see that, as senders seems to recognize the receivers' attitude, the latter is decisive.

5.2.2.1 The influence of negotiators' social motivation

Our starting point is that social motivation should produce the desired behavior, which would mean that in this specific case we expect the following:

H1a: The homogeneous dyad of "pro-social" sender coupled with "pro-social" receiver (SoSe-SoRe) decides more cooperatively than the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=1 of the trust game negotiations.

Since the investing and returning distributions are not normal and only show small statistical variances, we will now specify two independent output groups, which distinguish between types that show strong cooperation and those that do not. The strong cooperators are senders who invested their whole endowment and receivers who take care to effect equal individual payoffs of the tripled amount. The second group consists of subjects who are not-strong cooperators, since they deviate from the most fair and efficient forms of investing or returning. In our sample there are 158 strong cooperators and 22 not-strong cooperators. We run a logistic regression (method is backward stepwise) for testing the relationship between the actual behavior of strong cooperators and the social orientation and motivation of the matched pairs. The dependent dichotomous variable of the logistic regression has the feature of strong cooperation or not (1=Yes and 0=No). The predictors of the logistic regression are the metric variables for the SVO slider and the SPM instrument, dummy variables for the different matched pairs with SoSe-SoRe as the reference group as well as the individual motivation and interaction terms between SVO and dummies and SPM and dyad dummies.

Table 13 contains the logistic regression results for hypothesis 1a. Backward stepwise (Wald) method was used. According to Hair et al (2006), this method selects variables for inclusion in the regression model by including all independent variables in the model and then eliminating those variables that do not make a significant contribution. The Nagelkerke R^2 indicates that the prevailing logistic regression model accounts for at least 9% of the variation between the two groups of strong and not-strong cooperators. The Hosmer and Lemeshow test gives the statistical measure of the overall fit. The model in step 7 reduces the significance level to 0.24, since a non-significant value indicates that the model is acceptable. The final logistic regression model (step 7) includes five variables. The variable *SPM_cTA* has a positive sign, indicating a positive relationship between the independent variables and the predicted probability. All the other variables have negative signs suggesting a decreasing likelihood that a subject will be categorized as a strong cooperator.

The coefficient for measuring social preferences (*SPM_cTA* b=5.71) is significant at the 5-percent level. Each one point increase in the SPM main effect would lead to substantially increased odds of being in the strong cooperators' group. In other words the SPM parameter would indicate (coming from negative to zero) that less inequality is removed by giv-

ing something up. Therefore, the lower the inclination towards social preferences is, the higher the chance of being a strong cooperator. This main effect would make no sense from a conceptual perspective. However, the *SPM_cTA* coefficient (single predictor) does not explain anything by itself and is overruled by two significant interaction effects which are characterized by larger coefficients than the single social preference coefficient.

Table 13: Logistic regression for strong cooperators with social motivations predictors

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
7	125.40	0.05	0.09

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
7	9.14	7	0.24

Variables in the Equation

		B	SD	Wald	df	Sig.	Exp(B)
Step 7[a]	D_EgSe_SoRe	-2.66	1.56	2.88	1	0.09	0.07
	D_SoSe_EgRe	-3.13	1.49	4.43	1	0.04	0.04
	D_EgSe_SoRe by SPM_cTA	-6.07	3.07	3.90	1	0.05	0.00
	D_SoSe_EgRe by SPM_cTA	-6.89	2.91	5.61	1	0.02	0.00
	SPM_cTA	5.71	2.48	5.30	1	0.02	301.77
	Constant	4.69	1.38	11.57	1	0.00	109.28

a. Variable(s) entered on step 1: D_EgSe_SoRe, D_SoSe_EgRe, IndividualOrientation, D_EgSe_SoRe * SVO_Angle , D_SoSe_EgRe * SVO_Angle , IndividualOrientation * SPM_cTA , D_EgSe_SoRe * SPM_cTA , D_SoSe_EgRe * SPM_cTA , IndividualOrientation * SVO_Angle , SVO_Angle, SPM_cTA.

These interaction or moderation effects, however, are pronounced and suggest that each one point increase would actually decrease the odds of belonging to the strong cooperators. Firstly, *SPM_cTA*EgSe-SoRe* (b=-6.07, significant at the 5-percent level) would tell if the EgSe-SoRe matched pair removes inequality by having social preferences, then they do not belong to the strong cooperators group. Secondly, *SPM_cTA*SoSe-EgRe* (b=-6.89, significant at the 5-percent level) would tell the same story. When there is an increase in the SPM parameter the likelihood of the SoSe-EgRe dyad being strong cooperators decreases.[36]

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[36] It is confounding because an increase in the SPM parameter is indicated by a less negative number which means having less social preferences.

Further, we mention the other main effects, which are the dummy variables for the EgSe-SoRe group (*D_EgSe-SoRe* b=-2.66) and the SoSe-EgRe dyad (*D_SoSEe-EgRe* b=-3.13). These indicate that both mixed dyads are less likely to be part of the strong co-operators. On the other side, the odds for the SoSe-SoRe matched pair ODDS = e $^{4.69+(-2.65/-3.13*0)}$ = 109.28 show that the homogenous negotiation dyad is substantially more likely to be classified as strong cooperators. In this sense, hypothesis *H1a* is supported. Although the differences of the mean test in section 5.2.1.1 and 5.2.1.2 are not statistically significant across the matched pairs, the classification of strong cooperators reveals a higher probability of occurrences in the SoSe-SoRe matched pairs (with the restriction of the small explained variance).

Subject's perception in the negotiation matched pairs

A reason for the large group of strong cooperators (158 out of 180 or 87.8%) is probably that the face-to-face interaction enables most of the interaction partners to be perceived as social-minded. 77.1% of the subjects are perceived as "pro-social" orientated in the matched pairs, a number that is substantially higher than the 67% social-minded negotiators classified during the sorting stage of the trust game negotiations (stage 1). Moreover, this number corresponds to the number of subjects with the social preferences (140 out of 180, or 77.8%) given in the self-report questionnaires, while just 56.7% (102 out of 180) actually classified themselves as "pro-social" orientated in the SVO slider. 15.6% of the subjects are perceived to be "egoistic" (SPM: 22.2%; SVO: 43.3%) and 13.3% could not asses the partner's orientation.

Table 14: Cross table for perceived partner orientation and social preference attitude

		Perception of partner's orientation			
		Pro-social	**Indifferent**	**Egoistic**	Total
Social Preferences	Count	100	21	19	140
	Exp. Count	99.6	18.7	21.8	140
No Social Preferences	Count	28	3	9	40
	Exp. Count	28.4	5.3	6.2	40
Total		128	24	28	180
Exp. Count		128	24	28	180
%		71.1%	13.3%	15.6%	100%

Table 14 contains the matching of the variables measured by the social preferences instrument (SPM) and the perceived pro-sociality observed by the interaction partner in the

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form of a cross table (Partner_Orientation).[37] There is no statistically significant dependence between these two variables; a Chi-square test failed (Pearson Chi-square value 2.92; $p<0.23$). Table 15 gives the associated information in form of a cross table between the social value orientation slider (SVO pro-social; individualistic/competitive) and the perceived partner's orientation. Again the statistical dependence test could not be confirmed (Pearson Chi-square value 1.492; $p<0.47$).

In any case, there are some discrepancies between the subject's score and the partner's assessment. Nevertheless, it seems easier to perceive "pro-social" orientation, although it is often overestimated. Concerning the feature "egoistic", we make the observation that it is frequently underestimated. The self-image would correspond more or less to the partner's assessment only by adding the categories "indifferent" and egoistic". For more details, we refer to the discussion in section 6.

Table 15: Cross table for perceived partner orientation and social value orientation

		Perception of partner's orientation			
		Pro-social	**Indifferent**	**Egoistic**	Total
SVO pro-social	Count	72	16	14	102
	Exp. Count	72.5	13.6	15.9	102
SVO Individualistic, Competitive	Count	56	8	14	78
	Exp. Count	55.5	10.4	12.1	78
Total		128	24	28	180
Exp. Count		128	24	28	180
%		71.1%	13.3%	15.6%	100%

5.2.2.2 The keeping and breaking of agreements

We have seen the effects of unrestricted face-to-face communication on trust and trustworthiness by comparing $t=1$ with $t=2$ in the descriptive statistics section, since the amount returned, in particular, decreases in the email follow-up phase. We expect that social-minded subjects tend to keep their word during the transition between the two phases.

H1b: The homogeneous dyad of "pro-social" sender coupled with "pro-social" receiver (SoSe-SoRe) is less likely to use the option of overriding the settled agreement than the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=2 of the trust game negotiations.

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[37] Social preferences are measured in two categories: whether someone has or does not have social preferences. The measurement of the partner's orientation is summarized into three categories, since originally the variable "Partner_Orientation" is measured on 7-point-Likert scale. The answers "very egoistic", "egoistic" and "more or less egoistic" are labeled "egoistic". The answers "more or less social", "social" and "very social" are labeled "pro-social".

Both negative and positive deviations happen in the trust game negotiations. By comparing the face-to-face negotiation ($t=1$) with the follow-up email phase ($t=2$) it is noticeable that senders (n=5) change their behavior less often than receivers (n=18). If we take the social motivations into account, we observe that "egoistic" subjects (sender: $\Delta i=+11.5$; receiver: $\Delta r=-65$) change a higher amount than "pro-social" ones (sender: $\Delta i= +3.0$; receiver: $\Delta r=+0.5$). If we compare $t=1$ with the anonymous receiver decision, the option of overriding seems to be more attractive (26 "egoistic" subjects $\Delta=-224.5$ vs. 16 "pro-social" subjects $\Delta=-86.5$) and deviating from promises or previous commitments/agreements appears to be easier when there has been no face-to-face interaction before.[38]

Table 16: Receivers' changed return in *t=2*

Matched pairs	n	+Δr*	n	-Δr*	ΔDiff*
EgSe-SoRe	2	11	2	-13	-2
SoSe-EgRe	1	5.5	6	-54	-48.5
SoSe-SoRe	3	14	4	-45.5	-31.5

Changes are based on monetary units in total numbers (euro) to emphasize the distribution changes.

While 94% of the senders keep their settled agreement from the face-to-face phase, 80% of the receivers do not adapt their returns in the email follow-up phase. Table 16 contains the changed returns in detail for the receiver side. It is striking that in total senders use the option of overriding in order to improve their investment, while, in total, receiver are draining money from their return. Even social-minded receivers return less. Only among "egoistic" receivers are the instances and the amount higher compared to social ones. The contingency coefficient (value=0.14, $p<0.07$) is just slight significant between the changing behavior (Yes/No) and the individual dummy variable whether the partner is an "egoist" or not. In total, we notice that the majority of participants prefer to keep their word, which is in line with the findings of Gneezy (2005). However, the hypothesis *H1b* is not supported.

Classification of changing behavior

If we classify the changing behavior, three patterns (a) improvement, (b) exposure, and (c) temptation are identified (see Figure 34) in accordance with Bacharach et al (2007).

(a) The pattern *improvement* happens in 43.5% of the cases of changing behavior. It has the feature that trust and trustworthiness from $t=1$ to $t=2$ increases, exemplified by higher investing and higher returning. This would mean that the sender's and receiver's outcome increase by effectively 50%. An example would be the negotiation dyad

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[38] Referring back to table 9, if we compare the return in $t=1$ ($r=13.71$) with the return to an anonymous partner ($r=9.61$), the Wilcoxon test is highly significant.

43, where the "egoistic" sender increases the investment from *5* to *10* monetary units in the email follow-up phase. In exchange, the "pro-social" receiver subsequently increases the return from *5* to *15* monetary units; thus both achieve an individual outcome of *15* (instead of *10*). In this specific case, it is noticeable that the partners know each other by sight.

(b) The pattern *exposure* only occurs in 4.3% of the changing behavior cases. Here the sender's outcome is reduced by 33.3% and the receiver's outcome falls by 100%. For instance, in negotiation dyad 67 the sender reduces the investment from *10* to *0* monetary units; he/she stays with his endowment as the individual outcome, but the receiver loses everything. By looking at the satisfaction variables, we make the observation both sender and receiver are very dissatisfied in *t=1*; it thus seems likely that the sender does not send anything because he/she was annoyed about the partner in *t=1* or the sender anticipates a low return rate of his/her interaction partner for the email follow-up phase and invests nothing in *t=2*.

(c) The pattern *temptation* is the most frequent one with 52.2% of the cases that show changing behavior in the email follow-up phase. It has the feature that the trust shown in the face-to-face interaction is no longer honored in *t=2*; thus the sender's outcome becomes zero, since the receiver keeps the whole outcome. Group 60 is an example which shows such a pattern. In both phases the sender invests *10* but in the email follow-up phase the receiver returns nothing. This pattern is particularly frequent when the partners do not know each other and occurs even though both are very satisfied with the result and the partner.
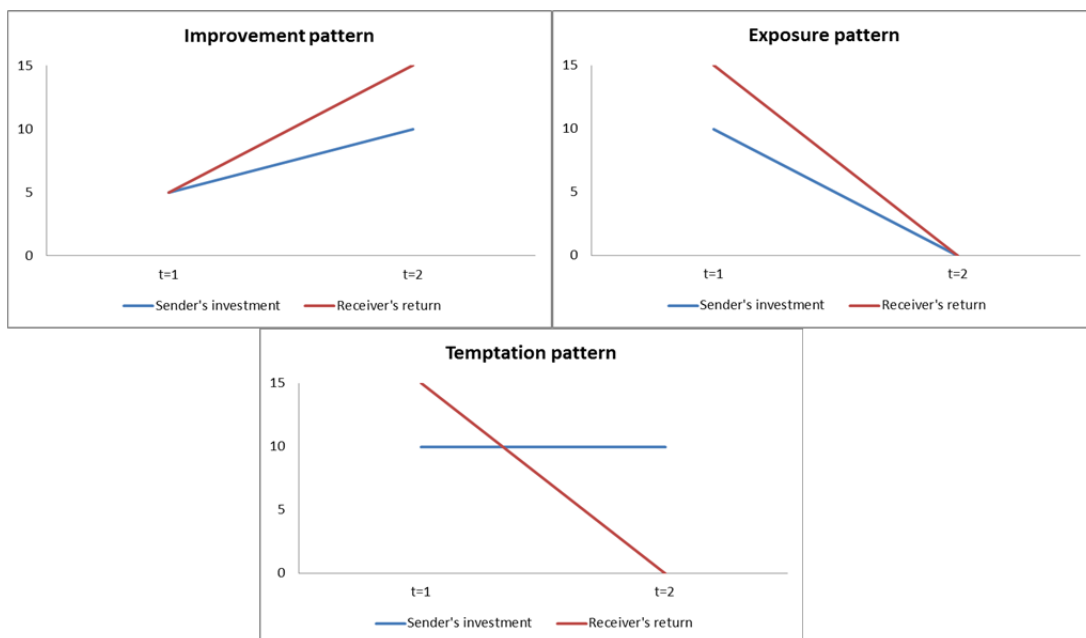
Figure 34: Three identified patterns by classifying the changing behavior

5.2.2.3 The impact on satisfaction

Looking back, we expected and confirmed that the "pro-social" sender and receiver group acts in a more cooperative way; they make higher investments and returns and they tend also to keep their promises more often in comparison to the mixed dyads. Now, moving a step further, we try to explain their satisfaction level, with the following hypothesis:

H1c: The homogeneous dyad of "pro-social" sender coupled with "pro-social" receiver (SoSe-SoRe) is more satisfied than the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=1 of the trust game negotiations.

The satisfaction level for outcome and partner is summarized in the index "Satisfaction_Total". The mean value for the total satisfaction with the trust game negotiation result is 5.90 (SD=0.82, N=180) on the 7-point-Likert-scale, where 7 represents very satisfied. For the EgSe-SoRe dyad the mean value is 6.06 (SD=0.68, N=58), for the SoRe-EgRe dyad 5.84 (SD=0.83, N=62) and for SoSe-SoRe 5.82 (SD=0.91, N=60). The differences are not significant according to the ANOVA with Turkey HSD and Scheffe post hoc test, a finding already reported in the descriptive statistics on satisfaction levels, which showed that the matched pairs of EgSe-SoRe are the most satisfied negotiation dyad.

Table 17: Regression for satisfaction

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.46	0.21	0.18	0.74	1.66

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	SD	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.69	0.41		9.12	0.00		
	Actor_Outcome	0.15	0.03	0.44	5.41	0.00	0.70	1.44
	Partner_Outcome	-0.00	0.03	-0.01	-0.12	0.91	0.70	1.44
	SVO_Angle	0.01	0.01	0.09	0.99	0.33	0.55	1.83
	SPM_cTA	-0.11	0.27	-0.03	-0.40	0.69	0.75	1.33
	D_EgSe_SoRe	0.13	0.14	0.08	0.96	0.34	0.75	1.34
	D_Partner_Egoist	-0.04	0.18	-0.02	-0.22	0.83	0.41	2.43
	D_Partner_Social	-0.18	0.21	-0.10	-0.85	0.40	0.31	3.13

To test the hypothesis, we run an OLS regression with the "Satisfaction_Total" as the dependent variable[39]. The predictors are the ones for the individual social motivation (SPM parameter and SVO Angle) and we add "Actor_Outcome" and "Partner_Outcome" as additional variables as well as some dummy variables. The two last variables are the individual payoffs and the payoffs of the respective interaction partners in the negotiation dyad in *t=1*. It is expected that these predictors would make substantial contributions. The dummy variables are the ones for the negotiation dyad, whether the partner is an egoist or not, and whether the partner has the same social orientation as the subject. Table 17 reveals the results with an explained variance of 17.8% (adjusted R^2). The dummy variable *D_SoSe-EgRe* is excluded due to multi-collinearity problems. The only highly significant variable is the predictor of "Actor_Outcome", which suggests that higher individual outcome leads to higher overall satisfaction. This was expected. All the other predictors, in particular the dummy for the matched pair EgSe-SoRe, are not significant. Also if we incorporate interactions, the result does not change much. Thus, we cannot support the hypothesis *H1c* that social-minded matched pairs are more satisfied than mixed ones.

Actor-partner interdependence model

Table 18: Model for actor and partner satisfaction on behavior change

Estimates of Fixed Effects[a]

Parameter	Estimate	SD	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-3.34	2.05	88.00	-1.63	.11	-7.42	.74
Actor_Satisfaction	.59	.25	176.60	2.38	.02	.10	1.08
Partner_Satisfaction	-.083	.2497	176.60	-.34	.74	-.57	.40

a. Dependent Variable: Behavior_Change.

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[39] The assumptions for linearity, homoscedasticity, independence of the residuals, and normality are tested in order to control for the generalizability of the OLS regression model. The first assumption, linearity is assessed through an analysis of residuals (testing the overall regression model) and partial-regression plots (for each independent variable in the analysis). Homoscedasticity is the next assumption, which deals with the constancy of the residuals across values of the independent variables. Again, our analysis is through examination of the residuals, which show no pattern of increasing or decreasing residuals. This finding indicates no homoscedasticity in the set of independent variables. Independence of the residuals is the third assumption which deals with the effect of carryover from one observation to another. Thus, making the residual not independent, in our example, several variables, including the identification number and each independent variable, were tried and no consistent pattern was found. We must use the residuals in this analysis, not the original dependent variable values, because the focus is on the prediction errors, not the relationship captured in the regression equation. Normality of the error term of the regression model is the final assumption we checked with a visual examination of the normal probability plots of the residuals. All the values fall along the diagonal with no substantial or systematic departures; thus, the residuals are considered to represent a normal distribution. The regression model is found to meet the assumption of normality (Hair, 2006).

Estimates of Covariance Parameters[a]

Parameter			Estimate	SD	Wald Z	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Repeated Measures	CS diagonal offset		6.12	.92	6.67	.00	4.56	8.21
	CS covariance		3.06	1.03	2.97	.00	1.04	5.08

a. Dependent Variable: Behavior_Change.

In the following, we would like to examine the relationship between satisfaction and the behavioral change in the email follow-up phase. For that purpose, we run an actor-partner interdependence model. Kenny et al (2006: p. 145) explains that "… one person's score on a predictor variable may influence not only that person's score on an outcome variable, but also that partner's score on the outcome variable." The effect estimated for "Actor_Satisfaction" is the actor effect for behavioral change (b=0.59, t=-2.38).[40] The actor effect indicates that each one-point increase in satisfaction in $t=1$ by an individual yields a behavioral change of 0.59. In the case of the trust game negotiations this means that people who are more satisfied invest or return more money. If the level of satisfaction increases per one point, senders would invest 60 cent on average more and receivers would return 60 cent more in $t=2$. The actor effect is large, positive and statistically significant. It indicates that the own satisfaction in the face-to-face phase influences the behavioral change of senders and receivers in the email follow-up phase.

The effect estimate for "Partner_Satisfaction" is the partner effect for behavioral change (b=-0.08, t=-0.74). The partner effect indicates that each one-point increase in satisfaction corresponds to a -0.08 decrease in behavioral change. So subjects whose partners are more satisfied than themselves invest or return slightly less. The partner effect is small, negative and not statistically significant. It indicates that we cannot tell whether the satisfaction level of the partner does influence the behavioral change of senders and receivers between the two phases. The main result is that, concerning the influence of satisfaction on behavioral change between $t=1$ and $t=2$, actor effects can be observed, while partner effects cannot.

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[40] We have to keep in mind for the dependent variable that there is no behavioral change in many cases.

5.3 THE IMPACT OF COMMUNICATION CONTENT

In the following section we turn the attention to the *observed bargaining behavior*, which is the recorded communications of the trust game negotiations in *t=1*. We examine the interactive relationship between the negotiators in order to understand the negotiators' strategies. We focus both on the relationship between individual differences/matched pairs and observed behavior as well as the relationship between observed and actual behavior. Here the overall question is whether the content of messages during face-to-face interactions displays any effects on actual behavior. The main objective is to find answers to the questions: Do the matched pairs use different negotiation strategies in the communication process? Does the content of communications lead to the promised actual behavior? Are spoken words congruent with actual behavior?

The benefit of the potential answers could be to prepare the negotiation process according to the differences in partners' social motivation and to show that *cheap talk* can affect the corresponding negotiation outcomes. The expectation is that an "egoistic" negotiator may use, for instance, more distributive than integrative strategies (Weingart et al, 2007). Moreover, we expect that promises can induce commitments to cooperate, which has already been shown in other contexts (Ellingson and Johannesson, 2004; Charness and Dufwenberg, 2006). In the best case scenario, a receiver's promises to return a higher amount encourage higher investments by the sender and ultimately make both parties better off in the trust game negotiations (Servatka et al, 2011).

Next we will introduce new variables that were gained through a time-consuming content analysis process. These variables describe how often subjects use different negotiation strategies in the face-to-face communication phase (*t=1*). The negotiation strategies are defined in the so called category scheme of the content analysis. As presented in the methodology section 4.4 the strategic orientation includes *integrative* and *distributive* strategies, while strategic functions involve *information* and *action*. Based on these two dimensions, and by adding one, there are five main strategies: (a) *integrative information: takes other into account*, (b) *integrative action: value creating*, (c) *distributive information: refers to self-interest*, (d) *distributive action: value claiming*, (e) *process management: procedural facilitating* (Olekalns et al, 2003; Pesendorfer et al, 2007; Weingart et al, 2007; Koeszegi et al, 2011). We present all the main categories and the subcategories together with the quality measures (Cohen's kappa) in table 19. We obtained an overall Cohen's Kappa of 0.89, which indicates high intercoder reliability.[41]

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[41] The intercoder reliability measures for the main categories are also very good, since the Cohen's Kappa quality measures lie between 0.85 and 0.96.

Table 19: Main categories and subcategories of content analysis with Cohen's kappa

Main categories ($K = .89$)	Subcategories
I. Integrative Information = Takes other into account ($K = .85$)	A. States/Asks preferences (Tactical behavior)
	B. Signals trust/trustworthiness (Tactical behavior)
	C. Joint processing (Tactical behavior)
	D. Relationship building (Private communication)
	E. Makes positive comment (Affective behavior)
II. Integrative Action = Value Creating ($K = .90$)	A. Makes fair offer $\geq$ 50% splitting (Substantive behavior)
	B. Makes fair suggestion (Substantive behavior)
	C. Agrees to offer (Substantive behavior)
	D. Agrees to suggestion (Substantive behavior)
	E. Refers to equality/Uses supportive argument (Persuasive behavior)
III. Distributive Information = Refers to task and self-interest ($K = .92$)	A. States/Asks preferences (Tactical behavior)
	B. Signals distrust/no trustworthiness (Tactical behavior)
	C. Makes task-related comment (Task-oriented behavior)
	D. Individual processing (Tactical behavior)
	E. Makes negative comment (Affective behavior)
IV. Distributive Action = Value Claiming ($K = .89$)	A. Makes unfair offer $\leq$ 50% splitting (Substantive behavior)
	B. Makes unfair suggestion (Substantive behavior)
	C. Disagrees to offer (Substantive behavior)
	D. Disagrees to suggestion (Substantive behavior)
	E. Refers to power/Uses supportive argument (Persuasive behavior)
V. Process Management ($K = .96$)	A. Administration-related (Procedural communication)
	B. Neutral fragment (Procedural communication)

We take into account which and how often the single main and the respective subcategories are mentioned by each individual. Besides the content analysis variables, we employ the antecedent variables, which are the defined individual differences/matched pairs, and the consequences variables, which are investing, returning, outcome and satisfaction. First, we present the descriptive statistics of the trust game negotiations content analysis. We then present differences and correlations between the mentioned categories. Finally, we analyze the effect of social motivation – or the strong cooperator group – on the negotiation strategies, and we also investigate the effects on outcome and satisfaction level.

5.3.1 DESCRIPTIVE STATISTICS

Table 20 and table 21 present the mean values in absolute and relative numbers together with the standard deviations of the mentioned main and corresponding subcategories.

It is important to note that the sample size is now smaller, since not all recorded trust game negotiations could be used for transcription. Therefore, we have a sample size of N=164 for the content analysis, equaling 82 negotiation dyads. 7,412 thought units (see definition in section 4.4) are distributed across five main categories and 22 subcategories. The four categories integrative information/action and distributive information/action each have five subcategories, whereas process management consists of two subdivisions.

Table 20: Descriptive statistics for mentioned main categories

Main categories	Absolute	SD	Relative	SD
Integrative Information (II): Takes other into account	9.69	6.97	0.21	0.09
Integrative Action (IA): Value creating	7.25	4.47	0.18	0.10
Distributive Information (DI): Refers to self-Interest	13.76	9.92	0.29	0.11
Distributive Action (DA): Value claiming	3.19	6.86	0.05	0.08
Process Management (PM): Procedural Facilitating	11.37	6.37	0.27	0.12

We start with a frequency analysis of the identified content analysis categories. In respect to the main categories, we can conclude that subjects use integrative (39%) more often than distributive (34%) strategies. It is definitely clear that the vast majority prefers creating value over claiming value. Thus, the category of *integrative action* accounts for 18% of all thought units, while *distributive action*, with 5%, is considerably lower. However, by focusing only on the information side we get a different picture. We observe that, in total, subjects mention *distributive information* most frequently (29%), and *integrative information* less often (21%). Slightly less than one third of all thought units concern the procedural facilitating of the communication process (27%), and are thus labeled as *process management*. The last category is used, since face-to-face interaction is marked by unfinished sentences, interruptions, and overlaps.

Table 21 contains all the subcategories, listed in the same logical order as the main categories. While the integrative information sub category *joint processing* (10%) can be classified as a tactical negotiation strategy, the integrative action subcategory *makes fair offer* (6%) is more substantial and offers at least a fair splitting of the joint outcome. The most mentioned distributive information subcategory is *makes task related comment* which accounts for 14% of all thought units. However, the most used distributive action subcategory *refers to power* (3%) can be characterized as persuasive negotiation behavior. Finally,

we find a considerable share of the process management subcategory *neutral fragment* (21%) conforming to findings of other studies (Nastase et al, 2007). Remarkable are some high standard deviations, which indicate a high spread of individual differences in the mentioning of single categories.

Table 21: Descriptive statistics for mentioned subcategories

Sub categories	Absolute	SD	Relative	SD
II States/Asks common preferences	2.27	2.14	0.06	0.05
II Signals trust/trustworthiness	0.85	1.45	0.02	0.03
II Joint processing	4.96	4.39	0.10	0.06
II Relationship-building	1.22	2.21	0.02	0.04
II Makes positive comment	0.41	0.88	0.01	0.02
IA Makes fair offer $\geq 50\%$	2.57	1.95	0.06	0.04
IA Makes fair suggestion	1.63	1.65	0.04	0.04
IA Agrees to offer	0.46	0.62	0.01	0.02
IA Agrees to suggestion	0.51	0.76	0.01	0.02
IA Refers to equality	2.09	2.10	0.05	0.05
DI States/Asks own preferences	1.76	2.62	0.03	0.04
DI Signals distrust/no trustworthiness	0.93	1.68	0.02	0.03
DI Makes task-related comment	6.70	5.32	0.14	0.09
DI Individual processing	3.81	3.70	0.08	0.07
DI Makes negative comment	0.58	1.24	0.01	0.02
DA Makes unfair offer $< 50\%$	0.74	1.36	0.014	0.02
DA Makes unfair suggestion	0.28	1.30	0.004	0.01
DA Disagrees to offer	0.18	0.55	0.003	0.01
DA Disagrees to suggestion	0.05	0.24	0.001	0.00
DA Refers to power	1.93	4.86	0.033	0.06
PM Administration-related	2.63	2.07	0.07	0.06
PM Neutral fragment	8.74	5.91	0.21	0.11

From a theoretical perspective, our content analysis results suggest that face-to-face trust game negotiations involve highly substantive and task-orientated communication constituting fundamental negotiation behavior. The results also show some tactical or persuasive negotiation behavior, which promotes problem solving like *joint processing* or *refers to equality* which is used as a supportive argument for presenting offers and suggestions. Arguments are very often not completely expressed, since the negotiation partners interrupt each other in order to present their own viewpoints. On the other hand, there is scant personal communication and few emotions are expressed when establishing a relationship in the trust game negotiations. However, the period of face-to-face negotiation was also quite short – limited to 15 minutes.

5.3.1.1 Differences across settings

We are able the compare two settings; firstly, the roles between sender and receiver, and secondly the differences between matched pairs in the mentioned categories of the communication process. Figure 35 shows the minor differences among the main categories between the two roles. A Kruskal-Wallis (KW) test ($p<0.06$) reveals only one statistically significant difference in the category *distributive information*. A possible explanation of why receivers refer more to self-interest could potentially be the simple fact that receivers are not given 10 euro, as senders are. In contrast, senders tend more toward value claiming, arguing that something from the investment should be returned. Most of the subcategories are comparable but some differences between sender and receiver are observable. While senders mention *joint processing* slightly more often (KW-test $p<0.05$) and *makes fair offer* (KW-test p<0.001), receivers show slightly higher occurrences of *agrees to offer* (KW-test $p<0.002$), *refers to equality* (KW-test $p<0.04$), s*ignals distrust/no trustworthiness* (KW-test $p<0.08$), *individual processing* (KW-test $p< 0.001$), and *disagrees to offer* (KW-test $p<0.05$) compared to the sender.[42] We can conclude from the frequency analysis results that the observed behavior in the communication process is consistent with the respective distribution of roles. Senders try to make fair offers, which are subsequently agreed to or rejected by the receiver. Moreover, because they do not receive an initial endowment, receivers tend more toward individual processing by calculating individual outcomes, while senders focus more on joint processing, since their role is decisive for the value created by the initial investment.
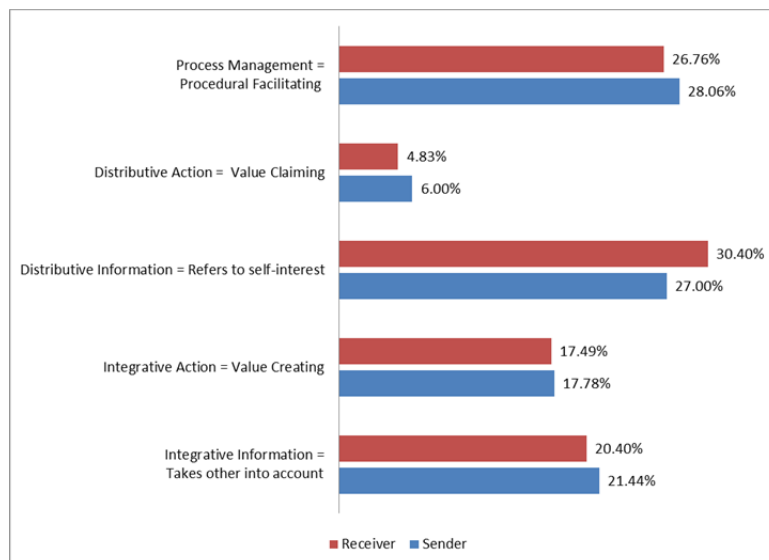
Figure 35: Main categories – Comparison between sender and receiver

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[42] Receivers employed slightly more frequently *refers to power* as supportive argument compared to senders which is surprisingly not statistically significant.

It is also worthwhile to search for differences in the mentioned categories of the content analysis across the matched pairs. Hypothesis 2 examines the relationship between the individual differences/matched pairs and the observed behavior, which is the negotiation process with the face-to-face communication in $t=1$.

H2: The homogeneous dyad of "pro-social" sender paired with "pro-social" receiver (SoSe-SoRe) uses more integrative than distributive negotiation strategies compared to the other two mixed dyads (EgSe-SoRe and SoSe-EgRe) in t=1 of the trust game negotiations.

Figure 36 shows the frequency analysis for the matched pairs which distinguish themselves out of the different social orientation compositions. The results for the negotiation dyads (EgSe-SoRe, SoSe-EgRe, SoSe-SoRe) reveal minor differences in the *process management* (KW-test $p<0.01$), *distributive information* (KW-test $p<0.04$), and the *distributive action* (KW-test $p<0.10$) categories, whereas no statistically significant differences for the integrative negotiation strategies could be found. It is remarkable that the mixed dyads use more *administration related comments* (KW-test $p<0.005$) or *neutral fragments* (KW-test $p<0.06$) compared to the homogenous social-minded group. In contrast, we observe that the SoSe-SoRe matched pair mentions more *task-related comments* (KW-test $p<0.01$), *signals* more *distrust or shows no trustworthiness* (KW-test $p<0.02$), and *makes* more *unfair offers* (KW-test $p<0.07$) compared to the EgSe-SoRe and SoSe-EgRe.

Our content analysis results demonstrate some results which we could not expect beforehand, in particular for the social-minded dyad of SoSe-SoRe. The results suggest that this dyad refers more to self-interest (31.27%) than it takes the other party into account (20.82%) as regards the information categories in the trust game negotiations. Regarding action categories, however, it is noticeable that the homogenous group indicates the lowest share in value creation (17.11%) but the highest share in value claiming (7%) compared to the mixed matched pairs. Although the matched pairs SoSe-SoRe use more distributive negotiation strategies, they mention process management categories less frequently than the other dyads. Therefore, the above stated hypothesis *H2* is not supported. These findings concerning the different matched pairs are new and contribute to the theoretical knowledge of negotiation research.

According to Weingart et al (2007) we would expect that social-minded subjects use more integrative negotiation strategies, while "egoistic" ones employ distributive strategies more often. Moreover Beersma and De Dreu (1999) suggested that "pro-social" subjects should use more *power* arguments and "egoistic" subjects more *equality* arguments. Thus, social-minded negotiators should be conducive to collaboration and reaching a win-win negotiation situation. Our data show that negotiation dyads of mixed social motivation also use integrative strategies in a comparable manner to the homogeneous dyad SoSe-SeRe. This finding is confirmed with help of the frequency analysis as well as the non-parametric Kruskal-Wallis-*H*-test (independent samples) and the hypothesis *H2* is not supported. However, the individual difference of social preference is almost significant at

the 10-percent level; entailing that subjects indicated social preferences in the pre-questionnaire use more equality arguments than subjects indicated no social preferences.
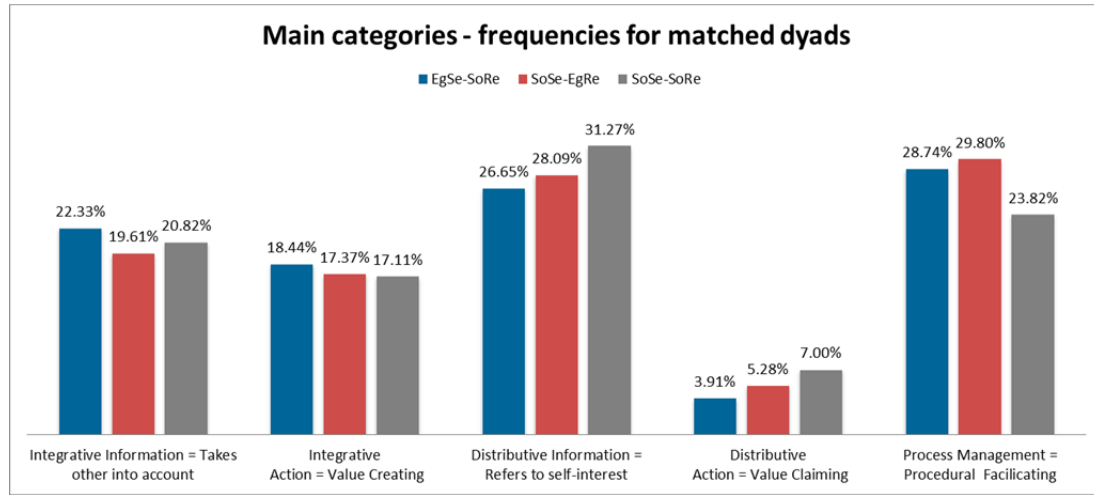
Figure 36: Main categories – Frequencies for matched pairs

5.3.1.2 Correlation of mentioned strategies

We will now consider if there is a relationship between sender and receiver negotiation strategies. In the previous section we asserted that the mentioned content analysis categories between sender and receiver are consistent with their respective roles. In table 22 we present the Pearson correlation coefficients between the sender (S) and receiver (R) main categories in the communication process. We see that the observed behavior, together with the recorded communication reflects reciprocity patterns which are similar to the actual behavior, where shown trust is honored with reciprocity. Thus, there are positive relationships and reciprocity behavior along the diagonal of the four main categories. On one hand, kindness is rewarded with kindness in the usage of *integrative strategies* (II, IA). One the other hand, we make the observation that "fire is fought with fire", since there is a kind of mimicking behavior, where *distributive information* (DI) and *action* (DA) strategies show a highly significant correlation between sender and receiver. Another interesting pattern is the correlation between created value and more *process management* (PM) and less *distributive information*, whereas claimed value correlates to *integrative information*. It is interesting that process management is being used more frequently by one party (see table 22). What is shown for the main categories can also be broken down for the content analysis subcategories.

Table 22: Correlation of communication categories between sender and receiver

	R_II	R_IA	R_DI	R_DA	R_PM
S_II	**0.35	-0.07	-0.08	-0.07	0.00
S_IA	-0.15	*0.28	*-0.26	-0.13	**0.31
S_DI	°-0.22	*-0.26	***0.38	0.18	-0.17
S_DA	*-0.27	-0.07	0.08	***0.42	-0.13
S_PM	0.11	0.15	-0.05	°-0.20	-0.07

*°: p < 10%, *: p < 5%, ** p < 1%, ***: p < 0.1%*

We discover the reciprocity and also other interesting patterns for the correlation of the same communication subcategories between sender and receiver. If someone tries to build up a *relationship* (0.71, $p<0.001$), *signals trust or trustworthiness* (0.43, $p<0.001$) states *common preferences* (0.41, $p<0.001$) or *makes a positive comment* (0.32, $p<0.01$), these integrative information strategies are highly contagious among themselves. For integrative action, we find agreeing or suggesting patterns, for instance, when a *fair suggestion* is agreed by the sender (0.47, $p<0.001$) or by the receiver (0.55, $p<0.001$). In the subcategories we discover other interesting patterns. We define a suggestion as a non-decision-maker proposal or influence on the other party, i.e. for instance when the receiver suggests an investment amount, while the actual decision lies with the sender. If someone shows distrust or no trustworthiness (0.63, $p<0.001$), makes task-related comments (0.61, $p<0.001$), or makes a negative comment (0.30, $p<0.001$), the chances are once again quite high that the "answer" is in the same vein. The analogy "fought fire with fire" fits best to the subcategory *refers to power* (0.38, $p<0.001$), since it is used as a supportive argument to pressure the other party to a preferred offer or suggestion. We find that this distributive action correlates with other power arguments and statements. There are further interesting interactions, such as a sender using a power argument to create pressure, leading the receiver to respond with an unfair offer (0.37, $p<0.01$) or when a sender makes an unfair offer, prompting the receiver to reject it (0.32, $p<0.01$). Least contagious are *administration related comments*.

From a theoretical perspective, we are faced with the finding that the *observed bargaining behavior* or negotiation strategies correlate among interaction partners in the face-to-face phase of the trust game negotiations (*t=1*). Whether process and output (actual decisions) correspond is tested in the following section. These negotiation strategy patterns, like the above mentioned reciprocity patterns, for instance, along the diagonal of table 22, are known as strategic response sequences in the negotiation literature (Putnam, 1990). Thus, our findings are in accordance with Brett et al (2002) who identified reciprocal sequences which evolve over the negotiation process. Such reciprocal sequences indicate that the negotiator responds to the counterpart's integrative or distributive behavior with exactly

the same type of behavior, as the respective correlation coefficients and their significance levels have shown us for the main and subcategories.[43]

5.3.2 TESTS FOR HYPOTHESES

In this section we concentrate on the relationship between the *observed bargaining behavior*, which is the negotiation process with face-to-face communication, and the *actual decisions*, which define the consequences of the trust game negotiations (hypothesis group 3). At first, we continue the analysis of social motivation by examining the differences for strong cooperators in the mentioned content analysis categories. Then, we investigate whether the words exchanged can explain the 'trust game' outcomes. The main insight from the previous descriptive statistics section is that there are consistent correlations between the negotiation process and the trust game negotiations' consequences. Servatka et al (2011) postulate that "words speak louder than money", meaning that exchanged words are not just *cheap talk,* but are a conducive mean to foster trust and trustworthiness between the negotiation parties. However, the research aim of the hypothesis group 3 is to determine the impact of the negotiation strategies on outcome, comprising individual payoff on one hand, and satisfaction level on the other.

5.3.2.1 Effects of negotiation strategies on strong cooperators

There are some unexpected findings regarding the individual differences/matched pairs. We will now consider the dependent dichotomous variable of strong cooperation or not (1=Yes and 0=No) and the extent (absolute numbers) how often the negotiation strategies – main and subcategories – are mentioned.

H3a: A strong cooperator, who invests everything or returns half of the tripled investment, uses more integrative than distributive negotiation strategies compared to a not-strong cooperator in t=1 of the trust game negotiations.

At first, we present frequency analysis tables with differences between the cooperator types. In table 23 the differences are significant between value creating and value claiming. Strong cooperators use more *integrative action* (significant at the 5-percent level), and

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[43] Other patterns, like complementary sequences where someone replies with the opposite of the behavior shown by their counterpart, can be examined for future research.

less *distributive action* (significant at the 1-percent level) than the not-strong cooperator type. It is interesting that the strategic function *action* – value creation and value claiming – and not the strategic function *information* matters.

Table 23: Cross tables and mean values for strong cooperators with content analysis main categories

	Strong cooperators			
	Yes	No	χ^2	*df*
Integrative Information	21.65	16.18	45.05	41
Integrative Action	18.49	12.14	54.92*	38
Distributive Information	27.63	35.59	55.32	46
Distributive Action	4.72	9.91	42.54**	23
Process Management	27.61	26.09	40.12	49
N	142	22		

*° p < 10 %. * p < 5%. ** p < 1%. *** p < 0.1%*

Table 24: Cross tables and mean values for strong cooperators with content analysis subcategories

	Strong cooperators			
	Yes	No	χ^2	*df*
II States/Asks common preferences	5.75	4.27	23.14	19
II Signals trust/trustworthiness	1.92	0.86	9.43	13
II Joint processing	10.30	9.68	35.46°	25
II Relationship-building	2.58	1.00	21.39	16
II Makes positive comment	1.19	0.32	7.31	10
IA Makes fair offer ≥ 50%	6.37	5.23	24.06	20
IA Makes fair suggestion	4.15	2.91	17.63	17
IA Agrees to offer	1.09	1.18	7.99	7
IA Agrees to suggestion	1.44	0.82	15.98	11
IA Refers to equality	5.47	2.14	20.97	20
DI States/Asks own preferences	2.67	3.50	18.64	16
DI Signals distrust/no trustworthiness	2.08	1.23	7.98	13
DI Makes task-related comment	13.53	19.77	54.77*	35
DI Individual processing	7.98	8.50	16.80	24
DI Makes negative comment	0.98	2.09	18.55°	11
DA Makes unfair offer < 50%	0.99	3.82	42.54***	11
DA Makes unfair suggestion	0.28	0.91	22.72**	7
DA Disagrees to offer	0.28	0.45	7.63	5
DA Disagree to suggestion	0.08	0.01	1.65	3
DA Refers to power	3.04	4.64	36.85**	18
PM Administration-related	7.08	6.14	8.79	23
PM Neutral fragment	20.58	20.25	49.43	43
N	142	22		

*° p < 10 %. * p < 5%. ** p < 1%. *** p < 0.1%*

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Differences between strong cooperators and not-strong cooperators are also to be found in the subcategories. In table 24 we see that strong cooperators use more *joint processing* (significant at the 10-percent level) and not-strong cooperators *make unfair offers* (significant at the 1-percent level) or *unfair suggestions* more often (significant at the 0.1-percent level), meaning that they share less than 50% of the joint outcome. Furthermore, not-strong cooperators are characterized by more frequent instances of *task-related comments* (significant at the 5-percent level), more *negative comments* (significant at the 10-percent level), and *refer* more often *to power* as a supportive argument (significant at the 1-percent level).

Table 25: Logistic regression for strong cooperator explained with negotiation strategies

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
8	94.97	0.19	0.35

Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
8	11.15	8	0.19

Variables in the Equation

		B	SD	Wald	df	Sig.	Exp(B)
Step 8	D_SoSe_EgRe by IntInf_Main	0.35	0.19	3.43	1	0.06	1.42
	IntAct_Main	0.35	0.11	10.04	1	0.00	1.42
	D_EgSe_SoRe by IntAct_Main	-0.35	0.14	5.82	1	0.02	0.71
	DisInf_Main	-0.09	0.04	5.70	1	0.02	0.91
	D_EgSe_SoRe by DisInf_Main	0.15	0.07	4.46	1	0.04	1.16
	D_SoSe_EgRe by DisInf_Main	-0.22	0.12	3.46	1	0.06	0.80
	DisAct_Main	-0.06	0.03	3.19	1	0.07	0.95
	Constant	1.55	0.58	7.18	1	0.01	4.73

a. Variable(s) entered on step 1: IntInf_Main, D_EgSe_SoRe * IntInf_Main , D_SoSe_EgRe * IntInf_Main , IntAct_Main, D_EgSe_SoRe * IntAct_Main , D_SoSe_EgRe * IntAct_Main , DisInf_Main, D_EgSe_SoRe * DisInf_Main , D_SoSe_EgRe * DisInf_Main , DisAct_Main, D_EgSe_SoRe * DisAct_Main , D_SoSe_EgRe * DisAct_Main , D_EgSe_SoRe, D_SoSe_EgRe.

Table 25 reveals the logistic regression results (method = backward stepwise) for hypothesis *H3a*. It should be recalled that we have a total sample of 164, consisting of 142 strong and 22 not strong cooperators. Thus, the dependent dichotomous variable is strong cooperator (1=Yes, 0=No) and the predictors are the main four content analysis categories; *integrative information/action* and *distributive information/action*, together with the inter-

action terms for the matched dyads (reference group SoSe-SoRe). The Nagelkerke R^2 indicates that the prevailing logistic regression model accounts for at least 35% of the variation between the two groups of either strong cooperators or not.

The final logistic regression model (step 8) includes seven variables. The main effect *IntAct* is highly significant for the *integrative information: takes others into account* (*b*=0.35). Its positive sign indicates that there is an increased chance for the group of subjects to be categorized as strong cooperators when this category is mentioned. The other main effects are *distributive information: refers to self-interest* (*b*=-0.09, significant at the 5-percent level) and *distributive action: value claiming* (*b*=-0.06, significant at the 10-percent level). Each one point increase in distributive information and action would lead to substantially decreased odds of belonging to the group of strong cooperators.

For the interaction effects we have the following findings: the relationship between *integrative information* and the dummy for the dyad SoSe-EgRe is positive but becomes negative between *integrative action* and the dummy for the dyad EgSe-SoRe. Moreover, the interaction of *distributive information* and the mixed negotiation dyads is unambiguous and overrules the main effect. While the subcategory *distributive information: refers to self-interest* is substantially more likely for the EgSe-SoRe dyad, it is less likely for the SoSe-EgRe dyad to be classified as strong cooperators.

The hypothesis can be supported that a strong cooperator, who invests everything or returns half of the tripled investment, uses more integrative than distributive negotiation strategies compared to a not strong cooperator. On the one hand, the presented cross tables with mean values (see tables 24 and 25) confirm the hypothesis, since strong cooperators tend to create value by, for instance, mentioning *integrative action* categories. On the other hand, the logistic regression shows that the *integrative action* categories have a positive effect, while *distributive action* categories have a negative impact, on the chance that a subject will belong to the strong cooperators.

5.3.2.2 Effects of negotiation strategies on negotiation outcome

We continue to test the relationship between *observed bargaining behavior* and *actual decisions*, by formulating the following hypotheses, based on literature review, between content analysis categories and outcome:

H3b: An integrative information/action negotiation strategy has a positive impact on negotiation outcome/individual decisions.

H3c: A distributive information/action negotiation strategy has a negative impact on negotiation outcome/individual decisions.

To test the hypotheses, we ran Spearman correlations between the content analysis main and subcategories and the individual outcome as well as senders' investment and receivers' return decisions. Results for the main categories are displayed in the tables 26 – 29. We find no relation between *distributive action* or *process management* and outcome, but we identify a slightly positive significant correlation between *integrative information* and outcome as well as a highly significant negative correlation between *distributive information* and outcome in *t=1*. For t=2, we find a slight positive significant correlation between *integrative action* and outcome. As predicted, it is beneficial to use *integrative information/action* in the communication process. If a subject takes the other party into account it has a positive impact on their respective outcomes. In particular (for *t=1*), *signaled trust* (0.21, $p<0.01$) and *fair suggestions* (0.18, $p<0.03$) have a positive effect, whereas *task-related comments* (-0.26, $p<0.001$) have a negative effect.

It is noteworthy that, separated by roles, we have stronger correlations for senders than for receivers. If we split table 26 according to the two roles of sender and receiver, it results in the distributive information correlation on outcome being a little bit higher and more significant for senders than for receivers (sender: -0.30, $p<0.01$; receiver: -0.24, $p<0.03$). Moreover, senders' outcomes show positive correlations with senders' *signaling trust* comments (0.25, $p<0.02$) and senders' *relationship-building* attempts (0.23, $p<0.03$), but negative correlations with senders' *task-related comments* (-0.34, $p<0.002$) and senders' *unfair offers* (-0.25, $p<0.02$). Thus, these results support hypotheses *H3b* and *H3c* only partially, since only two main content analysis categories, integrative and distributive information, are statistically significant.

Table 26: Correlation negotiation strategies on outcome *t=1*

Main Categories	Spearman *R*	*p*
Integrative Information: Takes other into account	0.15	0.06
Integrative Action: Value creating	0.11	0.16
Distributive Information : Refers to self-interest	-0.27	0.00
Distributive Action: Value claiming	-0.04	0.62
Process Management: Procedural Facilitating	-0.06	0.45

Table 27 reveals the correlation of senders' negotiation strategies to their investment and the receiver's return. First, we observe that the *integrative action* category has a positive effect on the sender's investment. Secondly, if the sender creates value in the communication process, it has a significant positive impact on the sender's investment decision. Thirdly, the *distributive information* category has a negative effect on the sender's investment. Fourthly, considering the effect of senders' communications on receivers, we see that when the sender uses distributive information or refers to self-interest in the communication process, it has a significant negative impact on the receiver's returning decision.

Table 27: Correlation sender's negotiation strategies on sender's investment and receiver's return

Sender's effects on	Sender's investment		Receiver's return	
	Spearman *R*	*p*	Spearman *R*	*p*
Integrative Information	0.20	0.08	0.18	0.11
Integrative Action	0.24	0.03	0.14	0.22
Distributive Information	-0.22	0.05	-0.30	0.01
Distributive Action	-0.14	0.22	-0.06	0.61
Process Management	0.11	0.08	0.08	0.48

Looking at the content analysis' subcategories there are also some notable results. Senders' negotiation strategies of *common preferences* (0.21, $p<0.06$), *signals trust/trustworthiness* (0.23, $p<0.04$), *makes fair suggestion* (0.25, $p<0.03$), *refers to equality* (0.23, $p<0.04$), and *signals distrust/no trustworthiness* (0.24, $p<0.03$) all have a positive impact on the investment decision. It is interesting that comments signaling trust or distrust have almost the same effect on the sender's decision. However, when the sender *makes task-related comments* (-0.30, $p<0.01$), *makes unfair offers* (-0.29, $p<0.01$), and refers to power as a supportive comment, it shows a significant negative influence on the investment decision. Furthermore, senders' strategies of *trust* (0.25, $p<0.02$), *relationship-building* (0.24, $p<0.03$), and *makes fair suggestion* (0.22, $p<0.05$) have a positive impact on the receiver's return, whereas when the categories *task-related comment* (-0.34, $p<0.002$) and *unfair offer* (-0.25, $p<0.02$) are mentioned by the sender, it has a significant negative influence on the receiver's return.

Table 28: Correlation receiver's negotiation strategies on receiver's return and sender's investment

Receiver's effects on	Receiver's return		Sender's investment	
	Spearman *R*	*P*	Spearman *R*	*p*
Integrative Information	0.11	0.19	0.17	0.14
Integrative Action	0.24	0.03	0.22	0.05
Distributive Information	-0.22	0.05	-0.28	0.01
Distributive Action	-0.09	0.43	-0.07	0.51
Process Management	0.08	0.50	0.02	0.85

Table 28 contains the correlation between receivers' negotiation strategies on receivers' returns and senders' investment decisions. First, we observe that the *integrative action* category has a positive effect on both receivers' returns and senders' investment. It is remarkable that the receiver can influence the sender with value creation, but not the other way around. Secondly, if the receiver refers to self-interest in the communication process, it has a significant negative impact on both individual decisions. Thirdly, considering the results for the subcategories, we see positive impacts on the amount returned when the receiver speaks about *trust* (0.22, $p<0.05$), *refers to equality* as a supportive argument (0.32, $p<0.003$), and *disagrees to suggestion* (0.20, $p<0.07$). Negative impacts, however, are observable when the receiver states *own preferences* (-0.35, $p<0.001$) or *makes unfair suggestions* (-0.15, $p<0.09$). Looking at the effect of receivers' communications on the

sender's decision, we see that while *trust* (0.25, *p*<0.03) and *equality* (0.29, *p*<0.01) has a positive influence, *own preferences* (-0.34, *p*<0.06) and *task-related comments* (-0.21, *p*<0.06) influence the sender's investment negatively.

Table 29: Correlation negotiation strategies on outcome *t=2*

Main Categories	Spearman *R*	*p*
Integrative Information: Takes other into account	0.03	0.67
Integrative Action: Value creating	0.18	0.02
Distributive Information : Refers to self-interest	-0.11	0.16
Distributive Action: Value claiming	-0.04	0.58
Process Management: Procedural Facilitating	-0.05	0.52

In table 29, we identify that there are also effects of negotiation strategies (bargaining behavior *t=1*) on the negotiation outcomes (*t=2*): the more *integrative action* is used, the higher the individual outcome. In particular, the subcategory *refers to equality* (0.18, *p*<0.02) has a positive effect for value creation on the individual outcome.

To sum up, our findings support the hypotheses *H3b* and *H3c* partially; integrative negotiation strategies have a positive impact and distributive negotiation strategies have a negative impact on the outcome and on individual decisions. These correlations indicate the expected positive or negative impact, but not all results are statistically significant. Overall, integrative negotiation strategies produce a positive influence on senders' and receivers' decisions, in particular the information categories of *signaling trust/trustworthiness* and *makes fair suggestion* and the action category *referring to equality*. Distributive negotiation strategies of the information category are highly significant for both individual outcome and individual decisions, in particular the categories making *task-related comments*, *unfair offers* or stating *own preferences* have negative impacts on the output.

5.3.2.3 Effects of negotiation strategies on partner's satisfaction

This part deals with the research question of whether face-to-face communication influences the partner's satisfaction level. Specifically, is there a relationship between the negotiation strategies of a person, as recorded during face-to-face negotiations, on the other party's satisfaction level? In general, we expect that the higher the satisfaction, the higher the level of cooperation.

H3d: Distributive negotiation strategies in the communication process affect the partner's satisfaction in a negative way and have a stronger effect than the positive integrative strategies in the communication process t=1 of the trust game negotiations.

We run stepwise OLS regressions[44] with the partner's satisfaction as the dependent variable, measured on a 7-point-Likert scale (7=highly satisfied), and the content analysis variables as the predictors. According to Hair (2006) the advantage of a stepwise OLS estimation procedure is that is designed to develop a regression model with the fewest number of statistically significant independent variables and maximum predictive accuracy. Since the regression model can be markedly affected by issues such as multicollinearity, we controlled for variance inflation factor and tolerance. Multicollinearity is not a problem, which means that predictor variables are not highly correlated. The calculated tolerance and variance inflation factor VIF values are in the acceptable range, entailing that tolerance is not below 0.1, and VIF is not greater than 10 or on average much greater than 1. In this case, as none of these values indicate levels of multicollinearity which seriously distort the regression model, there is no multicollinearity.

In table 30 we take the partner's satisfaction as the dependent variable and the five main categories of integrative information and action, distributive information and action, and process management as the predictors. Model 1 can explain 32.1% of the variance (adjusted R^2) just with the main category *distributive action*, meaning that each one point increase in value claiming would lead to a significant negative influence on the partner's satisfaction (b = -6.92). Model 2, however, shows that by adding *integrative action* the variance increases to 35.5% adjusted R^2. While more value claiming influences the partner's satisfaction negatively, the integrative information category would indicate that the more value creation is mentioned during face-to-face communications, the more satisfied the partner (b = 1.97). However, the effect of distributive action is stronger on the partner's satisfaction than the effect of integrative action:

Partner's satisfaction = 5.91 – 6.29 distributive action + 1.97 integrative action. Thus, we can support hypothesis *H3d*.

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[44] The prerequisites for running a regression are checked: normality (Kolmogorov-Smirnov test), linearity (Scatter plot check by plotting the residuals), homoscedasticity (Levene test and Goldfeld-Quandt test), no autocorrelation (Durbin Watson test 1.6–2.4), multi-collinearity (Variance inflation factor (VIF), and tolerance, and analysis of variance).

Table 30: OLS regression for partner's satisfaction with main categories

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.57[a]	.33	.32	.78	
2	.60[b]	.36	.36	.76	1.61

a. Predictors: (Constant). RDiAc_Main b. Predictors: (Constant). RDiAc_Main. RInAc_Main

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	SD	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.29	.07		85.03	.00	6.14	6.44		
	RDiAc_Main	-6.92	.78	-.57	-8.84	.00	-8.47	-5.38	1.00	1.00
2	(Constant)	5.91	.14		41.00	.00	5.62	6.19		
	RDiAc_Main	-6.29	.79	-.52	-7.95	.00	-7.85	-4.73	.93	1.07
	RInAc_Main	1.97	.64	.20	3.06	.00	.70	3.24	.93	1.07

a. Dependent Variable: Partner_Satisfaction

In table 31 we take all 22 content analysis subcategories into account in order to explain the effects on the partner's satisfaction. The result of the stepwise OLS regression is that seven models are calculated. Starting with the predictor *refers to power*, the results show an adjusted R^2 of 21.9% for model 1, entailing that the more power a subject expresses in his/her statements the less his/her partner is satisfied. Each of the other six variables added to the equation make substantial contributions to the overall model fit with substantive increases in R^2 and adjusted R^2, ending with an adjusted R^2 of 44.6% for model 7 with the significant predictors of *power*, *own preferences*, *disagreeing to offer*, *unfair offer*, *neutral fragments*, *negative comment*, and *unfair suggestion*. All predictors' coefficients are negative and the highest negative coefficient is the category *disagrees to offer* ($b = -19.3$), meaning each one point increase in disagreeing an offer would lead to less partner satisfaction. Also the category *makes unfair suggestion* dissatisfy the partner ($b = -13.9$). Highly significant is *refers to power*, the more pressure is exerted, the higher is the dissatisfaction of the partner. Furthermore, *states/asks own preferences*, *makes unfair offer*, *neutral fragment* and *negative comment* also have a negative influence on the partner's satisfaction level.

Table 31: OLS regression for partner's satisfaction with subcategories

Model Summary[a]

Model	R	R Square	Adjusted R Square	Std. Error	Durbin-Watson
7	.69	.47	.45	.70	1.67

Coefficients[a]

Model	Unstandardized Coefficients		Std			95.0% CI		Collinearity Statistics	
	B	SD	Beta	T	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
7 (Constant)	6.85	.15		47.04	.000	6.56	7.14		
RDA_Power	-5.11	1.26	-.30	-4.05	.000	-7.61	-2.62	.60	1.66
RDI_PrefSub	-5.57	1.63	-.23	-3.41	.001	-8.80	-2.35	.76	1.31
RDA_DisagreesOffer	-19.34	6.42	-.19	-3.01	.003	-32.01	-6.66	.87	1.14
RDA_Offer	-6.26	2.43	-.16	-2.57	.011	-11.07	-1.45	.88	1.14
RPM_Neutral	-1.61	.52	-.19	-3.10	.002	-2.63	-.58	.88	1.14
RDI_NegComR	-7.89	2.82	-.18	-2.79	.006	-13.46	-2.31	.86	1.17
RDA_Suggestion	-13.99	5.69	-.19	-2.46	.015	-25.23	-2.74	.59	1.70

a. Dependent Variable: Partner_Satisfaction

We can conclude that our findings are in accordance with both our expectations and previous research. We expected that positive integrative negotiation strategies would have a smaller influence on the partner's satisfaction level than negative distributive ones. In previous studies (Kahneman and Tversy, 1979; Rozin and Royzman, 2001) the dominance of negativity is emphasized, like the well-known phenomenon of loss aversion. The prevailing OLS regressions, either for the main or subcategories of the content analysis, confirm this kind of negativity bias. If someone mentions distributive negotiation strategies, like *making unfair offers* and *suggestions*, *disagreeing* to a presented *offer*, *referring to power* as a supportive argument, *making negative comments*, or focus only on their *own preferences* during face-to-face communications of the trust game negotiations, the partner's satisfaction level would be distorted and decrease.[45] Thus, the hypothesis *H3d* is supported. It is clearly shown that distributive subcategories explain the variance.

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[45] Besides six distributive subcategories, there is additionally one *process management* subcategory *neutral fragment*.

5.3.2.4 Effects of negotiation strategies on how a partner's orientation is perceived

The last research question for the relationship between *observed bargaining behavior* and *actual decisions* is, whether face-to-face communication influences the perception of the partner's orientation. Thus, does the communication process, recorded during trust game negotiations, influence how the subjects of a negotiation dyad perceive each other? In general, we expect that subjects can evaluate the partner's social orientation by assessing the communication content, on which we focus in the content analysis. We assume that subjects are more likely to assess the partner as "pro-social", the more integrative strategies they perceive them as employing. On the other hand, if they perceive more distributive strategies, the higher the likelihood that they evaluate their partner as "egoistic".

H3e: Integrative negotiation strategies in the communication process affect the perception of a partner's social orientation positively and distributive negotiation strategies used by one person in the dyad have a negative influence on how their social orientation is perceived by the partner.

To test the hypothesis, we run stepwise OLS regressions of the perception of partners' social orientations, measured on a 7-point-Likert scale (1=very egoistic to 7=very social-minded), as the dependent variable and the content analysis main categories as the predictors. Table 32 reveals that the regression model can only explain 6% of variance (adjusted R^2) just with the independent variable *distributive action: value claiming*, meaning that each one point increase in value claiming in the communication process would lead to a significant negative influence on how the partner's orientation is perceived:

Partner's orientation = 5.67 – 5.30 distributive action.

Table 32: OLS regression for partner's orientation with main categories

Model Summary[b]

Model	R	R Square	Adjusted R Square	SD	Durbin-Watson
1	.26[a]	.07	.06	1.57	2.16

a. Predictors: (Constant). RDiAc_Main
b. Dependent Variable: Orient_Partner

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.65	1	27.65	11.23	.00[a]
	Residual	398.911	162	2.462		
	Total	426.561	163			

a. Predictors: (Constant). RDiAc_Main
b. Dependent Variable: Orient_Partner

Coefficients^a

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	SD	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	5.67	.15		37.89	.00	5.37	5.96		
RDiAc_Main	-5.30	1.58	-.26	-3.35	.00	-8.42	-2.18	1.00	1.00

a. Dependent Variable: Orient_Partner

In the next step, we take the 22 content analysis subcategories as the predictors and again run a stepwise OLS regression with the perception of the partner's orientation as the dependent variable. In table 33, we see that this regression model can explain 5% of variance (adjusted R^2) just with the variable *refers to power*, which is slightly less than with the entire main category *distributive action*. This highly significant variable indicates that each one point increase in putting pressure or mentioning power in the communication process would lead to a significant negative influence on how the partner's orientation is perceived: Perception of partner's orientation = 5.60 – 6.72 Power.

Table 33: OLS regression for partner's orientation with subcategories

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.23[a]	.05	.05	1.58	2.16

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.16	1	23.16	9.30	.00[a]
	Residual	403.40	162	2.49		
	Total	426.56	163			

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	SD	Beta	T	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	5.60	.14		39.26	.00	5.32	5.88		
RDA_Power	-6.72	2.20	-.23	-3.05	.00	-11.08	-2.37	1.00	1.00

a. Dependent Variable: Orient_Partner

Similar to the last section (effects on the partner's satisfaction), we again observe the dominance of negativity, which seems to have a substantial influence on how a partner's orien-

tation is perceived. However, as we could not find a positive influence for integrative negotiation strategies and the *R²* is too weak to be relevant, the hypothesis *H3e* is not supported.

To conclude, in the context of trust game negotiations we have shown that it is an advantage to analyze what people say in order to understand what they do.

5.4 THE LINK BETWEEN ATTITUDE AND BEHAVIOR

In the last result section we focus on the relationship between *observed bargaining behavior*, gained from self-reports in the questionnaires, and the results of the experiment or *actual decisions*. It seems beneficial to analyze what people think about themselves compared to what they do.

In particular, two links are examined. The first link is between trust attitude and actual decisions. We asked attitudinal trust questions originally taken, amongst others, from the US General Social Survey (*GSS*). These eight basic questions were given in the online pre-questionnaire stage. As presented in the literature review, researchers (Glaeser et al, 2000; Gaechter et al 2004) have previously tried to predict the actual trust behavior with attitudinal trust questions. Glaeser et al (2000), for instance, found a poor correlation between the amounts sent in a 'trust game' and the trust stated in survey questions. They did, however, find a significant positive relationship between the amounts returned and the stated trust. We expect that trust attitude and trust behavior in the trust game negotiations are independent decisions. The second link is between self-reported social behavior and actual decisions. We asked six pro-social behavior questions in the post-questionnaire stage (after the face-to-face trust game negotiations). The single items helping friends/strangers, donating money/blood, contributing to a voluntary service and saving nature follow, among others, Bierhoff (2001) and are items that should indicate how often subjects have practiced specific pro-social activities in the last six months. Later, for the analysis, the six items are summarized into one score-based pro-social behavior index.

We use a two-step procedure for presenting the results. The first step is dedicated to the descriptive statistics of the additional variables, which were either collected in the pre- or the post-questionnaire. In the second step, we analyze the effect of the trust attitude items on the outcome and on whether the subject is a strong cooperator or. Then the effect of the pro-social behavior score is investigated on sender and receiver decisions in the trust game negotiations.

5.4.1 DESCRIPTIVE STATISTICS

Table 34 contains the collected information of the eight online pre-questionnaire items and the six post-questionnaire items. In general, the table is organized by describing the specific question and its response range for each item. Then we present the overall mean value for the whole sample of 180 subjects, the mean for senders and receivers, the corresponding standard deviations (SD), and the *p*-value, which determines whether the two roles are drawn from the same underlying population (based on Mann Whitney-U tests with α correction method "false discovery rate" according to Benjamini and Hochberg 1995). Fur-

thermore, the mean values of the Glaeser et al (2000) study are given as a reference for comparison to the online pre-questionnaire items.

The first eight questions of table 34 concern trust attitude. The three *GSS* items fair, help and trust are originally taken from the U.S. National Opinion Research Center's General Social Survey (*GSS*), which has been conducted continuously since 1972. Firstly, 45.6% of the subjects position themselves in the middle ("it depends") when asked whether people would try to take advantage of them given a chance, or would treat them fairly (GSS-fair). Secondly, 61.7% think that most of the time people just look out for themselves (GSShelp). Thirdly, based on the most frequently used *GSStrust* question "Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?", 21.7% feel that most people can be trusted, indicating a rather high level of trust. Taking a closer look at such respondents, we find that they have social preferences (SPM), but are more or less evaluated "egoistic" according to the SVO slider. On the other hand, 45.6% of the subjects believe that one cannot be too careful in dealing with other people.

The next five questions of table 34 were introduced by Glaser et al (2000) with the idea of eliciting past trust behavior. The question "How often do you leave your door unlocked" appears noteworthy, as the vast majority of Harvard students answered this question with "never" (mean value 4.26). Our subjects, however, seem to be more trusty (mean value 3.93); in particular, 35.6% of receivers leave their door often or sometimes unlocked. Moreover, 40.6% of the subjects lend money to friends once a month and 46.7% lend their friends personal possessions, like CDs, clothes, bicycles etc. just as often. Finally, 43.9% agree somewhat to the statement "I am trustworthy" and the statement "You can't count on strangers anymore" is more or less agreed to by 57.8% of the subjects. There are no significant differences between "pro-social" and "egoistic" subjects. In total, the shown trust attitudes are comparable with the Glaser et al (2000) study and tend to be somewhat pessimistic in comparison to the trust and trustworthiness shown in the trust game negotiations.

Besides past trust behavior the subjects also gave answers to some questions regarding past pro-social behavior. Subjects are asked how often they performed specific activities during the last six months, these being; donating money/blood, helping friend/stranger, contributing to voluntary services and saving nature (0=Never, 1=Once, 2=Several times, 3=Regularly). Whereas helping a friend regularly is most popular (mean value 2.60), followed by saving nature several times (mean value 2.47), activities such as donating money or blood are not widely distributed among the student population. Even though this finding is not really surprising, we do observe some differences. While 80.77% of "pro-social" subjects donate money to charities regularly or several times, only 53.92% of "egoistic" subjects do so (Pearson Chi-square 3.49, $p<0.06$). In contrast, 31.37% of "egoistic" people donate blood or plasma regularly or several times, while only 12.82% of "pro-social" people do so (not significant Pearson Chi-square). However, both the majority of "pro-social" and "egoistic" subjects help friends regularly, strangers several times, save nature most of

the time, while rarely contributing to any of the several voluntary services. To sum up, the past pro-social behavior displayed by the student population show weak results for donating money/blood and contributing to voluntary services, and stronger results for helping friends/strangers and saving nature.

Finally, in the post-questionnaire subjects answered three open questions in the form of a self-report, describing past pro-social, egoistic and trust behavior situations from their daily lives in their own words. Concerning pro-social behavior, 60.37% mention helping other people, of which more than half relate instances where they help strangers, rather than family or friends. Other pro-social categories are related to donations and environmental protection. The most frequent answer implying egoistic behavioral patterns, with 44.13%, is not sharing information with university colleagues, followed by not helping family or friends, and being egoistic in traffic, for instance by ignoring a red traffic light. The leading answer regarding past trust behavior is showing trust towards other people, with 71.64% - in particular trust towards family and friends. Furthermore, trust is shown by lending money or private possession to other people or by keeping promises or secrets. We can detect both consistencies and discrepancies between the previous closed and these open questions of the post-questionnaire. While the open questions also lend themselves to a closer examination, by, for instance, something like the content analysis methodology, we can already establish a social desirability bias without further analysis, since a striking majority report such perfect examples of pro-social behavior, such as helping elderly people crossing the street or offering a seat in public transport.

Table 34: Descriptive statistics, self-reports for trust attitude and social behavior

Variable	Description	Response range	N	Min	Max	Overall mean	SD	Sender mean	SD	Receiver mean	SD	p	Glaeser mean	SD
GSSfair	"Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?"	0=I don't know, 1=Would take advantage of you, 1.5=Depends, 2=Would try to be fair	180	0	2	1.46	0.38	1.50	0.37	1.42	0.40	0.54	1.56	0.49
GSShelp	"Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?"	0=I don't know, 1=Try to be helpful, 1.5=Depends, 2=Just look out from themselves	180	0	0	1.73	0.39	1.72	0.39	1.74	0.38	0.85	1.61	0.49
GSStrust	"Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?"	0=I don't know, 1=Most people can be trusted, 1.5=Depends, 2=Can't be too careful	180	0	2	1.61	0.41	1.64	0.38	1.58	0.44	0.54	1.51	0.50
DoorUnlocked	"How often do you leave your door unlocked?"	1=Very often, 2=Often, 3=Sometimes, 4=Rarely, 5=Never	180	1	5	3.93	1.31	4.09	1.30	3.77	1.31	0.15	4.26	1.11
LendMoney	"How often do you lend money to friends?"	1=More than once a week, 2=Once a week, 3=Once a month, 4=Once a year or less	180	1	4	2.93	0.88	2.93	0.83	2.93	0.93	0.86	2.85	1.15
LendPossessions	"How often do you lend personal possessions to friends?"	1=More than once a week, 2=Once a week, 3=Once a month, 4=Once a year or less	180	1	4	3.00	0.84	3.12	0.75	2.88	0.91	0.23	2.44	1.12
Trustworthiness	"I am trustworthy"	1=Diagress strongly, 2=Disagree somewhat, 3=Disagree slightly, 4=Agree slightly, 5=Agree somewhat, 6=Agree strongly	180	1	6	5.01	1.02	5.03	0.83	4.99	1.19	0.75	5.31	0.93
TrustStrangers	"You can't count on strangers anymore"	1=More or less agree, 2=More or less diagree	180	1	2	1.42	0.50	1.41	0.49	1.43	0.50	0.86	1.39	0.05
DonatingMoney	"How often did you donate money in the last six months?"	0=Never, 1=Once, 2=Several times, 3=Regularly	180	0	3	0.79	0.92	0.78	0.91	0.80	0.93	0.97		
DonatingBlood	"How often did you donate blood in the last six months?"	0=Never, 1=Once, 2=Several times, 3=Regularly	180	0	3	0.37	0.75	0.47	0.85	0.27	0.63	0.48		
HelpingFriend	"How often did you help a friend in the last six months?"	0=Never, 1=Once, 2=Several times, 3=Regularly	180	0	3	2.60	0.66	2.58	0.70	2.62	0.61	0.97		
HelpingStranger	"How often did you help a stranger in the last six months?"	0=Never, 1=Once, 2=Several times, 3=Regularly	179	0	3	1.75	0.82	1.74	0.87	1.75	0.77	0.97		
VoluntaryService	"How often did you contribute to a voluntary service in the last six months?"	0=Never, 1=Once, 2=Several times, 3=Regularly	180	0	3	0.65	1.04	0.63	1.03	0.67	1.06	0.97		
SavingNature	"How often did you save the nature in the last six months?"	0=Never, 1=Once, 2=Several times, 3=Regularly	180	0	3	2.47	0.91	2.56	0.75	2.38	1.03	0.97		

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The objective of this section is to study the relationship between observed attitudes, which are taken from subjects' self-reports, and their actual decisions in the trust game negotiations. In the hypotheses group 4, we concentrate on self-reports of past trust behavior and past pro-social behavior. According to Johansson-Stenman et al (2011) and Glaeser et al (2000), weak correlations exist between stated trust in the questionnaire questions and the investing or returning decision. Someone who displays a high trust attitude should also show a higher level of cooperation. Moreover, high self-reported pro-social behavior should correlate with higher investing and returning. The main insight from the previous descriptive statistics section is that the general trust attitude is moderate or somewhat cautiously pessimistic. In contrast, we know that the trust game negotiations resulted in high levels of investing and returning in both the face-to-face and the email follow-up phase. Therefore we expect that past trust behavior (pre-questionnaire) and actual behavior in the trust game negotiations (experimental phases) are independent decisions (Gaechter et al, 2004). Furthermore, we have seen discrepancies in the types of past pro-social behavior displayed; while helping is widely distributed; donating or making contributions is less popular, even among subjects classified "pro-social" by the pre-questionnaire.

5.4.2.1 The influence of trust attitude on investing and returning

At first we consider a correlation between the trust attitude variables and individual decisions of the trust game negotiations. Moreover, a regression should explain whether a subject is a strong cooperator or not with the help of the trust attitude variables in combination with the dummy variables for the matched pairs. The hypothesis is the following:

H4a: The GSS variables do not have an impact on investing and returning in the trust game negotiations (t=1) and they do not make a substantial contribution in explaining the likelihood of the subject being of a strong cooperator type.

Table 35: Correlation between trust game negotiation and GSS attitude items

		Senders choosing to trust by Investing				Receivers choosing to reciprocate by returning			
		All	**EgSe-SoRe**	**SoSe-EgRe**	**SoSe-SoRe**	**All**	**EgSe-SoRe**	**SoSe-EgRe**	**SoSe-SoRe**
GSS-fair	Pearson	*-0.05*	*-0.04*	*-0.03*	*-0.15*	*0.06*	*-0.30*	*0.36**	*0.10*
	p-value	0.63	0.85	0.87	0.42	0.59	0.11	0.05	0.61
	N	90	29	31	30	88	29	29	30
GSS-help	Pearson	*0.34***	*-0.15*	*0.54***	*0.40**	*0.06*	*0.53***	*0.15*	*-0.22*
	p-value	0.00	0.44	0.00	0.03	0.61	0.00	0.43	0.25
	N	90	29	31	30	88	29	29	30
GSS-trust	Pearson	*0.13*	*0.01*	*0.11*	*0.31°*	*-0.06*	*-0.18*	*-0.05*	*0.01*
	p-value	0.24	0.96	0.55	0.10	0.61	0.34	0.80	0.95
	N	90	29	31	30	88	29	29	30

*° p < 10 %. * p < 5%. ** p < 1%. *** p < 0.1%*

We already have a lot of information about the outcome of the actual decisions in the trust game negotiations. For instance, 88% of senders show trust by investing the whole endowment of 10 euro in *t=1*, the face-to-face interaction, a figure that increases to 91% in *t=2*, the email follow-up phase. This difference is not statistically significant (*p*=0.50, Wilcoxon test). However, 83% of receivers honor the trust placed in them by returning half of the augmented investment to the sender in *t=1*, amounting to 15 euro. The return falls significantly in *t=2* (*p*=0.03, Wilcoxon test), but 75% of receivers still opt for a fair and efficient 50:50 split, so that both individual outcomes amount to 15 euro.

Table 35 reveals the correlation between the *GSS* attitude items, the sender's investment and the receiver's returning decisions. In the first step we see the relationship for the whole sample and in the second step the correlations for the different matched pairs. For the whole sender sample, we observe that the variable *GSShelp* is significant and highly positive. Senders who agree that people try to be helpful most of the time (mean value 1.72, see table 35) tend to invest more. This relationship is also true and quite significant for the mixed matched pair SoSe-EgRe and the homogeneous dyad SoSe-SoRe. On the receiver side, this relationship is the only highly significant one for the mixed matched pair of EgSe-SoRe.

Moreover, a positive relationship between the *GSStrust* variable and the investment of the dyad SoSe-SoSE should be noted, as well as the positive and significant correlation between the *GSSfair* variable and the returning levels seen in the matched pair SoSe-EgRe. Therefore, the findings do not confirm a positive correlation between the amount invested/returned and stated trust (GSStrust is only significant at the 10-percent level for the sender role of the SoSe-SoRe group). However the *GSShelp* variable can be interpreted that subjects are expecting to be confronted with a more or less egoistic interaction partner. Furthermore, Spearman correlations disclose dependencies between the variables *GSSfair* and *GSShelp* (-0.30, *p*<0.01) as well as between *GSStrust* and *GSShelp* (0.23, *p*<0.01). Hence, we will only employ the variable *GSShelp* for the following regression.

Table 36: Logistic regression for strong cooperators with GSS attitude items

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
3	125.90	0.04	0.08

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
3	1.42	1	0.23

Variables in the Equation

		B	SD	Wald	df	Sig.	Exp(B)
Step 3[a]	GSShelp	1.47	.52	7.90	1	.01	4.37
	Constant	-.45	.85	.28	1	.60	.64

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
3	125.90	0.04	0.08

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.

a. Variable(s) entered on step 1: GSShelp. D_EgSe_SoRe * GSShelp . D_SoSe_EgRe * GSShelp .

Next, we run a logistic regression (method = backward stepwise) with the dichotomous dependent variable for strong cooperator (1=Yes and 0=No) and the predictors *GSShelp* and the interaction of *GSShelp* with the dummies for the matched pairs. The Nagelkerke R^2 is quite low; 8% of explained variance for the regression model with the backward stepwise method.

The final logistic regression model (step 3), table 37, includes only the *GSShelp* variable, which shows a significant coefficient at the 1-percent level. This variable measures the subjects' attitude whether people are helpful or just looking out for themselves. A one point increase in attitude towards the positive feature (i.e. helpful), would lead to an increased chance of belonging to the strong cooperators group. It seems that strong cooperators hold the opinion that the vast majority of people try to be helpful.

To sum up, there are some significant positive correlations between the amount invested and the *GSShelp* variable (see table 35). Further, the *GSShelp* variable does make a moderately significant contribution towards explaining whether a subject is a strong cooperator or not (small explained variance). However, stated trust in *GSStrust* and the variable *GSSfair* do not have a significant impact on investing and returning ($t=1$). Therefore, hypothesis *H4a* is supported, since we expected beforehand that trust attitude (pre-questionnaire) and trust behavior in the trust game negotiations are independent decisions (Gaechter et al, 2004).

5.4.2.2 The relationship between past pro-social behavior and outcome

What is the effect of self-reported pro-social behavior on investing, returning, and the outcome? To answer this question, we investigate the correlation between past self-reported social behavior and actual decisions.

H4b: Past pro-social behavior has a positive impact on the outcome of the trust game negotiations.

The pro-social behavior index is the weighed sum of the post-questionnaire variables "DonatingMoney", "DonatingBlood", "HelpingFriend", "HelpingStranger", "VoluntaryService", "SavingNature". Subjects have indicated their real life social activities in a

self-report on a four-point-Likert scale (0=Never, 1=Once, 2=Several times, 3=Regularly). This self-report is seen as a proxy for the subjects' pro-social behavior level (Cronbach α = .62); particularly tendencies to donate, help other people or protect nature are taken as evidence of social behavior. The mean value of this index is 1.44 (SD 0.46, N=179). For further analysis, we also use high and low scores of past pro-social behavior. This means that we take the whole continuum of the index, between the minimum (0) and the maximum (2.67), then we define the arithmetic midpoint (1.33) as a reference point and sort all data points below to the low score level and all points above to the high score level in order to measure stricter forms of low and high past pro-social behavior in the sample than with median split. According to this split, 59 subjects are classified as displaying low pro-social behavior and 120 subjects are found to show high pro-social behavior. Thus, as other researchers have already reported (e.g. Ellingson and Johannesson, 2004), we can confirm that people care about their self-image and tend to overestimate their behavior – a finding that also conforms to the well-known social desirability bias. This finding can also be seen in table 37, where the mean investing and returning is pooled with the respective low or high pro-social behavior level.

Table 37: Mean values of investment *i*, return *r*, and outcome π pooled by pro-social behavior level

Sender			t=1	t=2	p^a	Receiver	t=1	t=2	p^a
Pro-social behavior	**low**	*i*	*9.59*	*9.21*	*0.32*	*r*	*14.30*	*12.15*	*0.01*
		SD	1.32	2.21		SD	2.38	5.08	
		π	*14.86*	*14.07*	*0.10*	π	*14.68*	*17.52*	*0.01*
		SD	1.96	3.50		SD	6.59	4.98	
	high	*i*	*9.14*	*9.54*	*0.07*	*r*	*13.39*	*13.30*	*0.96*
		SD	2.39	1.91		SD	4.46	4.39	
		π	*14.22*	*13.09*	*0.02*	π	*13.86*	*14.46*	*0.17*
		SD	1.90	3.90		SD	3.25	4.15	
	p^b	*i*	0.63	0.27		*r*	0.51	0.08	
		π	0.29	0.42		π	0.70	0.00	

[a] Wilcoxon signed ranks test (non-parametric, dependent samples) between *t=1* and *t=2*
[b] Kruskal-Wallis-*H* test (non-parametric, independent samples)

It is remarkable that subjects with higher pro-social behavior scores make lower investments or returns (and also attain lower individual outcomes) than those with a lower pro-social behavior level in the face-to-face situation (*t=1*). However, the situation changes in *t=2*, when there is no face-to-face interaction. Here people with lower pro-social behavior scores make lower investments or returns (but attain higher outcomes) compared to those with a higher pro-social behavior level. This observation is highly significant (KW-test: *t=2*) on the receiver side, in particular for outcomes and returns. Moreover, it should be noted that there is a significant increase in investment and a significant decrease in outcome on the sender side amongst those with high pro-social behavior scores (Wilcoxon

test) between $t=1$ and $t=2$. In contrast, there is significant decrease in return and a significant increase in outcome on the receiver side among those with low pro-social behavior scores (Wilcoxon test). This indicates that people with a lower self-reported social behavior score reciprocate less and generate more individual outcome in $t=2$. It seems that self-reports tend to correspond to actual behavior when there is no social interaction.[46]

To test the hypothesis, we ran Spearman correlations between the pro-social behavior index and the senders'/receivers'/joint outcomes for the face-to-face and the email follow-up phase. No significant correlations of the variables *investing* ($r_S=-0.09$, $p<0.44$) and *returning* ($r_S=-0.06$, $p<0.96$) can be observed on the pro-social behavior index. However, the correlations indicate a very small negative relationship. Results concerning the outcome are displayed in the table 38. We find significant negative correlations between the pro-social behavior index and the receiver's outcome in $t=2$ and on the total outcome in $t=2$. If a receiver, or in general a subject in the email follow-up phase (when presented with the option of overriding), has a high pro-social behavior score, it has a negative impact on the respective outcome.

Table 38: Correlations pro-social past behavior with outcome

	Sender's outcome $t=1$	Sender's outcome $t=2$	Receiver's outcome $t=1$	Receiver's outcome $t=2$	Joint outcome $t=1$	Joint outcome $t=2$
Pro-social behavior	-0.15	-0.05	0.10	-0.24*	-0.03	-0.15*

*° p < 10 %. * p < 5%. ** p < 1%. *** p < 0.1%*

However, when we examine the association of past pro-social behavior and the likelihood of the subject being of the strong cooperation type, a Pearson Chi-square test fails for the face-to-face interaction ($\chi^2=0.02$, $p<0.90$) but is significant for the email follow-up phase ($\chi^2=4.36$, $p<0.04$). Thus, the hypothesis *H4b*, that past pro-social behavior has a positive impact on the outcome of the trust game negotiations is not supported.

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[46] Does it mean what subjects think about themselves and what they actually correspond as apples to oranges? Not necessarily, when people act socially without any interaction it may indicate that social-based actions are driven by themselves and not by the interaction.

6 DISCUSSION

"Is there one word which may serve as a rule of practice all one's life?" The Master said, "Is not reciprocity such a word?"

—Confucius,

The Analects, Book 15, Chapter 23.

While trust is an important component of human behavior, it differs for people with different social motivation: some are more social-minded and others more egoistically orientated. With this distinction in mind, we conducted a research aiming at disclosing the link between individual differences and trust behavior (and its outcomes). The basic method of our research is taken from experimental economics, but we altered some parts of experimental design to be closer to real world settings and to achieve higher external validity. In particular, in standard economic experiments, communication between subjects is not allowed. However, exchanges in real world settings occur in the context of social interactions, which require communication and consequently influence decisions and actions (List and Levitt, 2007; Andreoni and Rao, 2011). The role of communication is here the key question. On the one hand, the fact of having communication influences outcomes, but, on the other hand, the communication content also affects decisions and actions (Mohlin and Johannesson, 2008). Thus, we decided on an experiment that we call 'trust game negotiations', where face-to-face communication is unrestricted in order to obtain a research environment that is close to reality. Besides introducing face-to-face negotiation, we also added an overriding option for changing behavior between two phases. We combined a standard experimental approach with negotiation sciences by adding the composition of individual characteristics of social motivation, and such design allowed us to study the impact of individual differences meditated by communication on actual decisions and actions of trust, trustworthiness, and reciprocity. Borrowing from negotiation literature, we examined whether the bargaining behavior in the process (negotiation strategies) corresponds to or differs from the actual decisions and actions.

Our analysis led to a number of findings that contribute to theoretical knowledge in the trust, social preferences, and negotiation research.

To answer our research question, how do individual differences in social motivations influence trust behavior (outcome $t=1$) in the context of negotiations, as expected, face-to-face communication works for "signaling" trust and trustworthiness. It is interesting that in the presence of communication, individual differences in social motivations are adjusted to the interaction partner. Thus, subjects respond more systematically to others people's behavior (individual differences are not statistically significant). However, if there is an

option to override achieved agreements, more trust also means higher "vulnerability" (abuse of trust).

This addresses our research question, how do individual differences in social motivations influence trust behavior (outcome $t=2$) in the presence of an option to override the achieved agreement (outcome $t=1$). It is remarkable that our subjects have to a large extent a tendency to keep their words (87%). However, some subjects (13%) and also social-minded subjects make use of this overriding option. Overall, in overriding decisions, the individual differences become significant due to the behavior of egoistically-orientated receivers, which is in line with expectations. Some subjects use it also for improvement in trust behavior (higher investments and returns).

Finally, the impact of bargaining behavior (negotiation strategies) on the negotiation outcomes is investigated in a research question. Our findings show that spoken words examined by content analysis correspond also to actual decisions and actions. In particular, distributive information (refers to self-interest and task) has a negative influence, and integrative information (takes the other party into account) has a positive influence on the negotiation outcomes in the face-to-face phase ($t=1$). Thus, spoken words and actual actions are congruent.

In the following section we interpret our findings. These major findings are grouped concerning the effect of the face-to-face interaction (the fact of communication), the impact of the communication content (what was discussed), and/or the link between attitude and behavior. The interpretations should give a holistic view ("big picture"). The authors' opinion can be challenged but we believe that it could be the case. Furthermore we also mention limitations and implications that we have to face, and try to determine which areas are open for further research.

6.1 MAJOR FINDINGS AND INTERPRETATIONS

The trust game negotiations provided an experimental test of trust and trustworthiness. 97% of the subjects do not exhibit a behavior complying with the self-interest hypothesis. The majority of the participants shares evenly (89% in face-to-face and 84% in the email follow-up phase). Amongst others, altruism could be one reason why the vast majority of the subjects in the trust game negotiations cooperate strongly. Inequality aversion would be another reason, since people do not like to cooperate when others keep everything for themselves. Conditional cooperation is also quite likely: people cooperate if others cooperate as well. Fetchenhauer and Dunning (2009) believe that some percentage of senders and receivers act out of altruistic motives, as already mentioned, moral principles, guilt, or even because they misread the instructions. Senders' motives for positive investments ($i > 0$) or investment of the whole endowment ($i = 10$) could also be efficiency and the trust in reciprocity or risk seeking behavior besides altruism. The receiver's motives could mainly be reciprocity, inequality aversion, and altruism, when they return some ($r > 0$) or half of the augmented money ($r = 15$) to their senders. In comparison to other studies, Bowles and Gintis (2011) found that strong reciprocity is very common, since people in experiments sacrifice their own payoffs in order to cooperate with others. Moreover, Croson and Konow (2009) pointed out that equal splits (fairness) between sender and receiver can be seen as a measure of true social preferences.

6.1.1 THE EFFECT OF FACE-TO-FACE COMMUNICATION

The face-to-face interaction between sender and receiver activates the underlying norms of fairness and reciprocity (Frey and Bohnet, 1995). The initial endowment, which is in the case of the trust game negotiations only given to the sender, can be seen as a "gift" from the experimenter.[47] Apart from the game-theoretical predictions, the fairness and reciprocity norm should induce an equal division among the two parties (Frey and Bohnet, 1995). Thus, this means that the sender invests the whole endowment and/or the receiver passes half of the augmented money back to the sender. While norms are principles that stabilize social interactions and are learned through socialization and life experience (Ostrom, 2003), social preferences take into account the other party with regard to the allocation of outcomes, and decisions are influenced in such a way. A well-known common finding is that subjects exhibit significant social preferences, such as altruism, inequality aversion, and social welfare maximization (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000;

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[47] In the trust game negotiations, the receivers are not endowed because trust game results have shown: when senders and receivers have an endowment, then this situation leads to lower amounts sent by the senders (Johnson and Mislin, 2011).

Charness and Rabin 2002). Also, our research confirms that social preferences are important behavioral motivations.

Major finding and interpretation 1: Social preferences and norms are responsible for the achievement of fair and efficient outcomes.
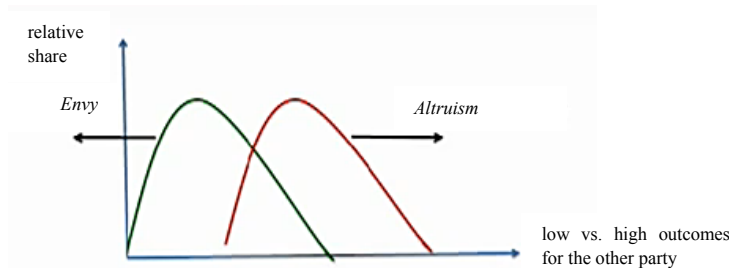
Figure 37: Exemplary distribution shift of outcomes due to social preferences

Social preferences and norms are two motives that influence cooperation. Social preferences, such as altruism, inequality aversion, and social welfare maximization, have the effect in a face-to-face interaction that people behave more cooperatively (Charness and Dufwenberg, 2006; Bicchieri et al, 2010; Servatka et al, 2011; Ben-Ner et al, 2011). Figure 37 gives an example of a distribution shift triggered by *altruism* to higher outcomes for the other party on the right hand side, whilst the *envy* properties of social preferences would move the distribution to lower outcomes for the other party on the left hand side (Tremewan, 2012). We can also confirm with the trust game negotiations that sender and receiver are affected by the social norms of fairness and reciprocity in this experimental interaction.

The social preferences are consistent: the correlations between the face-to-face ($t=1$) and email follow-up phase ($t=2$) offer proof for this consistency. Investments (Spearman correlation $r_S = 0.71$, $p<0.01$) and returns ($r_S = 0.55$, $p<0.01$) demonstrate that subjects behave similarly across the two phases of the trust game negotiations. The sender increases slightly on the average the investment between $t=1$ and the $t=2$, whereas some receivers take the chance of exploitation or abuse by returning less in the email follow-up phase.

Both roles are hence concerned with more than their own outcomes. To a high extent, subjects tried to be *fair*, entailing equal division of outcomes for sender and receiver, and *reciprocal*, entailing to return more, the more was invested (Johnson and Mislin, 2011). This is similar to other face-to-face bargaining experiments where communication is unrestricted, and as a result, the outcomes can be described Pareto-optimal, which is the situation in which the payoff of sender or receiver cannot be increased without reducing the payoff of the other party (Roth, 1995). Therefore, we come up at first with the interpretation of *conditional cooperators*, telling that the higher the sender's investment, the higher

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the receiver's return. Moreover, we also introduced the subject type of *strong cooperators*. These are senders who invest the whole endowment, and receivers who reciprocate and return half of the augmented money so that both parties have equal outcomes.

The economic lens can be very helpful in parsing strategic interactions within matched pairs. The mixed pair of SoSe-EgRe indicates the highest share of efficient (Pareto-optimal) exchanges in the face-to-face phase (*t=1*). This is also reflected in the self-reported satisfaction levels, since the sender demonstrates the highest result satisfaction, and the receiver is highly satisfied with the partner compared to the other matched pairs. However, the SoSe-EgRe dyad shows the lowest share of efficient exchanges under the presence of the overriding option (*t=2*). Thus, the social sender reduces significantly his/her risk of being exploited or abused and invests less in *t=2*. It may be possible that the "egoistic" receiver is punished for the lowest return on average in *t=1*. In any case, what we observe is that subjects, like in other experimental studies, adjust their decisions as they gain experience and learn about the interaction situation and the behavior of other subjects (Roth, 1995).

Homogenous social-minded subjects are not necessarily more likely strong cooperators than those with heterogeneous or mixed social motivation. The mixed pair of EgSe-SoRe is highly "attracted" by fair exchanges and has the highest concentration of equal outcome divisions in the face-to-face phase (*t=1*) and in the email follow-up phase (*t=2*). In contrast, the homogenous dyad, where a social-minded sender is paired with a social-minded receiver, has the lowest fair and efficient exchanges in *t=1*. However, in the SoSe-SoRe dyad the extent of efficiency is increased under the presence of the overriding option (*t=2*). Furthermore, the SoSe-SoRe matched pair is the only group, which is consistent with fair exchanges in *t=1* and *t=2*. Equal divisions are related to the notions of fairness. The idea about fairness and social preferences influences the outcomes of the strategic interaction.

Our results demonstrate, similarly as literature proposed (Ostrom and Walker, 1991; Ashraf et al, 2006; Brosig, 2006; Putterman, 2009), that communication can significantly enhance contribution and, therefore, increase efficiency. Both sender and receiver favor fair and efficient outcomes over unequal ones (Ben-Ner and Putterman, 2006). Further, as social preference literature predicts (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000), almost all subjects have a strong aversion to inequality and a preference for welfare maximization. Moreover, subjects show a high propensity to (positive) reciprocity. Thus, there is a strategic advantage to be generous and to behave cooperatively. As Novak and Sigmund (2005: pp. 1295-1296) claimed "…those who give often end up with the highest payoff, so that there is a strategic advantage to generosity ..." We make the observation that, similar to comparable experiments, there is a positive significant correlation between the numbers of gifts given and received (Spearman correlation $r_S = 0.30$, $p<0.01$) in the face-to-face phase of the trust game negotiations. Moreover, the correlation between the gifts given (93% of the endowment is invested) and the sender's outcome is positive and

relatively high (r_S = 0.80, $p<0.01$). The same is true for the receiver in the face-to-face condition (r_S = 0.30, $p<0.01$ with 49% repayment rate). It is interesting that in the email follow-up phase, which presents the unilateral option of overriding, the correlation between relative investment (94% of the endowment is invested) and outcome is positive but significantly smaller (r_S = 0.50, $p<0.01$). For the receivers, it now becomes a negative relationship (r_S = -0.41, $p<0.01$ with 46% repayment rate), which would mean it is better to give back less because otherwise the individual outcome would suffer. Therefore, there is a strategic advantage to be less vulnerable for exploitation in the email follow-up phase.

To sum up, the trust game negotiations research shows that social preferences as motives have an impact on actual decisions or behavior in the presence of communication. From a holistic perspective, face-to-face communication "activates" motives of social preferences, such as altruism, inequality aversion, and desire for social welfare maximization, and social norms, such as fairness and reciprocity.

Major finding and interpretation 2: Face-to-face communication increases subjects' shown trust and reciprocity and facilitates altruism through empathy.

Communication is provided as a "costless" institution (Ostrom and Walker, 1991). The unrestricted face-to-face communication, in particular, plays an important role in the trust game negotiations. The main reason is that the more communication channels, like tone of voice, body language, and facial expressions are available, the easier it is to assess the other party (Kagel and Roth, 1995). The challenge is to "read" and interpret the counterpart's intention correctly (Eckel and Wilson, 2003; Wilson and Eckel, 2006). In any case, the face-to-face interactions produce social pressure, and subsequently, exchanges are more efficient (Roth, 1995). While in anonymous 'trust games' (Berg et al, 1995; Johnson and Mislin, 2011), usually 50% of the endowment is invested and 33% of the monetary units received are returned, in the trust game negotiation there is a shift from 50% to 93% concerning the investment as well as a shift from 33% to 49% regarding the returning in *t=1*.

The finding that communication increases trust and trustworthiness is not new. For instance, Ben-Ner and Putterman (2006) present by introducing pre-play communication in 'trust games' that more trust leads to higher outcomes. The results of Lev-On et al (2010) show that the amounts sent were significantly higher in the unrestricted communication condition than in the restricted communication condition. They also found out that trust and reciprocity levels are higher in dyads communication conditions than in a group communication condition (three and more group members). Deciding on not to trust or reciprocate other subjects would also involve emotions like feeling a touch of guilt or shame. Therefore, besides fairness and reciprocity considerations, the decision to show and honor trust is also based on emotional reactions.

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Andreoni and Rao (2011) make the comprehensible claim that communication facilitates altruism through feelings of empathy. Therefore, the face-to-face communication in the trust game negotiations allows the development of shared feelings aside from shared norms. The findings of Andreoni and Rao (2011) regarding communication where it greatly influences the level of altruistic behavior can be confirmed, since the senders invest roughly 85% more of their endowment than in traditional 'trust games'. This is in line with the results of Mohlin and Johannesson (2008) who showed in a dictator game that just verbal communication increases the donations by 70%. The advantage of face-to-face communication and an explanation may be that one person identifies more comprehensively with the other party's position, which can be called empathy. This identification effect, entailing to put oneself in the other's shoes, is quite obvious in the homogenous student population, even though more than 90% of the subjects were strangers toward each other. In general, empathy makes connects us to other people, hence the generosity towards others, even strangers, is increased (Batson, 1987; Batson et al, 1988; Leider et al, 2009). Further, Andreoni and Rao (2011) made the interpretation that the existence of communication from the second mover (receiver) to the first mover (sender) in a dictator game increases the allocator's empathy with the interaction partner. Since the receiver does not have an endowment compared to the sender in the trust game negotiations, communication is the only way of the receiver to draw attention to his/her situation.

Major finding and interpretation 3: Subjects show more cooperative behavior than expected.

87.8% of the subjects can be seen as strong cooperators in face-to-face interaction, and in the email follow-up phase, the extent of strong cooperators is slightly reduced to 84.4%. It is interesting that the share of strong cooperators is almost stable between both phases. To test the perception question, 71.1% of the subjects are perceived as more or less social orientated (post-questionnaire), whereas 67% were classified and sorted as "pro-social" (pre-questionnaire). If we recall, pro-sociality means maximizing the joint outcome and/or minimizing the difference between the outcomes (Murphy et al, 2011). This described behavior we can definitely find in our results. Moreover, the strong cooperator type is more likely in the homogenous pair of SoSe-SoSe than the mixed matched pairs EgSe-SoRe and SoSe-EgRe.

Behavioral and experimental economics have identified factors which influence cooperation or mutual decision-making (Fischbacher et al, 2001; Fehr and Gaechter, 2002; Nowak and Sigmund, 2005). We know that there is a tendency that individuals cooperate when others cooperate, which can be described as conditional cooperation (Fischbacher et al, 2001). The strong cooperator type is derived from the observed behavior, when senders invest ten and receivers return 15 monetary units. According to Ben-Ner et al (2011) there exist 68.3% of strong cooperators in the case of 'trust games' with pre-play communication via chat. In their case, both sender and receiver are endowed with ten monetary units,

and the strong cooperator is defined when senders send ten and receivers return 2/3 of the augmented amount, since this leads to the most equal division of the outcome. Thus, the high extent of strong cooperators is the result of face-to-face interaction and the unrestricted communication compared to traditional anonymous 'trust games'. This verbal and non-verbal communication allows for detecting "signals" of trust and trustworthiness in the counterpart.

It is remarkable that also classified egoistically-oriented subjects behave cooperatively. Due to the higher percentage of strong cooperators as expected, also their behavior is triggered by cooperation motives or fairness norms (Frey and Bohnet, 1995). "Egoistic" subjects deviated from their dominant strategy, since they detected the opportunity of a win-win situation. During the negotiation process, the classified "egoistic" motivations are transformed into cooperative behavior. Therefore, individual differences are adapted and/or eliminated due to face-to-face interaction. Explanations are that subjects realized the chance of reaching a better position for themselves (this holds for senders) or they were convinced by their counterparts and subsequently overcame their own nature. Moreover, the homogeneous business student population understands easily the task of investing and returning. The perception of the other party's social motivation could also be explained by the friendly and kind social interaction among the student population, although they did not know each other before (except in some isolated cases). The subject's perception of the counterpart's social motivation (post-questionnaire) with 71.1% as "pro-social" is slightly higher, but close to the extent of the 67% of the classification and sorting decision in *stage 1* of the research process with the pre-questionnaire. Subjects perceive the partner's social motivation correctly, and "egoistic" subjects seem to surpass themselves in the social interaction.

In answering the question whether social motivation supports or suppresses the behavior, we could argue that in our experiment the choice of alternative cooperation is dominant over the alternative defection. This fact is reasonable, since we allow for the opportunity of coordination via face-to-face communication, which is different to the huge amount of research in anonymous social dilemmas, such as the well-known prisoner's dilemma. In anonymous settings, as game theory predicts, the dominant strategy is to behave according to the principles of self-interest (Nash, 1950). However, cooperation or fairness norms cannot be induced due to the existing social distance, which matters (Leider et al, 2010; Leider et al, 2009). Face-to-face communication helps to understand and/or to learn about the other party's attitudes or social motivation, and this leads to coordination.

The question arises if the strong cooperator type also emerges in a different population. To answer this question, we conducted experiments with children. However, we adapted the trust game negotiations since we did not check the children's individual differences in social motivations. Literature in social psychology and experimental economics claims that children behave more egoistically than adults. It is assumed that the degree of pro-sociality increases with age (Sutter and Kocher, 2007; Sutter et al, 2011).

We performed the 'trust game' experiment with face-to-face interaction within public lectures for children aged between seven and twelve years at the University of Vienna. We adapted the experiment the following way: children in the role of the sender got two chocolate coins and they were able to hand over zero, one or two coins to their receiver; the positive hand-over of chocolate coins was tripled by the experimenter, and children in the role of receiver were able the return some of the augmented chocolate coins to their sender. This arrangement was also conducted with unrestricted face-to-face communication. The results for the sample of 78 children are presented in Figure 38. Interestingly, we find in general similar results as for the students' sample, although the two samples are difficult to compare. The student population was endowed with ten monetary units, whereas the children population got two chocolate coins. Therefore, differences are also given in the augmentation and distribution process. The results are in line with the literature stating that children are less cooperative (Sutter and Kocher, 2007; Sutter et al, 2011). However everybody invested and/or returned something. The subjects of children preferred fair distributions, since the majority of the senders (69.2%) decided to give *one* of the chocolate coins, which were also tripled: on the receiver side, the majority (56.4%) passed the half in terms of *one* chocolate coin as return. To sum up, we see in the children's sample fair outcomes but not efficient exchanges, which we call strong cooperator type, as in the students' sample of the trust game negotiations.
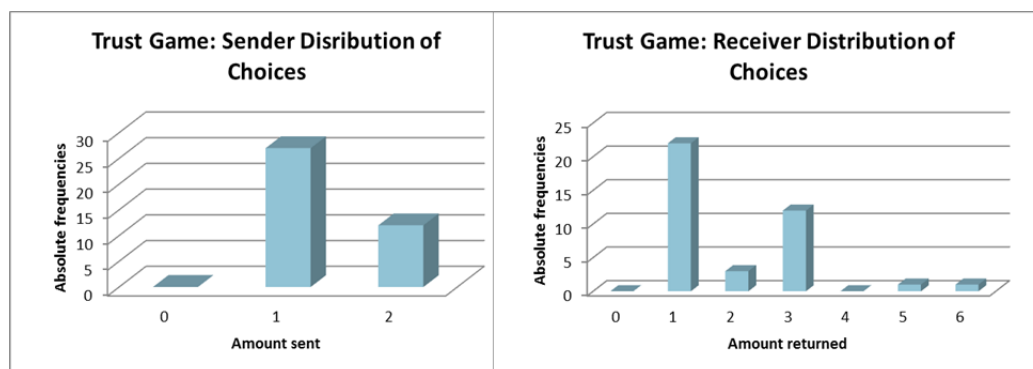
Figure 38: Children trust game (N=78)

Major finding and interpretation 4: In face-to-face negotiations the senders are better off and hence more satisfied in contrast to traditional 'trust games' where the receivers are better off.

Usually, receivers are better off in 'trust games' (Kugler et al, 2007) but not in trust game negotiations. This means that in the face-to-face phase, the sender's outcome (π=14.4) is on average slightly higher than the receiver's outcome (π=14.2). However, it changes in the follow-up email phase, as an exploitation of trust can happen because now the receiver (π=15.5) is definitely better off than the sender (π=13.4). The situation of phase t=2 is comparable to other 'trust games'. To recall our findings, we make the observation that

the 88% of the senders invest their whole endowment in phase $t=1$, and it increases slightly to 91% in phase $t=2$. The opposite happens on the receiver side, since the share falls from 83% in the face-to-face phase to 75% in the email follow-up phase of the receiver, who returns 15 when ten monetary units were sent. Concerning dyads, we realize that the matched pair EgSe-SoRe is best off concerning the joint outcome during the face-to-face interaction.

It seems beneficial on average to be the first mover in the trust game negotiations. In any case, the first mover received the endowment of ten monetary units, whilst the second mover depended on the partner's generosity. The senders take a risk of being exploited (abuse of trust) but the receivers face no risks, except for receiving nothing of the sender's endowment, which is basically a gift by the experimenter. The senders seem to be honored with the receiver's trustworthiness because he/she is the first one who takes the risk of showing trust. In most of the cases, the sender is very generous and gives the whole endowment out of his/her hands. The trustworthy receiver tends to reciprocate this kindness in order to answer the high trust level of the sender, but not in all cases symmetrically. Thus, there are few cases where trust is exploited, when the receiver takes more money out for him/herself of the augmented investment. Ben-Ner et al (2011) have reported in their findings that receivers have on average a higher outcome than senders because some of them are untrustworthy. We find such patterns above all in the email follow-up phase, which we called *temptation* in the classification of changing behavior (see section 5.2.2.2). On the dyad level, the composition of "egoistic" sender paired with "pro-social" receiver seems to be perfect because they collaborate successfully in order to achieve the highest joint outcome.

Based on the face-to-face interaction, senders are better off in phase $t=1$, the sender is subsequently also more satisfied than the receiver. The evidence of a somewhat higher outcome in $t=1$ corresponds obviously to the higher satisfaction level which also confirms our hypothesis *H1c*. Higher individual outcome corresponds to higher satisfaction on average. It is interesting that on the dyad level, the homogenous pair of SoSe-SoRe is not more satisfied than the mixed pairs. This fact has an impact, since just one's own satisfaction influences behavior change in $t=2$. Since the EgSe-SoRe dyad got on average the highest outcome, this matched pair is also highly satisfied. While its sender shows the highest satisfaction level with the partner, its receiver is highly satisfied with the result. According to this fact, the senders seem to be happy with the fact that their trust was not exploited and the receivers seem to appreciate the creation of wealth by investing the whole endowment. The mixed dyad EgSe-SoRe is very satisfied in the face-to-face phase, and hence this satisfaction influences the behavior an also the high outcome in the email follow-up phase. We can conclude that there is a consistency between the satisfaction level and the observable outcomes or actual decisions.

Major finding and interpretation 5: Keeping promises strongly dominates breaking promises.

Individuals in trust game negotiations tend to keep commitments and promises. The promises or settled agreements in the face-to-face interaction are kept in 87% of the cases; even when subjects unilaterally have the chance to bring themselves in a better position by maximizing their individual payoff. Therefore, the shown generosity is almost stable for the sender, although the chance of breaking the settled agreement was presented to them in the email follow-up phase. Subjects who deviated unilaterally communicated only with the experimenter via email and not with the interaction partner. In case of a deviation, the experimenter informed the interaction partner about the changed agreement and its payoff consequences. However, only one sender has withdrawn his/her investment in *t=2*, whereas the other sender who changed the binding agreement of the face-to-face interaction improved their investment compared to *t=1*. The first pattern, we call *exposure*, since the sender changed his mind and did not show trust anymore. It represents a mistrust (expectations about others' behavior decrease or become negative), entailing the success of "egoistic" motivation or the respective social orientation. The second one, the *improvement* pattern, happens in 43.5% of the changing behavior cases. This would mean that the sender placed considerably more trust in his/her receiver.

On the receiver side, 80% do not change their behavior due to the given opportunity between the face-to-face and the email follow-up phase. In 52.2% of the cases where we observe a behavior change between *t=1* and *t=2*, we have again a breach of trust. This *temptation* pattern would mean that the receiver exploits the sender's shown trust and retains the whole augmented investment for him-/herself. Thus, only 20% were tempted by the overriding option to break the agreement unilaterally. Pro-social subjects were expected to have a low probability of exploiting trust (breach of trust). Interestingly, they also broke settled agreements in smaller numbers than "egoistic" individuals. On the dyad level, the homogenous pair SoSe-SoRe is less likely to use the option of overriding than the mixed groups. Some subjects act self-interestedly, since they maximize their outcome due to missing interaction. The observed "egoistic" 20% are comparable to the results of other studies. De Paulo et al (1996) claimed in their social psychological study that people on average lie in 20% to 31% of their social interactions. Fischbacher and Heusi (2008) confirmed this result in their experimental study, where up to 22% of the subjects showed lies. They found subjects who lied but who did not maximize their outcome by doing so.

In many cases, subjects provided arguments why they did use the overriding option, even though they were not explicitly requested to do so. In the follow-up email phase, when subjects kept commitments, they often wrote statements to the experimenter as explanation, such as "As good as my word" or "An agreement is an agreement". Thus, the main reason for keeping promises depends on the subject's positive self-image. The desire for consistency in the behavior is very important (Bénabou and Tirole, 2002; Ellingsen and Johannesson, 2004) and hence sender and receiver want to see themselves in a positive light. Moreover, there is also the desire that others perceive them in a positive light, which

allows reaping reputational benefits. Therefore, consistency in behavior also affects reputation. For reputation building, it makes sense to be perceived pro-social and generous by others, since it also influences future interactions.

As already described, face-to-face communication works for assessing the other party whether it is strategic or beneficial to behave in a generous way. Furthermore, the communication effect also lasts in 90% of the cases in phase *t=2*. As an idiom says "A bargain's a bargain": the communication influences the binding agreement, since the partners build up a kind of relationship. Although the majority did not know each other before the experiment, among the students' sample relationship building can occur easily. Above all, future interactions cannot be excluded. Moreover, subjects seem to be aware that the act of giving trust to someone else is easy, but maintaining a trusting relationship with someone is very hard to do, in particular when the partner's trust is broken.

To sum up, subjects prefer keeping commitments and promises to breaking settled agreements, even when they have the chance to improve their individual outcome. Exploitation of trust may make one better off in the short run. Surprisingly trust is also exploited by subjects, who were classified "pro-social" with the social orientation measurements. Subsequently, this decision for a small number leads to higher outcomes. In general, a breach of trust, with 13% of the cases, was relatively rare considering trust game negotiations. Subjects might have thought that it would obviously be disadvantageous in the long run. If we focus on the "big picture", we may argue that face-to-face communication increases the social pressure to do the right thing, which seems to be the pressure not to violate trust placed in oneself (social closeness). The role of face-to-face communication cannot be denied because we observe the coordination of agreements which are both efficient and fair, and higher satisfaction levels with the partner and the outcome are achieved.

6.1.2 THE IMPACT OF COMMUNICATION CONTENT

From the previous section, we gather the information that face-to-face communication or "the gift of gab" is helpful in coordinating the conflict of interests in the trust game negotiations. In an exploratory analysis, we also focused exclusively on the communication content asking the question which negotiation strategies do increase payoffs. The main objective was to indicate that "talk is not cheap", since words affect behaviors. Therefore, we focus on the bargaining behavior and the impact on the negotiation outcome by demonstrating that spoken words and actual decisions are congruent (Mayer et al, 1995). Negotiation research (e.g. Srnka and Koeszegi, 2007) has provided evidence that communication content has an impact on the negotiation success. Besides substantive communication content, such as the exchange of offers and suggestions, also private information is exchanged which helps the relationship building with the partner (Koeszegi and

Vetschera, 2010). Subsequently, private information leads to messages which indicate empathy with the partner.

Ben-Ner et al (2011) have noted explicitly that there is a need to analyze what people say in order to understand what they do. We decided to close the gap with the extensive and elaborate method of content analysis. The whole process is documented accurately by Boudova and Kuntner (2012). This approach is time-consuming and has actually shown that "words speak louder than money" (Servatka et al, 2011). Thus, subjects "put their money where their mouth is", entailing that they actually do what they say. Ultimately, the consistent congruent behavior seems to have positive effects. In particular, our results have shown that the content of communication has an effect on one's own and on the other party's outcome.[48]

From the content analysis we have the insight, among other things, that strong cooperators use more integrative than distributive negotiation strategies in the process (value creating> value claiming) and they are convinced to behave in a pro-social manner. Distributive negotiation strategies have a negative impact on the partner's satisfaction, since statements referring to self-interest "destroy" individual payoff. We found in the communication process that receivers refer slightly more to self-interest and use more distributive information strategies than senders. A possible explanation would be that the receiver wants to convince the sender to invest more monetary units in order to maximize social welfare. Hence, the sender shows empathy towards the receiver, and suggestions of social welfare maximization come into play so that the outcome is equally distributed as a result. It is interesting and unexpected that the homogenous SoSe-SoRe dyad does not employ significantly more integrative negotiation strategies. An explanation given by Weingart et al (2007) is that cooperative negotiators employ distributive and integrative strategies intentionally and strategically to counterbalance the dominant strategy in a negotiation group.

Major finding and interpretation 6: Content analysis demonstrates highly substantive and task-orientated communication content.

Our content analysis results have shown that the content of communication is highly "not cheap", which constitutes fundamental negotiation behavior such as offers and suggestions how to allocate wealth, created in the trust game negotiations. Furthermore, we also have to a high extent task-orientated communication which promotes or facilitates problem solving. A lot of subjects used the subcategory *joint processing* which can be assigned to tactical negotiation behavior, since it is designed to influence the expectation and actions of the opponent. In particular, we understand under *joint processing* the pursuing of a

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[48] Since communication, communication content (bargaining behavior) and actions taken in the experimental phases are congruent; the authenticity can be seen as the key of perceived trustworthiness.

common idea between sender and receiver, such as the calculating of intermediate payoffs for both of the partners. We observe persuasive negotiation behavior, which supports the claims a negotiator makes, in the categories of *refers to power* and *refers to equality*. The latter category is employed as a supportive argument for improving payoffs on the integrative side, whereas the first one is a supportive argument on the distributive side which indicates pressure, power, or expert knowledge. It seems that the quality of the trust game negotiations is expressed in the communication content.

The coordination focus and the objective of problem solving could be reasons why subjects used mainly substantive and task-orientated communication in a face-to-face interaction. Through the process of communication, it is easier to explain the single positions and to bargain a common solution which satisfies both partners. Thus, subjects used substantive negotiation subcategories, such as making offers/suggestions and/or agreeing/disagreeing to offers/suggestions, in order to achieve a win-win situation. Moreover, substantive negotiation behavior means both integrative and distributive negotiation strategies; i.e. there could be ultimately both fair and unfair offers and suggestions. Our strong cooperator type hence uses more integrative negotiation strategies. However, it is unexpected that on the dyad level, the homogenous pair SoSe-SoRe does not employ more integrative but more distributive negotiation strategies. This fact implies that our hypothesis *H3a* is not confirmed in this context.

What we know is that procedural communication facilitates the interaction process. The high share for the process management subcategory *neutral fragment* (21%) is comparable with other studies (e.g. Nastase et al, 2007). While the use of neutral fillers or unfinished sentences is comprehensible, the use of relationship building or emotions statements is quite low. It seems that affective behavior, which is linked to expressions of feelings about the content, the opponent, or the bargaining situation, occurs in rare cases. Private communication is not directly related to the negotiation itself and happens often after signing the contract of the face-to-face phase in *t=1*. This kind of private communication about personal origin and study progress was not included in the transcription when it happened after the agreement was reached.

The content analysis results have shown that the subjects in the trust game negotiations used more *integrative action* (18%) than *distributive action* (5%) strategies, while in terms of information function, the difference is smaller (distributive: 29% vs. integrative: 21%). By referring to the dual concern model (Pruitt and Rabin, 1986) we can confirm that the vast majority of participants preferred a problem-solving solution. This constellation is characterized by high concern for oneself and high concern for the other party. The predominant collaboration or win-win solution is also confirmed in the actual decisions, since we have a high share of equitable outcomes for both sender and receiver with 15 monetary units each. The main expectation is that pro-social negotiators employ more integrative strategies than egoistic ones (De Dreu et al, 2000), but as Pruitt and Kim (2004) mentioned, the negotiators in the problem-solving constellation can be both self-interested and cooperative. In the content analysis, we detected also a remarkable usage of distributive

strategies. These strategies were more frequently applied during the negotiation process, which we conclude from the higher number of mentions for the information category (29%). However, we observe in terms of *distributive action* that a minority decided on a contending solution of the dual concern model. This constellation would mean competition or a win-lose solution which is characterized by high concern for oneself and low concern for the other party. Regarding the outcome, we have some inequitable payoffs for negotiation dyads also in the face-to-face phase. Moreover, there are just a few inaction and yielding solutions of the dual concern model (Pruitt and Rabin, 1986). In total, the participants used slightly more integrative than distributive negotiation strategies during the 'trust game' bargaining process.

Major finding and interpretation 7: Content analysis demonstrates reciprocity in words in the same way as actual decisions.

We saw in the results the dependence of shown and honored trust which increased the cooperation and reciprocity not only among strong cooperators. The content analysis results demonstrate that negotiation strategies among the subjects are contagious. Our hypotheses *H3b* and *H3c* are partially supported, in that integrative strategies have a positive impact on outcome and individual decisions, whereas distributive strategies a negative impact. Therefore, the negotiation partners assimilate themselves in the use of the negotiation strategies. Thus, the vast majority recognized to achieve better payoffs by employing integrative rather than distributive negotiation strategies. Maybe also the restricted time of discussion influenced the choice of strategies, as Rand et al (2012) demonstrated that subjects tend to behave more cooperatively under pressure and more selfish when more time is provided in the decision-making situation.

In any case, the concept of reciprocity assumes that usually, kindness is rewarded with kindness, and unkindness is punished (Falk and Fischbacher, 2006). Novak (2005) distinguishes between direct and indirect reciprocity, and subjects seem to be aware of these forms. We may observe both forms in the trust game negotiations. First, direct shown trust is honored with the indicator for trustworthiness in order to remove existing inequality or balance the received generosity. The social pressure is quite high to achieve balance in words and actual decisions due to face-to-face interaction. Second, indirect reciprocity is connected to reputation. An unfair act could have the negative effect that this information is presented to other people in the community. In case of the student population, negative information about a person can spread very fast, since identities are known through filling out the decision sheet together in the face-to-face phase. Since people often care about reputation building, they care about their actual decisions for future interactions with the same partner or others.

Moreover, we saw the correlation among the diagonal of the main categories in the content analysis. It is contagious, for instance, if one negotiator starts with *value creating*, in

such a way that the other one also jumps onto the moving train. It is remarkable that those same or similar negotiation strategies are used or that we can observe a kind of alignment in the argumentation of the negotiators in order to reach a win-win-situation.

Major finding and interpretation 8: Distributive negotiation strategies affect the sender's and receiver's payoff.

We have the finding that distributive negotiation strategies – both information and action dimension – have a negative impact on partners' satisfaction. Furthermore, distributive negotiation strategies are stronger than integrative ones regarding consequences. In particular the *distributive information* category "destroys" and has a negative influence on the sender's and receiver's outcome. However, *integrative action* or value creation mentioned by the receiver influences the senders' decision to invest.

An explanation for the strong effect of distributive negotiation strategies is, as already mentioned, the negativity bias (Rozin and Royzman, 2001). It works like this: If someone *makes unfair offers*, *refers to power* as a supportive argument, or *makes negative comments* or other distributive negotiation strategies during face-to-face communications of the trust game negotiations, this affect the individual outcome, and consequently the partner's satisfaction level is distorted and decreases.

To sum up, we made the observation that those integrative negotiation strategies, like value creating, increase trust and reciprocity in face-to-face communication with respect to better individual and joint outcomes. Another displayed effect is that distributive strategies would harm the satisfaction with the interaction partner. Distributive statements have a stronger effect than integrative ones, meaning that perceived negativity in the interaction process would lead to more dominant consequences than positive perceptions. In general, the matched pairs do not use different negotiation strategies, but it was unexpected that the SoSe-SoRe dyad employed more distributive negotiation strategies compared to the other groups. Finally, we have seen that it is an advantage to analyze what people say in order to understand what they do. The content of messages lead to the promised actual decisions, which is also maintained in the email follow-up phase in *t=2*.

6.1.3 THE LINK BETWEEN ATTITUDE AND BEHAVIOR

Trust attitudes and trust behavior are independent decisions according to Gaechter et al (2004). Subjects face a hypothetical situation when trust attitudes or the propensity to trust are measured in questionnaires in contrast to decisions in experiments that affect the individual payoffs. Other possible reasons for the difference between attitudes and behavior are that they are measured to different points in time, and the instruments also differ on

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how and what they measure. In the pre-questionnaire of the trust game negotiations, subjects first filled out, amongst others, items for trust attitudes or the propensity to trust, the so-called *GSS* variables (Glaser et al, 2000). They indicated in the questionnaire before the experiment, for instance, whether the majority of people can be trusted or not. In the post-questionnaire, subjects also described in closed and open questions their past social behavior (Bierhoff, 2001; Naquin and Paulson, 2003). Since participants reported in form of self-reports, social desirability bias cannot be excluded. Furthermore, in the trust game negotiations, the decisions for investing or returning were measured as an indicator for trust and trustworthiness. Besides the outcome, the whole bargaining process was observed by recording the words and promises exchanged.

Coming back to the link between attitude and behavior, the psychological concept of *attitude* is comparable with the economic concept of *preferences* but not with the actual decisions in an experimental setting (Antonides, 1991). The sequence from interests via preferences to behavior is certainly easier and comprehensible for individual decisions without any social interaction. However, to take the position, interests, and preferences of a partner into account, the existing interdependence influences also one's own behavior and their respective decisions. In literature, Ajzen and Fishbein (1977), for instance, examined the attitude-behavior relationship in a meta-analysis. They identified four elements that should be employed in the measurement for both attitudes and behavior. These elements are "… the *action*, the *target* at which the action is directed, the *context* in which the action is performed, and the *time* at which it is performed" (Ajzen and Fishbein, 1977: p. 889). The major finding is that high correspondence should be ensured, at least, between target and action of the attitude, and behavior measured in order to predict the behavior with attitudes. However, the attitude is only one factor determining behavior, and borders between attitudes and behavioral intentions are blurred (Antonides, 1991).

Major finding and interpretation 9: Individual differences in social motivations are aligned with the interaction partner.

Fetchenhauer and Dunning (2009) compared the actual versus the predicted rate of trust as well as the predicted versus the actual rates of trustworthiness in a 'trust game' with the level of risk tolerance participants indicated in a lottery. They demonstrated in their fascinating studies that people show too little and too much trust at the same time. On the one hand, participants expressed too little trust on the cognitive level by underestimating the percentage of people who would honor trust placed in them (trustworthiness). On the other hand, they expressed too much trust on the behavioral level by overestimating the fact that people would not pocket money, which was handed over to a stranger. In the trust game negotiations, we are able to compare, on the one hand, the attitude or propensity to trust with the actual behavior in the trust game negotiations. We found that subjects show on average little attitudinal trust (pre-questionnaire) but a high extent of behavioral trust (experimental settings).

We also consider the link between individual differences in social motivations and actual decisions. Here, one would, in general, expect, depending on the role (either sender or receiver), that the more social motivation is identified (according to the social preferences and social value orientation instrument), the more trust or trustworthiness should be displayed in the trust game negotiations. However, the relationship between individual differences and actual decisions is not unequivocally identified. Since the results are not statistically significant, the research question is not answered. Individual differences in social motivations are adapted according to the interaction partner, if face-to-face communication is in place. Again, we have a contrast between two different points in time and how what was measured. The individual differences in social motivations were measured in the pre-questionnaire, while afterwards we have the actual decisions in the experimental settings.

Individual differences in social motivations do not matter in the face-to-face phase ($t=1$) but in the email follow-up phase ($t=2$), where it mainly depends on the receiver side. By looking at the relationship of individual differences within matched pairs and actual decisions, we have the only significant result that the receivers of the mixed SoSe-EgRe dyad give back less on average in $t=2$ than in $t=1$. For the "egoistic" receiver it is more likely to use the presented option of overriding because the return is reduced on average, entailing that the indicator for trustworthiness is decreased. It also means that reciprocity suffers when the overriding option is provided, although this option is not employed by a large number of subjects. The consequences are that the measured social motivations for the "egoistic" receiver appear in the email follow-up phase, where social interaction does not exist. In the case of the SoSe-EgRe negotiation dyad, we can imply that the social motivation produced the expected behavior in $t=2$. We observe a reduction of return but an increase in receiver's payoff compared to the face-to-face phase. This shift in the actual decision between the phases is, however, the only significant change in trust behavior. In any case, the face-to-face interaction seems to play an important role. The negotiation process, in general, is responsible for people adapting or aligning their motivation to each other for achieving a win-win situation (Weingart et al, 2004). Therefore, negotiations are seen as dynamic processes in which negotiators change their strategies in response to each other.

By considering the content analysis and the link between matched pairs and observed behavior regarding negotiation strategies, the different use of content analysis categories is unexpected. In particular, the homogenous dyad SoSe-SoRe employs more distributive strategies than the mixed negotiation dyads. A pro-social sender coupled with a pro-social receiver group mentions more task-related comments or neutral fragments. This is comprehensible, since social-minded subjects are more cautious (Eisenberg et al, 1996) and therefore refer back to the instrumental instructions, or they are interrupted by the other party and cannot finish sentences. What is surprising is that in our sample, the likelihood for the usage of *unfair offers* and *signaling distrust* or *showing no trustworthiness* is significantly higher for subjects of the SoSe-SoRe than for the mixed matched pairs. If some-

one makes a self-interested offer, the other party would perceive it as an act of distrust. Why unfair offers and shown distrust concerning negotiation strategies more often occur in the homogenous social-minded pair is subject to speculation. One reason could be that in the pro-social sender and receiver dyad, the positions or preferences are neither communicated nor clearly perceptible. Thus, the assessment of the other party seems more difficult than for the mixed matched pairs.

Major finding and interpretation 10: Attitude measures and experimental behavior are indeed two different pairs of shoes.

In general, it would be expected that people tend to act more in a socially desirable way when considering a hypothetical situation than when they face a real decision (e.g. Epley and Dunning, 2000). Thus, people's propensity to trust measured in a questionnaire should be higher than the trust measured in the actual decisions of the trust game negotiations, since the attitude could be socially desirable compared to the trust decisions in the experiment which usually have real monetary consequences in contrast to questionnaire items. However, the trust items of the U.S. General Social Survey (*GSS*) questionnaire showed a relatively pessimistic view of the 180 subjects in the data sample, whereas the vast majority of the subjects in the trust game negotiations placed and honored trust to a really great extent. It is different in the case of past pro-social behavior, where the vast majority of the subjects indicated to help friends regularly or lend them money and possessions frequently. In particular when answering the open questions, subjects described their past pro-social behavior in a socially desirable way. Interestingly, we could not support the hypothesis that past pro-social behavior has a positive impact on the outcome of the trust game negotiations. Self-images and actual decisions appeared not to correspond. With this in mind, our findings for trust attitude and past pro-social behavior compared with the actual decisions in the experiment are in accordance with the expectation of Eply and Dunning (2000). Also, Gaechter et al (2004) conclude that trust attitudes do not affect decisions in the 'trust game'. To sum up, the fact that responses to questionnaire questions often do not mirror what people choose when they make actual decisions with real consequences, are reported quite often. What subjects think about themselves in hypothetical situations and what they actually do when they face real decisions, are as apples are to oranges.

With this in mind, we can summarize our major findings of the trust game negotiations. First of all, face-to-face communication influences the adherence to settled agreements, since 87% of the participants kept their promises and commitments despite of the unilateral option of overriding the agreements and potential improvements for their own payoff. However, we found that social minded subjects (SoSe-SoRe) also made use of this overriding option for their actual decisions, and that social minded subjects do not employ more integrative negotiation strategies in the observed bargaining process. Finally, our

results show effects of communication content, because to a high extent, the spoken words are congruent with the actions taken. Although pro-socially minded subjects did not mention a statistically significant higher number of 'equality' arguments and egoistic subjects did not mention more 'power' arguments, we demonstrate the negative effect of distributive negotiation strategies on the subjects' payoffs.

6.2 LIMITATIONS

In general, it seems to be a problem to generalize the observed behavior of a phenomenon in the experimental setting to the wider real world. The main reason mentioned by Roth (1995) is that the environments explored in an experiment are usually simpler, while face-to-face bargaining, for instance, in real world settings takes always place in more complex environments. Consequently, it may happen that some aspects of the phenomenon appear important in the experimental setting, but these aspects are diminished in naturally occurring negotiations. Furthermore, aspects of the phenomenon that have no opportunity to emerge in the experimental setting may have much more importance in the real world. Thus, the basic limitation, which is also mentioned here, is the external validity, whether we can generalize our inferences from the experiment to the wider world or not. However, a lower external validity can be compensated with a higher internal validity, whether the data permits causal inferences or not. Internal validity can be influenced by the experimenter and is a matter of proper experimental controls, experimental design, and data analysis. Moreover, laboratory experiments are no substitute for the conduct and the analysis of field experiments or for questionnaire data (Friedman and Cassar, 2004). Therefore, we also preferred a combination of empirical methods in the trust game negotiations research but also mention to consider potential limitations.

Does the stake size matter in the 'trust game'? A further reason for skepticism about the generalizability has to do with the scale of incentives or rewards that are feasible to offer to the subjects for participation. The stakes in the trust game negotiations are relatively low with an endowment of ten euro and an average payoff of roughly 14 euro (five euro show-up fee was only paid if sender invested nothing or receiver returned nothing in the email follow-up phase). For Fehr and Schmidt (2001), it is possible that extremely high stakes may cause a shift towards more selfish behavior. Possibly, subjects would exploit trust and change their behavior when stakes are higher. Johnson and Mislin (2011) did not find that stakes influence the trust behavior in their meta-analysis of 161 'trust games' performed all over the world. In general, no empirical findings demonstrate that stake size matters, entailing that cooperative behavior is practically invariant to the stake size (Hofman et al, 1996; Munier and Zaharia, 2003; Kocher et al, 2008). However, the number of 'trust games' with higher stakes than ten monetary units is limited. Johansson-Stenman et al (2008) and (2011) give one evidence that trust behavior falls as stakes increase in a 'trust game' conducted in rural Bangladesh among subjects with the same and different religion (Muslim and Hindu). Their finding shows that higher stakes, more than the average country's income, induce lower amounts to be sent in the 'trust game'. This is in accordance with Binswanger (1980) and Holt and Laury (2002) who found that people become more risk-averse at higher stakes. Holt and Laury (2002), for instance, showed that subjects became more risk-averse as the stakes increased in a lottery choice experiment that measured risk aversion over a wide range of payoffs. At the moment, by comparing the results of existing 'trust game' experiments, it is evident that similar trust behaviors

are observed as the scale of incentives and/or rewards increase (Johnson and Mislin, 2011). The student sample in experiments is often stressed as a limitation which we try to weaken by having also a children sample for comparison. It mainly has practical reasons, since the homogenous student population can be easily recruited at the university campus. Students easily start talking to each other, even when they meet for the first time for performing a trust game negotiations experiment. Therefore, one might argue that student subjects achieve a collaboration situation more easily, where both parties are better off due to the same starting position and because they meet at the same eye level. Thus, the shown pro-social behavior might be more or less "strategically" applied as an instrument which could also hide the ultimate goal of self-interest. We could assume that students do not harm each other because they might meet each other again for future interactions, and their decisions may be influenced by consideration of social desirability. Although the experiment design is inspired by real world settings, the question is, would the concern for one's own outcome be greater or smaller in a real world negotiation. However, behavior in real world settings is also influenced; hence it is unclear whether norms exert a greater impact in real or the trust game negotiations settings.

From a pure experimental economics perspective, communication can be seen as a nuisance variable and a limitation, because through face-to-face communication, someone can produce social pressure on his/her interaction partner. However, the role of face-to-face communication is here the key question. The communication variable was used intentionally in the design of the experiment to make the trust game negotiations more realistic and comparable to real world settings. Communication has advantages, such as making assurances, allowing for reputation building and promoting reciprocity and cooperation. Thus, we accept the argument of Eckel and Wilson (2006) that when anonymity is taken so far in the laboratory that subjects have only the experimenter's word as evidence that they are playing with a real counterpart, subjects' doubts about their counterpart's existence can affect trusting. Usually, the opportunity to communicate is not without cost because individuals in general have "... to invest time and effort to create and maintain arenas for face-to-face communication" (Ostrom and Walker, 1991: p. 287). The novelty was to study the face-to-face interaction. But we missed the opportunity to ask for the sender's investment decision if the interaction partner was anonymous. This is definitely a limitation that needs to be considered in future research.

Another issue which cannot be ignored is the question whether it would be better to go for matched pairs or randomization in the trust game negotiations. Randomization would mean that subjects' personal idiosyncrasies, like social preferences and social value orientation, are basically uncontrolled (Friedman and Cassar, 2004). Actually, we applied two measurement instruments for screening and matching subjects. The two different instruments are based on different backgrounds. Therefore, the social preference measurement (Vetschera and Kainz, 2012) and the social value orientation slider (Murphy et al, 2011) produced some participant mismatch in the results; entailing that an individual, for instance, had social preferences but was classified 'competitive' regarding the SVO slider.

Thus, the matched pair compositions do not show many significant differences in the results. In particular, for performing the experiment, the coordination of "pro-social" and "egoistic" subjects during the students' recruitment was complex in order to assign them the roles of sender and receiver. However, it was also intentionally chosen in the design of the experiment.

6.3 IMPLICATIONS

Loss of trust or breaches of trust are often stressed in the news and in public or private discussions; for instance, authorities and institutions cannot be trusted anymore. The objective of experiments in general is more or less to provide a direct observation of individual trust behavior. The experimental setting of the 'trust game' has, as already mentioned, many analogies in business, be it a bank loaning money or an individual buying company stocks. In general, we can argue that trust and reciprocity are highly connected to reputation, since people care about their self-image (Bénabou and Tirole, 2002; Ostrom, 2003). Communication is an obvious way of solving a coordination problem, since it makes the development of shared norms possible, which again foster trust and reciprocity. According to Botsman and Rodgers (2010), trust can be seen as the currency of the 21st century economy, and reputation is the measurement of how much a community trusts someone. Remarkable is the phenomenon of building trust among strangers, and, in particular, trust among strangers in an online environment. Nowadays, there is a lot of reputation data available on the internet; on online-marketplaces, we find different reputations, such as star ratings on Amazon or the power seller status on ebay. This social reputation data on how well someone behaves or how badly he/she misbehaves on the internet, according to Botsman and Rodgers (2010), can be bundled to a trust and trustworthiness measure. And this measure will become a future currency that will be more powerful than someone's credit history. The reason given by the authors is that good reputation can be used to buy cooperation from others, even from someone we never met before. These arguments are in accordance with the trust game negotiation results. Participants never met before (expect in a few cases) and they took care about their reputation. Thus, they want to be perceived pro-socially or trustworthy. Particularly important is the role of communication, since it is responsible for establishing shared norms, and subsequently cooperation. While the first mover takes a risk, the trust placed in a person is honored in most of the cases by the second mover. In order to reach a win-win situation, it also means to keep promises and commitments because it is beneficial to have a good reputation both in face-to-face interactions and on the internet.

The main *theoretical implication* is the introduction of a face-to-face 'trust game' variant with the option of overriding. After an established cooperation, we study what is stronger – the adherence to or the deviation from a settled agreement. Theories of social preferences from the economic literature stream and social value orientation from the psychological literature stream may be helpful combined with social contextual factors, like face-to-face communication and trust, in explaining decision-making behavior in an interaction or exchange situation.

The main *methodological implication* is the benefit of combining empirical instruments and tools. On the one hand, subjects can be screened and matched with the help of different questionnaires. On the other hand, the observed bargaining behavior can be compared

with actual decisions. Moreover, the methodological tool of content analysis helps to analyze what subjects say in the bargaining process in order to understand what they do.

The main *practical implication* is to promote the mechanisms of communication and trust. Trust is a concept that is usually seldom exploited in a bilateral setting, and a stimulation of pro-social motives seems to be helpful. Reasons for the former case could be that it takes a long time to build up a trust relationship and/or it is quite difficult to rebuild a loss of trust. However, one should keep in mind that in the trust game negotiations, also pro-social people sometimes use the option of breaking a settled agreement and employ, to quite a high extent, distributive strategies.

As Ostrom (2003) argued, trust-building is the key link in the communication and cooperation connection. Therefore, managers should communicate in a transparent and honest way in order to care for a trust-building atmosphere among their responsible teams. Furthermore, managers should care for the establishment of trust and fairness in the corporate culture. In terms of team compositions, individual differences in social motivations should be considered. These differences should facilitate the identification of interests and objectives in the communication process in the preparation of negotiations and in project teams, in the planning of strategy and tactics of negotiations, and in the (post)settlement of agreements. Finally, managers should stimulate a pro-social motivation in negotiation dyads or groups, since it enhances the quality of negotiation outcomes (only when the problem is integrative). Teams will achieve higher joint outcomes and hence use available resources more efficiently.

6.4 Future research

Context is obviously relevant for taking decisions. Since communication allows more co-operation, trust, trustworthiness, and reciprocity in 'trust games' (Charness and Dufwenberg, 2006; Bicchieri et al, 2010; Servatka et al, 2011; Ben-Ner et al, 2011), face-to-face communication in particular should serve as contextual factor in order to obtain more real world settings in laboratory experiments. Besides individual differences, also cultural differences can be taken into consideration. While in individualistic cultures, it is easier to break agreements without any moral scruples in order to be better off in terms of individual payoff, in collectivistic cultures, keeping achieved agreements is pursued (Weller, 2009). Therefore it would be interesting to observe cultural differences, such as U.S./Europe versus Asia, in the trust game negotiations. Furthermore, it is maybe beneficial to measure behavioral intentions and beliefs instead of attitudes in the pre-questionnaire of the trust game negotiations. In this case, it would mean to ask about one's own behavioral intentions and the beliefs regarding one's interaction partner. And after the actual decisions are done in the experiment, the concrete intentions and beliefs for the other party are compared with the actual behavior of the trust game negotiations.

One promising direction for future research would be to examine trust behavior and the reciprocity factor of the trust game negotiations in a field experiment. For instance, this field experiment could be embedded in an online environment taking website users as participants, like casino and lottery companies, or online platforms, like Amazon or ebay. Another option for a field experiment would be to take a real world situation similar as the 'trust game' exchange situation. Such a situation could to the newspaper sale on Sundays in Austria. This works in the way that newspaper racks in form of plastic bags are distributed in neighborhoods across urban and rural sales regions together with a cash box which is labeled with the price for one issue. They are usually mounted on road signs or street lamps, and the sales bags together with the cash boxes are recollected on Sunday evenings. Usually, it is expected that potential readers may take an issue out of the newspaper rack on a self-serving basis and pay by inserting the respective amount of money into the cash box. It is necessary to pay the exact price in coins because an exchange is excluded in this kind of purchase situation as there is no counterpart. Since the issues are provided in a freely accessible way, inserting money is not a prerequisite for taking out a newspaper. Hence, readers have to decide whether to pay for a withdrawn newspaper or not (depends also on whether there are spectators around). Obviously it is possible that interested readers withdraw issues of the Sunday newspaper without inserting money into the cash box.

In addition to trust behavior and reciprocity, in such a field experiment also priming effects of eye images can be studied. As Bateson et al (2006) and Eckel and Wilson (2003) showed, visual cues of eyes and flowers can be used for priming subjects in their natural

environment. Visual priming would be the idea of influencing people to obey rules with subtle cues in form of images.[49] The research objective could be to test subtle visual cues in the newspaper sale on Sundays. In that context, we would just have the second mover condition (receiver) of the 'trust game' (Berg et al, 1995). In this real world 'trust game', we could test whether people honor the shown trust with trustworthiness and show reciprocity by inserting money in the cash box for taking out a Sunday newspaper or not. Thus, the willingness to withdraw an issue of the newspaper would be highlighted, as well as the willingness to pay for a newspaper on Sundays would be considered. Moreover, the behavior of people in the urban and rural sales regions could be compared.

This study could be a replication and validation of the studies by Bateson et al (2006) and Eckel and Wilson (2003), in a new context. The results are expected to be similar to those in the mentioned studies. The greatest benefit of a field experiment is to test the effects of one manipulation alone in a real world setting with heterogeneous people as subjects. However, potential confounders are difficult to control. It could also be interesting to take differences, such as socio-demographic variables, into account. Since experiments have already shown that people increase their level of cooperation when they know that their behavior is being observed by others (e.g. Milinski et al, 2002), we basically think that future research in a real word settings, such as field experiments, could give additional insight concerning trust behavior.

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[49] Bateson et al (2006) conducted a field experiment at the University of Newcastle in the setting of a shared kitchen for department members. In this field study, people were requested to pay some money for coffee and tea into a cash box. This procedure was announced with a notice on a cupboard, and additionally, the notice was featured with changing images of eyes and flowers each week. The researchers varied the images of eyes and flowers each week, and controlled the consumed milk out of the fridge and the money collected in the cash box. Usually, everyone was supposed to pay for the consumption of a common good such as milk, but not everybody made a contribution. It is quite interesting that the contributions increased up to three times in the weeks when images of eyes were positioned on the presented notice.

7 CONCLUSION

Trust is like a paper once it is crumpled it can't be perfect again.

—Unknown

Management is based on behavior; and behavioral economics, in particular, takes up the challenge of explaining human behavior in decision-making situations. Basically, empirical findings have shown what most of us have already gathered from personal experience; namely that people do not always make the best decisions for themselves. However, does the situation become easier if decisions are embedded in social relationship structures, such as interdependence with interaction partners? In these interactions we observe the conflict between individual and collective interests; situations usually referred to as social dilemmas. Social dilemmas are mainly investigated in laboratory experiments, since this method provides controlled conditions that allow for the manipulation of specific experimental factors in the decision-making tasks, as well as the elimination of potential disturbing factors. Various economic games, like the prisoner's dilemma or the 'trust game', were introduced to literature in the last decades in order to test rational choice theory. In this context the main objective is to test whether people focus on their own self-interest or whether they also take their interaction partners into consideration.

People in general behave heterogeneously. To take individual differences on social motivations into account a large number of researchers in the field of economics have devoted considerable attention to test models of social preferences (Fehr and Schmidt, 1999; Bolten and Ockenfels, 2000; Charness and Rabin, 2002; Engelmann and Strobel, 2004). A deluge of experimental results suggest that individual behavior is not purely opportunistic, but that in many cases people refrain from maximizing their own payoffs. Thus, people with social preferences show unselfish attitudes towards others. Research on social preferences theories has addressed several aspects besides monetary payoffs, such as altruism (e.g. Andreoni and Miller, 2002), inequality aversion (e.g. Fehr and Schmidt, 1999), the role of reciprocity (Dufwenberg and Kirchsteiger, 2004; Cox, 2004), and fairness norms (Fehr and Fischbacher, 2002; Camerer, 2003). In addition, psychological literature contains several studies of social motivations which in turn have attracted research on the underlying interdependent decision behavior (e.g. Kelley and Thibaut, 1978). The social value orientations (competitive, individualistic, pro-social, altruistic) appear to be important and worthy of investigation in particular in the context of negotiations, since individuals vary in their motivations and goals when faced with the decision to allocate resources between themselves and others. These individual differences imply that some people are more inclined than others to approach people in a pro-social manner (McClintock, 1972; Rubin and Brown, 1975; De Dreu and Van Lange, 1995; Beersma and De Dreu, 1999).

Besides individual differences in social motivations, cooperative behavior in strategic interactions is also promoted by trust and communication (Deutsch, 1962; Sally, 1995; Ostrom, 2003; Balliet, 2010). The phenomenon of trust is basically ubiquitous. Trust appears relevant for all kinds of relationships, since it makes interactions run more smoothly. On the one hand, people trust each other even when they have never met before, as is evident, for instance, in most economic transactions or can be observed in online environments. Studies have shown that people are generous towards strangers, even when there is no prospect of repeated interactions (Gintis et al, 2003) because they want to appear generous and perceived by others as social-minded (Roberts, 1998; Allison et al, 1989; Bénabou and Tirole, 2002; Ellingsen and Johannesson, 2004). On the other hand, trust is also exploited on occasion; as when decisions or choices are reversed, settled agreements not kept or commitments broken because one party, by putting moral scruples aside, has the chance to be better off. Communication offers a way to learn about interaction partners and "size up" the character of the other party during the exchange of promises (Charness and Dufwenberg, 2006; Servatka et al, 2011). Unrestricted two-way communication overcomes three critical problems; the problem of trust, the bargaining problem, and the problem of coordination. The obvious benefit with people getting to know each other and having the opportunity to communicate, is that they are able achieve more efficient and fair outcomes, making both partners better off. Moreover, it enables people to make commitments and keep promises (Dawes et al, 1977; Ostrom, 2003; Bicchieri et al, 2010).

Finally, cooperative behavior is also determined by whether promises are kept or broken. Broken promises would harm relationships, and hence negatively influence the satisfaction with interaction partners. Although trust is occasionally exploited in economic exchanges, less trust in an economic exchange would consequently mean that less wealth is created. Since people are better at creating wealth when they are conditional cooperators, social motivations can probably be seen as a remedy in order to prevent trust being exploited. In this context, negotiations can be analyzed as dynamic processes in which negotiators with cooperation cues and negotiators without any cooperation cues interact. Negotiators are sometimes willing to sacrifice part of their material payoffs in order to reciprocate and compensate the kind behavior of other individuals. However, negotiators are also willing to break agreements, possibly in order to punish the unkind behavior of egoistic individuals. Thus, the main objective of this research was to investigate in how far social-minded and egoistic orientated individuals change their behavior when presented with the overriding (defection) option in the trust game negotiations.

The main problems dealt with in this dissertation were trust behavior operationalized in monetary outcomes and the question of whether people revise prior decisions and agreements. We attempt to enrich the economic 'trust game' (Berg et al, 1995) threefold with real world negotiation context. First, we added face-to-face communication ($t=1$). Second, we introduced the extension of the overriding option, which can be seen as a post negotiation phase. This enabled us to test whether the outcomes of the email follow-up phase ($t=2$) adhered to or deviated from prior agreements ($t=1$). Third, we were particularly

interested in exploring and elucidating whether individual differences and/or matched pairs matter in terms of social motivation (pro-social versus egoistic). For this reason we came up with three different combinations of matched pairs: (1) pro-social sender and egoistic receiver, (2) egoistic sender and pro-social receiver, and (3) pro-social sender and pro-social receiver. Moreover, the content analysis was new by integrating qualitative and quantitative data. Here we addressed the question of whether spoken words during bargaining were congruent with actual decisions in the trust game negotiations. We thus observed the mentioned negotiation strategies, through the whole (recorded) bargaining process and analyzed their influence on the actual decisions ($t=1$ and $t=2$).

Methodologically, the entire research process is built on three stages. First, we had the pre-questionnaires for screening the participants concerning their social motivations (social preferences and social value orientations). Subsequently, the screened individuals were matched with a partner for the two phases of the trust game negotiations. Second, in the face-to-face phase ($t=1$) the trust game negotiations were carried out face-to-face, with the communication content, containing agreements which were bilateral and binding, recorded. Afterwards, participants were asked to assess their satisfaction with the interaction in a post-questionnaire. Third, in the email follow-up phase ($t=2$), individuals were presented the option of overriding the agreement reached during the previous face-to-face phase ($t=1$) by email, an option of which they had not been informed in advance. First the sender and then the receiver were informed that they have the chance of changing the settled agreement unilaterally. Our experimental design consists of the economic 'trust game' (Berg et al, 1995) and the negotiation context. In other laboratory experiments individuals do not usually interact face-to-face, but are simply given information about the actions of their interaction partner. Thus, we named our experimental setting *trust game negotiations*, since we have both a face-to-face negotiation phase and a post negotiation phase. The 'trust game', to recount it briefly, involves a sender who is able to place trust (or not) by sending (or not) an amount of his endowment to a receiver. This given amount is tripled by the experimenter and subsequently the receiver is given the choice to be trustworthy (or not), by returning something (or not) to the sender. Thus, trust and trustworthiness are operationalized by investments and returns. The sender's outcome consists of the initial endowment minus the amount sent to the receiver, plus the amount given back by the receiver. The receiver's outcome is the tripled amount given by the sender minus the amount which is given back to the sender.

The achievements of this dissertation are threefold: (1) establishing the importance of the contextual factor of face-to-face communication, (2) confirming – to a high extent – a preference for keeping agreements, and (3) ascertaining the congruence between spoken words (bargaining behavior) and actual actions in the trust game negotiations.

First, face-to-face communication works forgive an opportunity to understand and learn about the interaction partner. In the face-to-face phase ($t=1$) both sender and receiver realize the strategic advantage in being generous and hence show a high degree of trust behavior by indicating high monetary investments and returns. However, individual differences

are adapted according to the interaction partner in the first phase ($t=1$). Some differences are observable (but not statistically significant) on the receiver side; if the receiver is egoistic orientated, he/she returns slightly less compared to pro-social receivers. This would imply that the receiver is perceived and assessed as untrustworthy by the sender during the face-to-face communication phase ($t=1$). However, in the email follow-up phase ($t=2$) the strategic advantage in being generous diminishes; since the option of overriding the agreement is presented there is greater scope for abuse or exploitation. It is interesting to note that senders (expect for pro-social senders paired with egoistic receivers) still invest slightly more, in spite of the risk that the receiver can take the whole augmented money for him-/herself. On the other hand, receivers tend to reciprocate less on average in the email-follow up phase ($t=2$), in particular egoistic receivers who are coupled with pro-social senders. When considering the individual differences/matched pairs, a sustainable result in the trust game negotiations seem to be best achieved when a more or less egoistic individual makes the investment decision and a more or less pro-social individual decides on the subsequent allocation of funds.

Unexpectedly, the option of overriding is also employed by social-minded individuals, but the option makes them just slightly better off in terms of monetary outcome when compared with their egoistic counterparts. Therefore, in the trust game negotiations, cooperation can be said to beat self-interest, since individuals display a strong preference for reciprocity and a strong tendency to cooperate (though it should be rightly described as conditional cooperation). It is remarkable to note that the level of cooperation remains stable in the email-follow up phase ($t=2$), although the option of overriding is now available and face-to-face communication is no longer possible. Thus, our results are in line with the findings of previous studies; face-to-face communication enhances cooperation in social interactions and cooperation remains strong, even when unrestricted communication is removed (Sally, 1995; Balliet, 2010; Ben-Ner et al, 2011). Moreover, we have seen that communication promotes fair and efficient outcomes for both senders and receivers. In contrast, equal division agreements have been less common in other 'trust game' experiments. We conjecture that the inclusion of face-to-face communication is the main reason for this discrepancy. Our study showed 89% equal division agreements in the face-to-face phase ($t=1$), with the rate reduced to 84% in the email follow-up phase ($t=2$).

Second, individuals display a strong tendency for keeping their word. 87% of 180 individuals kept the promises made during the face-to-face phase ($t=1$), refusing to employ the option of overriding unilaterally in the email follow-up phase ($t=2$) in order to improve their personal outcomes. 20% of the receivers changed their behavior when given the opportunity; in particular egoistic orientated receivers drove the use of the overriding option, to a statistically significant extent. Although all participants of the trust game negotiations had the possibility to employ this option, in general, most did not take advantage of the opportunity. This result is in line with existing studies, that have established that a desire for consistency in behavior is very important (Bénabou and Tirole, 2002; Ellingsen and Johannesson, 2004). Therefore both senders and receivers appear to want to see them-

selves their behavior in a positive light. Basically, individuals seem aware of the fact that trust building needs a lot of effort.

Third, words and actions are congruent. From a theoretical perspective, our content analysis results suggest that highly substantive and task-orientated communication is involved during the negotiations, constituting fundamental negotiation behavior. The results also show some tactical or persuasive negotiation behavior, which promotes problem solving, such as *joint processing* or *referring to equality*, that are used as supportive arguments when presenting offers or suggestions. Arguments were very often not completely expressed, since the negotiation partners interrupted each other in order to present their own viewpoints. It is interesting to note the influence of integrative and distributive information categories on the negotiation outcome of the person employing them. If a negotiator follows an integrative strategy by taking the other party into account in the bargaining behavior, the impact on their own negotiation outcome is positive. On the other hand, when the negotiator makes comments that are distributive by referring to self-interest, then the impact on the negotiation outcome is negative. Moreover it is interesting that negotiation strategies have effects on the negotiation outcome in the face-to-face (*t=1*) and the email follow-up phase (*t=2*). Moreover, we found out that the usage of mainly distributive negotiation strategies, such as using *power or making pressure*, *stating own preferences* or *disagreeing to offers*, have a negative impact on the partner's satisfaction. Although no set of words should affect actions under the assumption of strict rationality and payoff maximizing preferences (Crawford, 1995; Farrell and Rabin, 1996; Ben-Ner et al, 2011), our results show that communication content definitely affects negotiation outcome. Content analysis revealed that *what* was said, and not merely the fact *that* things are said, significantly affects the negotiation outcome. Furthermore, it really is an advantage to analyze what people say in order to understand what they do (Ben-Ner et al, 2011).

The main contribution of the trust game negotiations is to give an understanding of the mechanisms of trust and trustworthiness, and the role of face-to-face communication in an exchange situation that includes the potential risk of being exploited. There is a risk that the negotiation partners reverse a decision or agreement when given the chance to improve their individual payoff. To narrow down the possibilities, we categorized participants' differences depending on their social motivations (egoistic versus pro-social). Thus we stressed, in particular, the relationship between individual differences/matched pairs and the experimental outcome achieved in the trust game negotiations. But we also focused on the relationship between bargaining behavior and actual actions, as well as comparing self-reports, in the form questionnaires, with actual actions. From a methodological point of view we used economic and psychological questionnaire instruments for the screening and matching of individuals. Furthermore, we introduced the 'trust game' as a negotiation task in negotiation sciences and extended the 'trust game' by implementing the option of overriding prior bilateral agreements.

Our research examined cooperative behavior a setting similar to the real world. We enriched the context of 'trust games', by introducing face-to-face negotiations and the possi-

bility to change behavior to a laboratory experiment. We are definitely convinced that the research on cooperative behavior is far from fully exhausted, and that a lot remains to be done in order to get deeper insight into human decision-making. It seems conducive to think outside the box and find new and interdisciplinary approaches for achieving further insight in this field. In this context, we want to call to mind research by Van den Assem et al (2012), where cooperative behavior was investigated in a natural setting. In the British TV show "Golden balls" two contestants had to choose between the two options "split" and "steal", in a game similar to the well-known prisoner's dilemma. It is comparable to the trust game negotiations, since contestants are able to learn about their interaction partners during a short period of face-to-face communication. Thus, contestants were also able to assess the reliability of exchanged promises, by showing trust or mistrust towards their partners when making their decisions. For future research it would be advantageous to compare real world data with experimental data in order to make reliable inferences for theoretical and practical implications.

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Appendix 1 – Tables

Table 39: Exemplary evaluation of the social value orientation slider measure by Murphy et al (2011)

Item Nr.	Exemplary choice allocations		Choice Nr.
	Payoff to self	Payoff to other	
1	85	85	1
2	100	50	9
3	85	85	9
4	63	68	4
5	75	75	5
6	85	85	9
	Step 1:Subtract 50 from items		
Item Nr.	Payoff to self	Payoff to other	Choice Nr.
1	35	35	1
2	50	0	9
3	35	35	9
4	13	18	4
5	25	25	5
6	35	35	9
	Step 2: Calculate average payoffs		
Mean	32,16666667	24,66666667	
	Step 3: Calculate ratio (mean payoff to other / mean payoff to self)		
Ratio	0,766839378		
	Step 4: Calculate arc tangent of that ratio		
Angle (in radians)	0,654191491		
	Step 5: Convert radians into degrees		
Angle (in degrees)	37,48241143		
This person is:	Prosocial		

Table 40: Data from the trust game negotiation

| | | | | Treatment: Face-to-face (t=1) | | | Treatment: Email (t=2) | | |
| | | | | Action chosen by subject # | | | Action chosen by subject # | | |
Subject	Group	Role	Setting	Investment	Return	Outcome	Investment	Return	Outcome
1	1	0	1	10	0	15	10	0	15
2	2	0	3	10	0	15	10	0	15
3	3	0	3	10	0	15	10	0	15
4	4	0	3	5	0	10	10	0	15
5	5	0	3	10	0	20	10	0	20
6	6	0	1	10	0	15	10	0	15
7	7	0	3	10	0	15	10	0	15
8	8	0	3	10	0	20	10	0	20
9	9	0	3	10	0	15	10	0	15
10	10	0	3	10	0	13	10	0	13
11	11	0	1	10	0	15	10	0	15
12	12	0	3	10	0	15	10	0	15
13	13	0	3	10	0	16.5	10	0	0
14	14	0	3	10	0	15	10	0	15
15	15	0	3	10	0	15	10	0	15
16	16	0	3	2	0	9.5	10	0	5
17	17	0	1	10	0	15	10	0	15
18	18	0	2	10	0	15	10	0	15
19	19	0	3	10	0	15	10	0	15
20	20	0	3	10	0	15	10	0	15
21	21	0	3	10	0	15	10	0	15
22	22	0	3	10	0	15	10	0	15
23	23	0	3	10	0	15	10	0	15
24	24	0	3	5	0	10	5	0	10
25	25	0	3	8	0	12	8	0	4
26	26	0	3	10	0	15	10	0	10
27	27	0	3	10	0	15	10	0	15
28	28	0	3	10	0	15	10	0	15
29	29	0	1	10	0	15	10	0	16
30	30	0	3	10	0	15	10	0	15
31	31	0	3	10	0	14.5	10	0	15
32	32	0	1	10	0	13	10	0	13
33	33	0	1	10	0	15	10	0	15
34	34	0	2	10	0	15	10	0	15
35	35	0	2	10	0	15	10	0	15
36	36	0	1	10	0	15	10	0	15
37	37	0	1	10	0	15	10	0	15
38	38	0	3	10	0	15	10	0	15
39	39	0	1	10	0	15	10	0	15
40	40	0	1	10	0	15	10	0	15
41	41	0	3	10	0	15	10	0	9
42	42	0	2	2.5	0	8.5	2.5	0	8.5
43	43	0	1	5	0	10	10	0	15
44	44	0	1	10	0	10	10	0	10
45	45	0	2	10	0	15	10	0	15

(continued)

Table 40: (Continued)

Subject	Group	Role	Setting	Treatment: Face-to-face (t=1) Action chosen by subject #			Treatment: Email (t=2) Action chosen by subject #		
				Investment	Return	Outcome	Investment	Return	Outcome
46	46	0	1	10	0	15	10	0	15
47	47	0	1	10	0	15	10	0	15
48	48	0	2	10	0	15	10	0	12
49	49	0	1	10	0	15	10	0	15
50	50	0	1	3.5	0	10	10	0	3.5
51	51	0	1	10	0	15	10	0	15
52	52	0	1	10	0	15	10	0	15
53	53	0	2	10	0	15	10	0	15
54	54	0	3	10	0	15	10	0	15
55	55	0	2	0.5	0	9.5	0.5	0	9.5
56	56	0	2	10	0	15	10	0	15
57	57	0	2	10	0	15	10	0	15
58	58	0	1	10	0	15	10	0	15
59	59	0	2	10	0	15	10	0	15
60	60	0	2	10	0	15	10	0	0
61	61	0	2	10	0	15	10	0	15
62	62	0	2	10	0	15	10	0	15
63	63	0	3	10	0	15	10	0	15
64	64	0	2	10	0	15	10	0	15
65	65	0	2	10	0	15	10	0	15
66	66	0	2	10	0	15	10	0	0
67	67	0	2	10	0	15	0	0	10
68	68	0	2	5	0	10	5	0	10
69	69	0	2	10	0	15	10	0	15
70	70	0	2	10	0	15	10	0	15
71	71	0	2	10	0	15	10	0	15
72	72	0	2	10	0	15	10	0	10
73	73	0	2	10	0	15	10	0	15
74	74	0	2	1	0	9	1	0	9
75	75	0	1	10	0	15	10	0	12
76	76	0	1	8	0	13	8	0	13
77	77	0	1	10	0	15	10	0	5
78	78	0	1	10	0	15	10	0	15
79	79	0	3	10	0	15	10	0	15
80	80	0	2	10	0	15	10	0	15
81	81	0	2	10	0	15	10	0	15
82	82	0	2	10	0	15	10	0	15
83	83	0	1	10	0	15	10	0	15
84	84	0	2	10	0	15	10	0	15
85	85	0	2	10	0	15	10	0	15
86	86	0	2	10	0	15	10	0	14
87	87	0	1	10	0	15	10	0	15
88	88	0	1	10	0	15	10	0	15
89	89	0	1	10	0	15	10	0	15
90	90	0	1	10	0	15	10	0	15

(continued)

Table 40: (Continued)

Subject	Group	Role	Setting	Treatment: Face-to-face (t=1) Action chosen by subject # Investment	Return	Outcome	Treatment: Email (t=2) Action chosen by subject # Investment	Return	Outcome
91	1	1	1	0	15	15	0	15	15
92	2	1	3	0	15	15	0	15	15
93	3	1	3	0	15	15	0	15	15
94	4	1	3	0	5	10	0	15	15
95	5	1	3	0	20	10	0	20	10
96	6	1	1	0	15	15	0	15	15
97	7	1	3	0	15	15	0	15	15
98	8	1	3	0	20	10	0	20	10
99	9	1	3	0	15	15	0	15	15
100	10	1	3	0	13	17	0	13	17
101	11	1	1	0	15	15	0	15	15
102	12	1	3	0	15	15	0	15	15
103	13	1	3	0	16.5	14.5	0	0	30
104	14	1	3	0	15	15	0	15	15
105	15	1	3	0	15	15	0	15	15
106	16	1	3	0	1.5	4.5	0	5	25
107	17	1	1	0	15	15	0	15	15
108	18	1	2	0	15	15	0	15	15
109	19	1	3	0	15	15	0	15	15
110	20	1	3	0	15	15	0	15	15
111	21	1	3	0	15	15	0	15	15
112	22	1	3	0	15	15	0	15	15
113	23	1	3	0	15	15	0	15	15
114	24	1	3	0	5	10	0	5	10
115	25	1	3	0	10	14	0	4	22
116	26	1	3	0	15	15	0	10	20
117	27	1	3	0	15	15	0	15	15
118	28	1	3	0	15	15	0	15	15
119	29	1	1	0	15	15	0	16	14
120	30	1	3	0	15	15	0	15	15
121	31	1	3	0	14.5	15.5	0	15	15
122	32	1	1	0	13	17	0	13	17
123	33	1	1	0	15	15	0	15	15
124	34	1	2	0	15	15	0	15	15
125	35	1	2	0	15	15	0	15	15
126	36	1	1	0	15	15	0	15	15
127	37	1	1	0	15	15	0	15	15
128	38	1	3	0	15	15	0	15	15
129	39	1	1	0	15	15	0	15	15
130	40	1	1	0	15	15	0	15	15
131	41	1	3	0	15	15	0	9	21
132	42	1	2	0	1	6.5	0	6.5	6.5
133	43	1	1	0	5	10	0	15	15
134	44	1	1	0	10	20	0	10	20
135	45	1	2	0	15	15	0	15	15

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Table 40: (Continued)

Subject	Group	Role	Setting	Treatment: Face-to-face (t=1)			Treatment: Email (t=2)		
				Action chosen by subject #			*Action chosen by subject #*		
				Investment	Return	Outcome	Investment	Return	Outcome
136	46	1	1	0	15	15	0	15	15
137	47	1	1	0	15	15	0	15	15
138	48	1	2	0	15	15	0	12	18
139	49	1	1	0	15	15	0	15	15
140	50	1	1	0	3.5	7	0	3.5	26.5
141	51	1	1	0	15	15	0	15	15
142	52	1	1	0	15	15	0	15	15
143	53	1	2	0	15	15	0	15	15
144	54	1	3	0	15	15	0	15	15
145	55	1	2	0	0	1.5	0	0	1.5
146	56	1	2	0	15	15	0	15	15
147	57	1	2	0	15	15	0	15	15
148	58	1	1	0	15	15	0	15	15
149	59	1	2	0	15	15	0	15	15
150	60	1	2	0	15	15	0	0	30
151	61	1	2	0	15	15	0	15	15
152	62	1	2	0	15	15	0	15	15
153	63	1	3	0	15	15	0	15	15
154	64	1	2	0	15	15	0	15	15
155	65	1	2	0	15	15	0	15	15
156	66	1	2	0	15	15	0	0	30
157	67	1	2	0	15	15	0	0	0
158	68	1	2	0	5	10	0	5	10
159	69	1	2	0	15	15	0	15	15
160	70	1	2	0	15	15	0	15	15
161	71	1	2	0	15	15	0	15	15
162	72	1	2	0	15	15	0	10	20
163	73	1	2	0	15	15	0	15	15
164	74	1	2	0	0	3	0	0	3
165	75	1	1	0	15	15	0	12	18
166	76	1	1	0	11	13	0	11	13
167	77	1	1	0	15	15	0	5	25
168	78	1	1	0	15	15	0	15	15
169	79	1	3	0	15	15	0	15	15
170	80	1	2	0	15	15	0	15	15
171	81	1	2	0	15	15	0	15	15
172	82	1	2	0	15	15	0	15	15
173	83	1	1	0	15	15	0	15	15
174	84	1	2	0	15	15	0	15	15
175	85	1	2	0	15	15	0	15	15
176	86	1	2	0	15	15	0	14	16
177	87	1	1	0	15	15	0	15	15
178	88	1	1	0	15	15	0	15	15
179	89	1	1	0	15	15	0	15	15
180	90	1	1	0	15	15	0	15	15

Table 41: Statistics of sender's and receiver's satisfaction level across matched pairs

		Sender		Receiver	
		Res_Satis	Part_Satis	Res-Satis	Part_Satis
EgSe-SoRe	*N*	*29*	*29*	*29*	*29*
	Mean	6.45	6.72	6.76	6.45
	Median	7.00	7.00	7.00	7.00
	SD	0.87	0.75	0.58	1.12
SoSe-EgRe	*N*	*31*	*31*	*31*	*31*
	Mean	6.48	6.55	6.06	6.22
	Median	7.00	7.00	7.00	7.00
	SD	0.89	0.89	1.59	1.71
SoSe-SoRe	*N*	*30*	*30*	*30*	*30*
	Mean	6.50	6.30	5.73	6.50
	Median	7.00	7.00	6.00	7.00
	SD	0.73	1.09	1.60	0.90

Appendix 2 – Experimental instructions

Negotiation Experiment

Experimental instructions

Welcome, you are participating in a negotiation experiment!

We want to investigate in this experiment how people behave in a decision making situation. You can earn <u>real money</u>. This will be paid to you after the complete experimental processing. During the experiment you and an other participant are going to be asked to <u>make decisions</u>.

Procedure of the negotiation experiment:

In this negotiation experiment there are two roles: **player RED** and **player GREEN**. Your role will be assigned by the experimenter. Player RED and player GREEN negotiate about the decisions to be made and the negotiation results, which are achieved, are binding.

- <u>Player RED</u> decides about the amount of the <u>stake</u>, which can be between 0 and 10 €. In the next step, player RED decides about how much of the stake he/she would like to hand over to player GREEN (in steps of 50 Eurocents).
- The sum, which player RED hands over to "his/her" player GREEN, is <u>tripled</u> by the experimenter. This means that player GREEN gets exaxtely three times more as player RED has given to him/her. Afterwards, it is the turn of player GREEN.
- <u>Player GREEN</u> receives the tripled amount, which player RED has given to him/her. Then player GREEN decides about how much he/she is going to return to player RED. <u>Please note:</u> The amount of player GREEN, which is returned to player RED, is not tripled anymore by the experimenter. This means that player RED gets the amount, which player GREEN has returned.

Player RED and player GREEN negotiate about their decisions to make and they fill their final results of the negotiation, which have been achieved together, in the provided form.

Caluculation of payoffs:

<u>Player RED</u> gets at the end the amount, which he/she has kept for himself/herself, <u>plus</u> the amount, which was given to him/her by player GREEN.

<u>Player GREEN</u> gets the amout, which he/she has received by player RED (times three), <u>minus</u> the amout, which he/she has returned to player RED.

Negotiation Experiment

Decision form for the negotiation experiment

Player RED - Experimental ID _____ :

Player RED hands over the following amount to player GREEN: _____

Player GREEN - Experimental ID _____ :

Player GREEN has received the following amount: _____

The amount tripled is the following: _____

Player GREEN returns the following amount to player RED: _____

Appendix 3 – Questionnaires

Pre-Questionnaire

Verhandlungsexperiment

Online-Fragebogen zum

Verhandlungsexperiment

Email-Adresse _____

Experiment ID (automatisch vergeben)

<u>**Herzlich Willkommen, Sie nehmen an einem Verhandlungsexperiment teil!**</u>

Wir bedanken uns für Ihre Teilnahme. In diesem Experiment untersuchen wir, wie sich Menschen in Entscheidungssituationen verhalten. Sie können dabei echtes Geld verdienen. Dieses wird Ihnen nach vollständiger Experimentabwicklung ausbezahlt.

Dieses Experiment besteht aus: (1) einem Fragebogen vor dem Experiment, (2) dem Verhandlungsexperiment und (3) einem Fragebogen nach dem Experiment.

Sie starten hier den Fragebogen vor dem Verhandlungsexperiment. In diesem Fragebogen präsentieren wir Ihnen Möglichkeiten wie Geld zwischen Ihnen und einer anderen Person aufgeteilt werden kann (Teil A und B) und präsentieren abschließend kurze Aussagen, die Sie bitte bewerten (Teil C).

Bitte geben Sie auf die folgenden Fragen eine ehrliche Antwort. Es gibt keine richtigen oder falschen Antworten. Für die Beantwortung dieses Fragenbogens benötigen Sie ungefähr 15 Minuten.

Das Verhandlungsexperiment findet im Zeitraum zwischen 4. und 15. April 2011 am Betriebswirtschaftlichen Zentrum der Universität Wien statt.

Wenn Sie bereit sind, drücken Sie bitte den „Start" Button!

Teil A

In dieser Aufgabe sind Sie mit einer Ihnen unbekannten Person in einer Gruppe. Alle Ihre Entscheidungen werden selbstverständlich komplett vertrauensvoll behandelt. Sie werden im Teil A dieses Fragebogens sechs Entscheidungen treffen, indem Sie Geld zwischen Ihnen und der anderen Person verteilen. Für jede der folgenden Fragen bewegen Sie einen zur Verfügung gestellten Regler in einem vorgegebenen Bereich. Bitte verschieben Sie den Regler an jene Stelle, die für Sie die am meisten bevorzugte Verteilung anzeigt und bestätigen Sie Ihre Eingabe durch den Button „Senden".

Ihre Entscheidungen führen zu Geldauszahlungen für Sie (oranger Balken in der Grafik) und die andere Person (blauer Balken in der Grafik). In dem unten dargestellten Beispiel hat eine Person eine Verteilung gewählt, in der sie selbst 50 EUR und die andere Person 40 EUR bekommen.

Es wird ausdrücklich darauf hingewiesen, dass es keine richtigen oder falschen Antworten gibt. Es geht um Ihre persönlichen Präferenzen. Wie Sie aus dem Beispiel entnehmen können, beeinflusst Ihre Entscheidungen sowohl den Geldbetrag, den Sie bzw. die andere Person erhält.

Beispiel

(Aktionsspielraum - Sie: 30 / Ein Anderer: 80 *versus* Sie: 70 / Ein Anderer: 0)
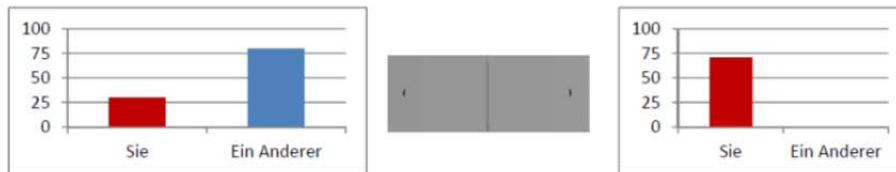
Sie erhalten 50 **EUR. Ein Anderer erhält** 40 **EUR** (Felder veränderbar).

Kontrollfrage

Ihre persönliche Verteilung an Geldbeträgen ist in der Grafik durch folgende Farbe gekennzeichnet?

o blau

o orange

(Hinweis: Bei richtiger Antwort (orange) weiter – Sonst „Lesen Sie bitte nochmals die Aufgabenstellung!")

Weiter!

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Frage 1A von 6A

Die Grafiken an der linken und rechten Seite markieren den Aktionsraum der möglichen Verteilungen an Geldbeträgen zwischen Ihnen (oranger Balken) und der anderen Person (blauer Balken).

Unten sehen Sie einen Regler. Durch Verschieben des Reglers können Sie den Geldbetrag zwischen Ihnen und einer anderen Person verändern.

Sobald der Regler für Sie an der passenden Stelle steht, drücken Sie bitte den „Senden" Button.

(Aktionsspielraum - Sie: 85 / Ein Anderer: 15 *versus* Sie: 50 / Ein Anderer: 100)
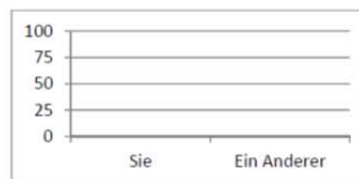
Sie erhalten 67 EUR.
Ein Anderer erhält 59 EUR
(Felder veränderbar).

Frage 2A von 6A

(Aktionsspielraum - Sie: 100 / Ein Anderer: 50 *versus* Sie: 85 / Ein Anderer: 15)

Verhandlungsexperiment
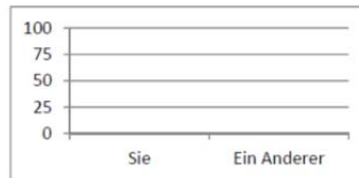
Sie erhalten 92 EUR.
Ein Anderer erhält 31 EUR
(Felder veränderbar).

Frage 3A von 6A

(Aktionsspielraum - Sie: 85 / Ein Anderer: 85 *versus* Sie: 85 / Ein Anderer: 15)
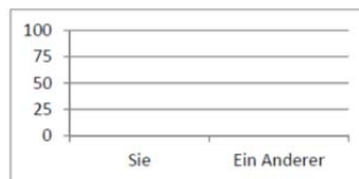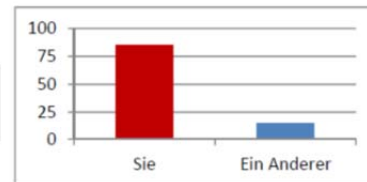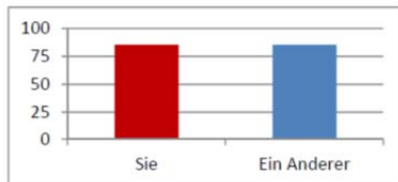
Sie erhalten 85 EUR.
Ein Anderer erhält 50 EUR
(Felder veränderbar).

Frage 4A von 6A

(Aktionsspielraum - Sie: 50 / Ein Anderer: 100 *versus* Sie: 100 / Ein Anderer: 50)

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ORGANISATION UND PLANUNG

Verhandlungsexperiment
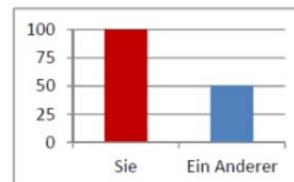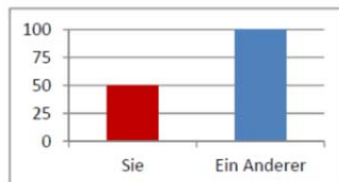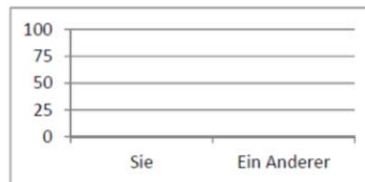
Sie erhalten 75 EUR.
Ein Anderer erhält 75 EUR
(Felder veränderbar).

Frage 5A von 6A

(Aktionsspielraum - Sie: 100 / Ein Anderer: 50 _versus_ Sie: 85 / Ein Anderer: 85)
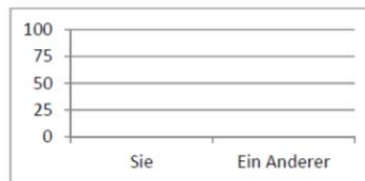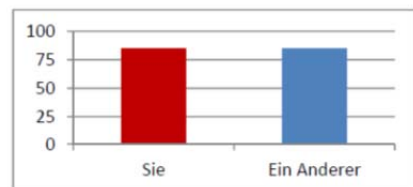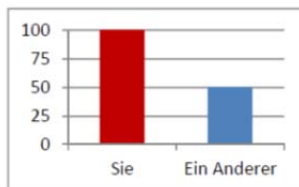
Sie erhalten 92 EUR.
Ein Anderer erhält 69 EUR
(Felder veränderbar).

Frage 6A von 6A

(Aktionsspielraum - Sie: 85 / Ein Anderer: 85 _versus_ Sie: 50 / Ein Anderer: 100)

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ORGANISATION UND PLANUNG

Verhandlungsexperiment

	Sie	Ein Anderer
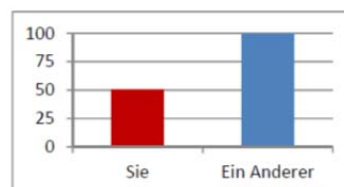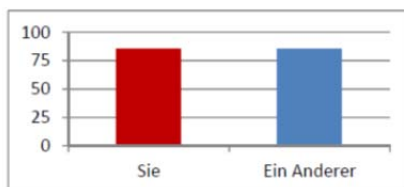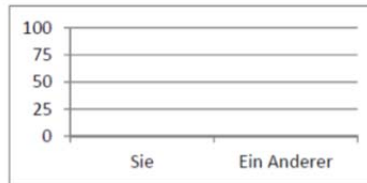
Sie erhalten 67 EUR.
Ein Anderer erhält 93 EUR
(Felder veränderbar).

© SVO Slider by Murphy, Ackermann, Handgraaf (2011)

Weiter mit Teil B!

Verhandlungsexperiment

Teil B

Auch bei dieser Aufgabe sind Sie mit einer Ihnen unbekannten Person in einer Gruppe und wiederrum werden alle Ihre Entscheidungen komplett vertrauenswürdig behandelt. Sie werden im Teil B dieses Fragebogens sechs Entscheidungen treffen, indem Sie gleiche und ungleiche Verteilungen an Geld zwischen Ihnen und der anderen Person vergleichen. Die ungleiche Verteilung ist vorgegeben und Sie müssen sich für eine gleiche Verteilung entscheiden. Bitte bestätigen Sie wieder Ihre Eingabe durch den Button „Senden".

Ihre Entscheidungen führen zu Geldauszahlungen für Sie (oranger Balken in der Grafik) und die andere Person (blauer Balken in der Grafik). In dem unten dargestellten Beispiel hat eine Person eine gleiche Verteilung gewählt, die für die Person gleichwertig zur dargestellten ungleichen Verteilung ist, in der sie selbst und die andere Person jeweils 500 EUR bekommen. Es wird ausdrücklich darauf hingewiesen, dass es keine richtigen oder falschen Antworten gibt. Es geht um Ihre persönlichen Präferenzen.

Wenn Sie Schwierigkeiten bei der Beantwortung haben, wenden Sie folgendes Schema an:
- Stellen Sie zunächst die höchst mögliche gleiche Verteilung mit Hilfe des Reglers ein und fragen Sie sich, ob Sie die ungleiche oder die gleiche Verteilung bevorzugen würden.
- Wenn für Sie nun die ungleiche und gleiche Verteilung **gleichwertig** sind, dann bestätigen Sie Ihre Eingabe.
- Wenn die Verteilungen nicht gleichwertig sind, dann reduzieren Sie die Höhe der gleichen Verteilung und stellen sich wieder die gleiche Frage.
- Wiederholen Sie diese Vorgehensweise, indem Sie die Höhe der gleichen Verteilung durch den Regler reduzieren oder erhöhen, bis für Sie der Punkt erreicht ist, an dem die ungleiche und die gleiche Verteilung an Geldauszahlungen gleichwertig sind.

Beispiel

(*Ungleiche Verteilung:* Sie: 800 – Ein Anderer: 200
Gleiche Verteilung: Sie: ? – Ein Anderer: ?)

Sie und ein Anderer erhalten 500 **EUR.**

Weiter!

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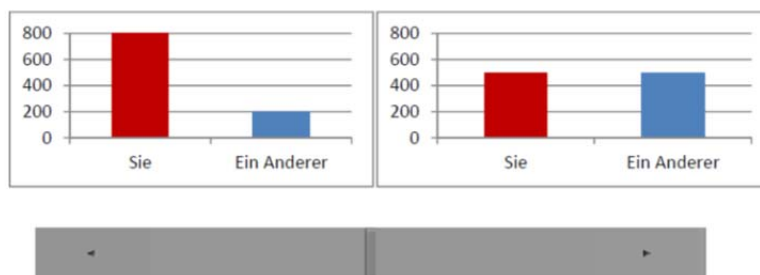
Kontrollfrage

Ihre Aufgabe ist ...:

o ... zu entscheiden, welche ungleiche Verteilung Sie am meisten bevorzugen, die gleichwertig zu einer gezeigten gleichen Verteilung ist (1)
o ... zu entscheiden, welche gleiche Verteilung Sie am meisten bevorzugen, die gleichwertig zu einer gezeigten ungleichen Verteilung ist (2)

(Bei richtiger Antwort (2) weiter – Sonst „Lesen Sie bitte nochmals die Aufgabenstellung!")

Weiter!

Frage 1B von 6B

Die Grafiken auf der linken Seite zeigen die ungleichen Geldbeträge und auf der rechten Seite die gleichen Geldbeträge zwischen Ihnen (oranger Balken) und der anderen Person (blauer Balken).

Unten sehen Sie einen Regler. Durch Verschieben des Reglers können die Höhe des Geldes bei einer gleichen Verteilung zwischen Ihnen und einer anderen Person verändern. D.h. die Beträge für die gleiche Verteilung verändern sich, aber die Beträge für die ungleiche Verteilung nicht.

Sobald der Regler für Sie an der passenden Stelle steht, drücken Sie bitte den „Senden" Button.

© SP Measurement by Vetschera, Graf, Kainz, Nimczick, Zhang (2011)

(*Ungleiche Verteilung:* Sie: 600 – Ein Anderer: 450
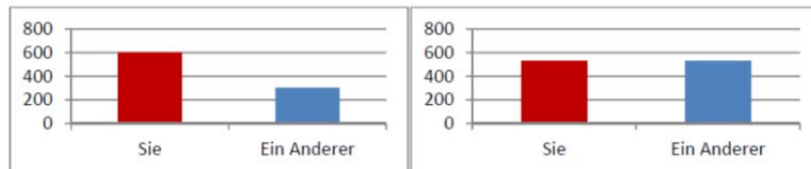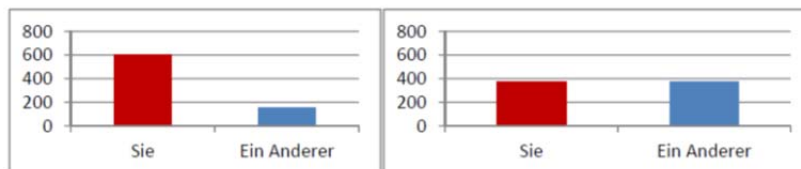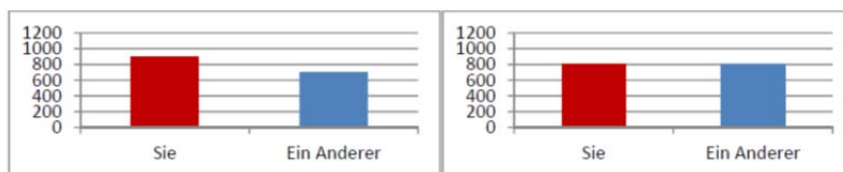*Gleiche Verteilung:* Sie: ? – Ein Anderer: ?)
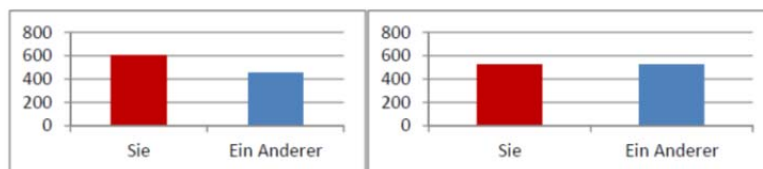
Sie und ein Anderer erhalten 525 EUR (Feld veränderbar).

Ich bestätige mit dem Button „Senden", dass ich den von mir oben genannten Betrag in der gleichen Verteilung an Geld **gleichwertig** wahrnehme wie die oben dargestellte ungleiche Verteilung an Geld.

Senden!

Verhandlungsexperiment
Frage 2B von 6B

(Ungleiche Verteilung: Sie: 600 – Ein Anderer: 300
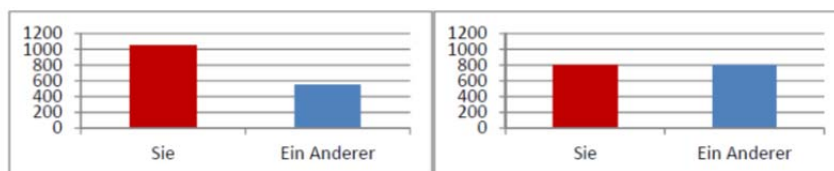_Gleiche Verteilung: Sie: ? – Ein Anderer: ?)_

Sie und ein Anderer erhalten 450 EUR (Feld veränderbar).

Ich bestätige mit dem Button „Senden", dass ich den von mir oben genannten Betrag in der gleichen Verteilung an Geld **gleichwertig** wahrnehme wie die oben dargestellte ungleiche Verteilung an Geld.

Senden!

Frage 3B von 6B

(Ungleiche Verteilung: Sie: 600 – Ein Anderer: 150
Gleiche Verteilung: Sie: ? – Ein Anderer: ?)

Sie und ein Anderer erhalten 375 EUR (Feld veränderbar).

Ich bestätige mit dem Button „Senden", dass ich den von mir oben genannten Betrag in der gleichen Verteilung an Geld **gleichwertig** wahrnehme wie die oben dargestellte ungleiche Verteilung an Geld.

Senden!

Frage 4B von 6B

(*Ungleiche Verteilung:* Sie: 900 – Ein Anderer: 700
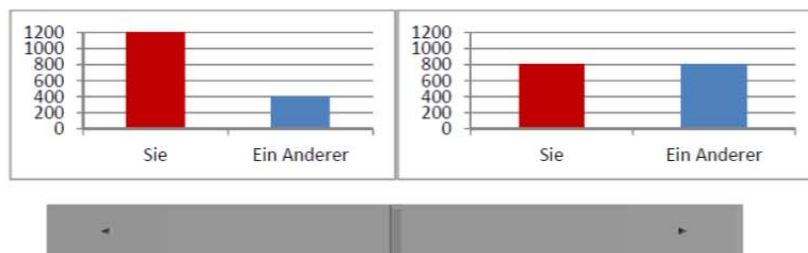*Gleiche Verteilung:* Sie: ? – Ein Anderer: ?)

Sie und ein Anderer erhalten 800 EUR (Feld veränderbar).

Ich bestätige mit dem Button „Senden", dass ich den von mir oben genannten Betrag in der gleichen Verteilung an Geld **gleichwertig** wahrnehme wie die oben dargestellte ungleiche Verteilung an Geld.

Senden!

Frage 5B von 6B

(*Ungleiche Verteilung:* Sie: 1050 – Ein Anderer: 550
Gleiche Verteilung: Sie: ? – Ein Anderer: ?)

Sie und ein Anderer erhalten 800 EUR (Feld veränderbar).

Ich bestätige mit dem Button „Senden", dass ich den von mir oben genannten Betrag in der gleichen Verteilung an Geld **gleichwertig** wahrnehme wie die oben dargestellte ungleiche Verteilung an Geld.

Senden!

Frage 6B von 6B

(*Ungleiche Verteilung:* Sie: 1200 – Ein Anderer: 400
Gleiche Verteilung: Sie: ? – Ein Anderer: ?)

Sie und ein Anderer erhalten 800 **EUR** (Feld veränderbar).

Ich bestätige mit dem Button „Senden", dass ich den von mir oben genannten Betrag in der gleichen Verteilung an Geld **gleichwertig** wahrnehme wie die oben dargestellte ungleiche Verteilung an Geld.

Senden!

Strategie

Bitte erklären Sie Ihre Strategie, die Sie bei der Beantwortung der Fragen 1B bis 6B verfolgt haben:

_____

_____

_____

_____

_____

_____

_____

_____

Weiter mit Teil C!

Teil C

Abschließend ersuchen wir Sie höflich die folgenden vier Statements mit der für Sie passendsten Aussage zu bewerten. Bitte geben Sie eine ehrliche Antwort, d.h. die Antwort, die Ihnen als erstes in den Sinn kommt. (Zutreffendes bitte ankreuzen)

Starten Sie Teil C des Fragebogens!

Frage 1C von 8C

Glauben Sie, dass die Mehrheit der Menschen Sie ausnutzt, wenn die Möglichkeit dazu besteht, oder schätzen Sie sie fair ein?

Nutzen mich aus	Sind fair	Es hängt davon ab	Weiß nicht
1	2	3	4

Frage 2C von 8C

Glauben Sie, dass die Mehrheit der Menschen sich die meiste Zeit hilfsbereit verhält oder die meiste Zeit auf den eigenen Vorteil bedacht ist?

Sind hilfsbereit	Sind vorteilsbedacht	Es hängt davon ab	Weiß nicht
1	2	3	4

Frage 3C von 8C

Allgemein betrachtet, glauben Sie, dass die Mehrheit der Menschen vertrauenswürdig ist oder dass man im Umgang mit seinen Mitmenschen nicht vorsichtig genug sein kann?

Es kann vertraut werden	Man muss vorsichtig sein	Es hängt davon ab	Weiß nicht
1	2	3	4

Frage 4C von 8C

Wie oft sperren Sie Ihre Haustüre nicht ab?

Immer	Oft	Manchmal	Selten	Nie
1	2	3	4	5

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Verhandlungsexperiment

Frage 5C von 8C

Wie oft borgen Sie Ihren Freunden Geld?

Mehr als 1x/Woche	1x/Woche	1x/Monat	1x/Jahr oder seltener
1	2	3	4

Frage 6C von 8C

Wie oft borgen Sie Ihren Freunden persönliche (Wert-)Gegenstände?

Mehr als 1x/Woche	1x/Woche	1x/Monat	1x/Jahr oder seltener
1	2	3	4

Frage 7C von 8C

Ich bin vertrauenswürdig

Stimme absolut nicht zu / Stimmt nicht zu / Stimme eher nicht zu / Stimme eher zu / Stimme zu/Stimme stark zu

1	2	3	4	5	6

Frage 8C von 8C

Man kann Fremden nicht mehr vertrauen.

Mehr oder weniger stimme ich zu	Mehr oder weniger stimme ich nicht zu
1	2

Das ist das Ende des Fragebogens. Vielen Dank für Ihre Antworten! In den nächsten Tagen erhalten Sie, wenn Sie ausgewählt werden, eine Einladung zum Verhandlungsexperiment.

Vielen Dank für Ihre Teilnahme!

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ORGANISATION UND PLANUNG
Verhandlungsexperiment

Fragebogen nach dem Verhandlungsexperiment

Experiment ID : _____

Rolle: ○ *Spieler ROT*   ○ *Spieler GRÜN*

Wir ersuchen Sie höflich die folgenden Aussagen zu bewerten und die offenen Fragen zu beantworten. Bitte geben Sie eine wahrheitsgemäße Antwort (Zutreffendes bitte ankreuzen).

Frage 1	Unzufrieden ▬▬▬ Zufrieden
Wie zufrieden sind Sie mit Ihrem Verhandlungsergebnis?	○ ○ ○ ○ ○ ○ ○

Frage 2	Unfair ▬▬▬ Fair
Wie fair ist Ihr Verhandlungsergebnis?	○ ○ ○ ○ ○ ○ ○

Frage 3	Schlechter ▬▬▬ Besser
Wie schätzen Sie Ihr Verhandlungsergebnis im Vergleich zu anderen ein? Ich denke, dass ich ...... war als andere, die dieselbe Rolle wie ich innehatten.	○ ○ ○ ○ ○ ○ ○

Frage 4	Unzufrieden ▬▬▬ Zufrieden
Wie zufrieden waren Sie mit Ihrem Verhandlungspartner?	○ ○ ○ ○ ○ ○ ○

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Verhandlungsexperiment

Frage 5	Sozial Orientiert						Selbst Bezogen
Wie schätzen Sie Ihren Verhandlungspartner ein?	○	○	○	○	○	○	○

Frage 6	Überhaupt nicht						Wahrscheinlich
Würden Sie mit Ihrem Verhandlungspartner in zukünftige Verhandlungen treten?	○	○	○	○	○	○	○

Frage 7 Haben Sie Ihren Verhandlungspartner bereits gekannt?	○ Nein, kannte vorher nicht ○ Ja, war mir bereits bekannt ○ Ja, sind sogar Freunde

Frage 8 Haben Sie im letzten halben Jahr Geld für eine oder mehrere wohltätige Organisation(en) gespendet?	○ Ja, einmal ○ Ja, ein paarmal ○ Ja, regelmäßig ○ Nein

Frage 9 Haben Sie im letzten halben Jahr Blut und/oder Plasma gespendet?	○ Ja, einmal ○ Ja, ein paarmal ○ Ja, regelmäßig ○ Nein

Frage 10 Haben Sie im letzten halben Jahr einem Freund geholfen?	○ Ja, einmal ○ Ja, ein paarmal ○ Ja, regelmäßig ○ Nein

Frage 11 Haben Sie im letzten halben Jahr einem Fremden geholfen?	○ Ja, einmal ○ Ja, ein paarmal ○ Ja, regelmäßig ○ Nein

Frage 12 Haben Sie im letzten halben Jahr an Freiwilligendienst teilgenommen?	○ Ja, einmal ○ Ja, ein paarmal ○ Ja, regelmäßig ○ Nein

Frage 13 Haben Sie im letzten halben Jahr die Umwelt nachhaltig geschützt, indem Sie z.B. Müll trennen?	○ Ja, einmal ○ Ja, ein paarmal ○ Ja, regelmäßig ○ Nein

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Frage 14
Nennen SIE bitte drei Situationen aus der Vergangenheit, in denen Sie eher soziales Verhalten
gezeigt haben.

1.

2. _____

3. _____

Frage 15
Nennen SIE bitte drei Situationen aus der Vergangenheit, in denen Sie eher egoistisches Verhalten
gezeigt haben.

1. _____

2. _____

3. _____

Frage 16
Nennen SIE bitte drei Situationen aus der Vergangenheit, in denen für Sie Vertrauen wichtig war.

1. _____

2. _____

3.

Demografische Daten	
Geschlecht	○ Weiblich ○ Männlich
Alter	_____ Jahre
Muttersprache	_____
Anzahl der Geschwister	_____ Geschwister
Studienrichtung	_____

Vielen Dank für Ihre Antworten!

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Abstract English

The phenomenon of trust is based on the principle and expectation that people keep their promises. Keeping promises enhances cooperation and efficiency. Although an element of trust can be found in every business transaction (Arrow, 1972), there are individual differences among people. People sometimes abuse trust and override decisions in order to increase their individual payoffs in a strategic interaction. Therefore, mechanisms to promote trust behavior are needed. One of the strongest among them is communication (Ostrom, 2003). Communication regarding the distribution of outcomes (hereafter referred as negotiation context) gives opportunities to learn about the interaction partner and assess the credibility and reliability of prior promises. As communication promotes trust, so trust leads to cooperation, and allows for more efficient outcomes.

Within the framework of this dissertation, we address the problem of trust behavior in the context of negotiations. From the economic perspective we are interested in how communication affects the relationship between individual differences and trust behavior. Besides emphasizing the context of negotiations, we also analyze the communication content employing strategies from the negotiation sciences. The objective is to test how individual differences in social motivations influence the trust behavior and whether and how an option to override the achieved agreement influences the outcomes. We investigate the impact of bargaining behavior (negotiation strategies) on the negotiation outcomes in order to test for the congruence between spoken words and actual decisions.

We use the combination of two methods – experiment and questionnaires – to answer our research questions. We conduct an integrated analysis of the quantitative data based on experimental results and the qualitative data collected by means of content analysis. Our experimental design is essentially based on the 'trust game' (Berg et al, 1995) which we enrich with face-to-face communication (negotiation) and an option of overriding an achieved agreement. We observe the trust behavior in two experimental phases ($t=1$: face-to-face phase; $t=2$: email follow-up phase). Prior the experiment subjects are screened (using questionnaires) and subsequently matched according to their individual differences in social motivations. Moreover the communication content is recorded and analyzed with the help of content analysis. As a result, we follow a triangulation approach (Flick, 2009) by combining different methods and different types of data (quantitative and qualitative).

The findings of the *trust game negotiations* show that face-to-face communication leads to fair and efficient trust behavior and that subjects systematically respond to the interaction partners' behavior. The majority of the participants shares evenly negotiation outcomes: 89% in face-to-face and 84% in the email follow-up phase. Thus, individual differences are adapted or even eliminated in the face-to-face communication phase. Subjects, to a remarkably large extent, display a tendency to keep the promises made in the face-to-face

phase: 87% participants did not change their decision when the overriding option was provided. If overriding option was employed, it was done by both social-minded and egoistic orientated subjects. However, the egoistic orientated ones trigger the individual differences (statistically significant) in the email follow-up phase (*t=2*).

Concerning the impact of bargaining behavior (negotiation strategies) on the negotiation outcomes, our content analysis shows that the communication content is consistent with the actual actions in the experimental phases. In particular, *distributive information* (refers to self-interest and task) has a negative influence and *integrative information* (takes the other party into account) has a positive influence on the negotiation outcomes in the face-to-face phase (*t=1*). Moreover, it is interesting that negotiation strategies also have effects on the negotiation outcome in the email follow-up phase. It implies that the more *integrative action* or value creation is employed the higher are the individual outcomes (*t=2*). Thus, our objective to ascertain the congruence between spoken words and actual actions in the trust game negotiations yielded positive results. To summarize, communication contributes to fair and efficient outcomes, whereas communication content (negotiation strategies) affect actual decisions.

Abstract Deutsch

Das Phänomen Vertrauen basiert unter anderem auf dem Prinzip und der Erwartung, dass Menschen abgegebene Versprechen einhalten. Obwohl jede wirtschaftliche Transaktion durch Vertrauen gekennzeichnet ist (Arrow, 1972), verhalten sich Menschen unterschiedlich, indem sie Vertrauen des anderen zum eigenen Vorteil ausnutzen. Daher kann die Bildung von Vertrauen als ein Kernelement in Verbindung zwischen Kommunikation und Kooperation gesehen werden (Ostrom, 2003). Grundsätzlich wird Vertrauen durch den Kommunikationskontext gefördert. Kommunikation erlaubt des Weiteren Lernen und Einschätzen des Interaktionspartners. Es lässt sich einschätzen, wie glaubwürdig und verlässlich die abgegebenen Versprechen sind. Schließlich wird als Ergebnis von Vertrauen und Kommunikation kooperatives Verhalten gefördert.

Im Rahmen dieser Dissertation behandeln wir das Problem, wie individuelle Unterschiede in der sozialen Motivation auf der Vertrauensverhalten im Kontext von Verhandlungen wirken. Dabei heben wir den Faktor Kommunikation sowie insbesondere den Inhalt der Kommunikation hervor. Der Einfluss des Verhandlungsprozesses auf das Verhandlungsergebnis wird untersucht, um heraus zu finden, ob gesprochene Worte und Taten übereinstimmen. Darüber hinaus verfolgen wir das Ziel zu testen, wie die individuellen Unterschiede in der sozialen Motivation das Vertrauensverhalten beeinflussen, wenn eine Option zur Verhaltensveränderung des bereits erreichten Verhandlungsergebnisses angeboten wird.

Wir verbinden die Methoden Experiment und Fragebögen um unsere Forschungsfragen zu beantworten. Die Untersuchung basiert einerseits auf quantitative Daten aus den Experimentergebnissen und andererseits auf qualitative Daten, die mittels Inhaltsanalyse untersucht wurden. Das Experimentdesign stützt sich auf das Vertrauensspiel oder „Trust game" (Berg et al, 1995), welches durch Face-to-Face Kommunikation und einer Option zur Verhaltensveränderung (des bereits erreichten Verhandlungsergebnisses) erweitert wurde. Es werden zwei Phasen unterschieden: *t=1* Face-to-Face Phase und *t=2* Email Phase mit Option auf Verhaltensveränderung. Vor dem Experiment wurden die Teilnehmer hinsichtlich ihrer sozialen Motivation (sozial versus egoistisch) mittels Fragebögen überprüft und mit einem passenden Interaktionspartner zusammengebracht. Daher verfolgen wir einen „Triangulations"-Ansatz (Flick, 2009) mit der Kombination von unterschiedlichen Methoden und unterschiedlichen Datenausprägungen.

Die Ergebnisse der Verhandlungsexperimente zeigen, dass Face-to-Face Kommunikation zu fairen und effizienten Verhandlungsergebnisse führen. Interessanterweise werden die individuellen Unterschiede in der sozialen Motivation entsprechend an den Interaktionspartner bei Face-to-Face Kommunikation angepasst (*t=1*). Teilnehmer antworten daher

systematisch auf das Verhalten des Interaktionspartners. Die Mehrheit der Teilnehmer teilt die Verhandlungsergebnisse gleichmäßig zwischen den Partnern auf: 89% in der Face-to-Face Phase und 84% in der Email Phase mit Option auf Verhaltensveränderung. Teilnehmer zeigen zu einem großen Anteil die Tendenz Versprechen zu halten: 87% der Teilnehmer nutzen nicht die Option auf Verhaltensänderung. Wenn diese Option genutzt wurde, wurde sie sowohl von sozial orientierten als auch egoistischen Teilnehmer eingesetzt. Allerdings haben vor allem egoistische Vertrauensnehmer diese Veränderung (statistisch signifikant) in der Email-Phase verwendet. Interessant ist auch, dass das Vertrauen im Zeitverlauf erhalten bleibt, auch wenn die Option auf Verhaltensveränderung angeboten wird.

Hinsichtlich des Einflusses des Verhandlungsprozesses auf das Verhandlungsergebnis zeigen wir, dass die ausgetauschten Worte, analysiert durch die Inhaltsanalyse, konsistent mit den Taten aus den experimentellen Phasen sind. Im Besonderen hat distributive Information (wenn Eigeninteresse ausgedrückt wird) einen negativen Einfluss und integrative Information (wenn auch Fremdinteresse ausgedrückt wird) einen positiven Einfluss auf das Verhandlungsergebnis in der Face-to-Face Phase ($t=1$). Darüber hinaus ist es auch interessant, dass integrative Verhandlungsstrategien (mit Wertvermehrung) einen Einfluss auf das individuelle Verhandlungsergebnis in Email Phase mit Option auf Verhaltensveränderung ($t=2$) haben. In diesem Sinne wurde die Erwartung erfüllt, dass gesprochene Worte und erfolgte Taten in den Verhandlungsexperimenten kongruent sind. Zusammenfassend kann gesagt werden, dass Kommunikation zu fairen und effizienten Verhandlungsergebnissen beiträgt, während der Kommunikationsinhalt (Verhandlungsstrategien) die individuellen Entscheidungen beeinflusst.

Curriculum Vitae

Personal Information

Günther Kainz

guenther.kainz@univie.ac.at

Education

09/2009-today	Ph.D. Management, University of Vienna, Faculty of Business Administration, Economics, and Statistics (Title of the dissertation: "A Matter of Trust: Keeping Promises in Negotiations")
10/2002-08/2007	Studies in business administration, University of Graz, Master program "Financial and Industrial Management" (Title of the thesis: "Experimenteller Wirtschaftsforschung auf der Spur – Differentialgleichungen als Hilfestellung bei der Beschreibung und Erklärung von komplexen Systemen") and Master program "Management and International Business" (Title of thesis "Geschäftsprozess-Analyse bei der Kreditvergabe am Beispiel einer Raiffeisenbank")
09/2006-01/2007	Exchange Program Sokrates/Erasmus, University of Limerick – Kemmy Business School (Ireland)
09/1997-04/1998	Military Service (obligatory in Austria)
09/1989-06/1997	Comprehensive secondary school, Bundesgymnasium Tanzenberg (Maria Saal, Austria)

Professional Experience

05/2009-today	**University of Vienna** – Chair of Organization and Planning (University assistant: research and teaching, Ph.D. thesis)

09/2007-02/2009	**Capgemini Consulting Österreich/Eastern Europe AG** – financial services department (fulltime employment: consultant for projects in the CEE area, such as Ukraine and Romania, responsible for business process management and project management activities)
04/2007	**Austrian Federal Economic Chambers** – permanent representation in Brussels (internship: assistant for organization, responsible for writing of statements and newsletters)
07/2006	**x-Sample Sozialforschung** (Graz, Austria) – psychological market research (internship: assistant, responsible for questionnaire surveys in the field)
03/2005-06/2006	**University of Graz** – Institute of Statistics and Operations Research (part-time undergraduate assistant: participation in research and teaching, student support)
03/2004-01/2005	**Kocher Marktforschung GmbH** (Graz, Austria) – market research (internship: assistant, responsible for questionnaire surveys in the field)
07-09/2003-2005	**Raiffeisen-Bezirksbank GenmbH** (St. Veit an der Glan, Austria) – credit department (holiday replacement: credit team member and responsible for credit processing)
06/1998-09/2002	**Raiffeisen-Bezirksbank GenmbH** (St. Veit an der Glan, Austria) – credit department (fulltime employment: service advisor and credit manager, responsible for private customer, credit discussion, and loan processing)

Teaching Experience

Courses

weekly term courses **Undergraduate program**	summer 2010	winter 2010/11	summer 2011	winter 2011/12	summer 2012	winter 2012/13
Organization and Human Resources (VK)	x	x		x		
Organization and Human Resource Management (FK)	x		x		x	x

author	title	fin-ished
Neumann, Lisa	Effiziente Prozessgestaltung am Bespiel eines österreichischen Hotelsaison-betriebes	2011
Boudova, Linda; Kuntner, Evamaria	Methode der Inhaltsanalyse am Beispiel eines Verhandlungsexperiments	2012
Kaffke, Marten	Anreize und Motivation bei Social Entrepreneurs	2012
Steinkellner, Petra; Zheden, Nadine	Prozessanalyse im Bereich der Gemeindeverwaltung zur Vorbereitung des elektronischen Aktes	2012
Several	Bachelor theses	2010 -2012

Scholarships, Grants, and Awards

2011	'Förderungsstipendium der Universität Wien' scholarship for conducting the Ph.D research project of the University of Vienna
2006-2009	European Forum Alpbach (Austria), grant holder for the annual meeting 2009 'trust', grant holder for the annual meeting 2008 'perception and decision', grant holder for the annual meeting 2007 'emergence', and grant holder for the annual meeting 2006 'quest for certainty and security'
2007	'SOWI im Dialog – Förderpreis 2007' award for excellent thesis of the Grazer Wechselseitige Versicherung AG
2003-2007	'Leistungsstipendium der Universität Graz' scholarship for excellent performance of the University of Graz
09/2002-08/2007	'Studienbeihilfe' general grant for students of the Austrian Federal Ministry of Science and Research

Publications

Refereed journals

Vetschera, R. and Kainz, G. (2012). Do Self-reported Strategies Match Actual Behavior in a Social Preference Experiment? *Group Decision and Negotiation*, DOI: 10.1007/s10726-012-9295-5.

Conference proceedings

Kainz, G. (2012). Trust Game Negotiations: Experimental Evidence. Proceedings of the international conference on *Group Decision and Negotiation* (GDN) 2012, Recife (Brazil).

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Kainz, G. (2010). Trust and e-Negotiation. Proceedings of the international conference on *Group Decision and Negotiation* (GDN) 2010, Delft (Belgium).

Master theses

Kainz, G. (2007). Experimenteller Wirtschaftsforschung auf der Spur – Differentialgleichungen als Hilfestellung bei der Beschreibung und Erklärung von komplexen Systemen. Master thesis, University of Graz.

Kainz, G. (2007). Geschäftsprozess-Analyse bei der Kreditvergabe am Beispiel einer Raiffeisenbank. Master thesis, University of Graz.

Misc

Languages	German – mother tongue English – fluent Italian – basics
Software	MS Office (Word, Excel, PowerPoint, Visio and Outlook), SPSS, SAP/R3, MatLab-Octave, ARIS, Adonis, Internet Research
Interests	behavioral economics, (social) media, reading, music, philosophy, theatre, hiking, running